Appendix G
Waters of the U.S. Determination Form

WATERS OF THE U.S. DETERMINATION FORM

US 31 at SR 28
New Interchange Construction
Designation Number(s) 1382317

Prepared by: Sandra Bowman, Robert Winebrinner and Julie Barnard, INDOT ESD
October 6, 2014

Date of Waters Field Investigation: August 7 and 19, 2013

Location:
Section 7 and 18, Township 21 N, Range 4 E
Section 12 and 13, Township 21 N, Range 3 E
Kempton & Tipton, Indiana Quadrangles
Tipton County, Indiana

Project Description:
The purpose of the project is to create a new interchange at the intersection of US 31 and SR 28. The construction will include bridges to carry SR 28 over US 31, on- and off-ramps, and road widening, turn lanes and/or added travel lanes on SR 28.

National Wetland Inventory (NWI) Information:
There are NWI wetlands identified near the project area. NWI maps are attached to this report.

Soils:
According to the Soil Survey Geographic (SSURGO) Database for Tipton County, Indiana, the project area does contain nationally listed hydric soils.

Soil Unit Symbol	Soil Unit Name
Pn	Patton silty clay loam, sandy substratum

Attached Documents:
Summary tables of the waterways and wetlands known to be present in the project area.
Maps of the project area.
Photographs of the project area.
USACE Wetland Determination Data Forms

Field Reconnaissance:
Field visits to the project area were conducted on August 7 and 19, 2013 by the INDOT ESD ecology and waterway permitting staff. The survey footprint consisted of the area that had the potential to be impacted based on all possible design scenarios. This area is shown on the attached map. The survey area was evaluated for the presence or absence of wetlands and waterways. Seventeen data points were taken to determine the presence or absence of wetlands meeting the criteria of the 1987 Corps of Engineers Wetland Delineation Manual and the August 2010 Midwest Regional Supplement. In addition, two stream crossings were evaluated.

STREAMS

One waterway, Dixon Creek, was observed in the project area. Dixon Creek flows southeast from the "Dixon Creek at SR 28" bridge to the "Dixon Creek at US 31" north and south bound bridges. Dixon Creek is classified as R2UBH (Riverine Lower Perennial Unconsolidated Bottom Permanently Flooded) in the National Wetlands Inventory and is a solid blue line stream feature on the USGS topographic map. According to the USGS *Indiana StreamStats* the Dixon Creek drainage area above the US 31 bridge is 12.58 square miles.

Dixon Creek at SR 28

The Dixon Creek bridge on SR 28 is approximately 0.4 miles west of US 31. Dixon Creek at SR 28 had a defined ordinary high water mark (OHWM) and it was approximately 21.5 feet wide and 24 inches deep. This bridge crossing exhibits wetland characteristics on the surrounding banks. It is classified as Wetland G below. Dixon Creek at SR 28 is likely a Waters of the US. Approximately 200 linear feet of Dixon Creek is within the project area at this location and could potentially be impacted by the project.

Dixon Creek at US 31

The Dixon Creek bridges on US 31 are approximately 0.3 miles south of SR 28. Dixon Creek at US 31 had a defined ordinary high water mark (OHWM) and it was approximately 15.75 feet wide and 28 inches deep. The OHWM is visible on both the west and east sides of the road. This bridge crossing does not exhibit wetland characteristics on the surrounding banks. The roadside ditches in the immediate vicinity of the creek are riprap lined and data points were not obtained. Te ditch line further out from the bridges exhibited the three wetland characteristics. Roadside Ditch A and H are discussed below. Dixon Creek at US 31 is likely a Waters of the US. Approximately 400 linear feet of Dixon Creek is within the project area at this location and could potentially be impacted by the project.

Stream Summary Table
US 31
New Interchange Construction
Tipton County, Indiana
Designation Number (s): 1382317

Stream Name	Photos	Lat/Long	OHW Width	Depth	USGS Blue-line	Riffles and Pools	Quality	Likely Water of U.S.	Potential Stream Impact (ft)
Dixon Creek (at US 31)	1-22, 25, 26	**40.2711/ 86.1271**	15.75'	28"	Yes	None	Poor	Yes	400

Dixon Creek (at SR 28)	109, 110, 114, 115, 118, 129, 133	**40.2753/ 86.1271**	21.5'	24"	Yes	None	Poor	Yes	200

WETLANDS

Wetland E
Wetland E is located at the intersection of US 31 and SR 28 in the northwest corner. It is approximately 0.0113 acre in size. Data Point E1 was dominated with wetland vegetation (predominantly *Echinochloa crus-gali* Large Barnyard Grass and *Schoenoplectus tabernaemontani* Soft-Stem Club-Rush). Two wetland hydrology primary indicators were present – Saturation and Inundation Visible on Aerial Imagery. A water table was present at four inches. In addition three secondary indicators were present – Surface Soil Cracks, Geomorphic Position and FAC-Neutral Test. The soil profile contained soils with a matrix of 10YR 4/1 with 10YR 5/6 redox features to 3.5 inches, 10YR 3/2 to seven inches and 10YR 5/1 with 10YR 4/6 redox features to twelve inches. This data point appears to be within a wetland. Data Point E2 contained upland species, non-hydric soil and did not exhibit wetland hydrology indicators. This data point doesn't appear to be within a wetland.

Wetland F
Wetland F is located 0.35 miles west of US 31 in northwest quadrant of the intersection of SR 28 and Dixon Creek. It is approximately 0.0549 acre in size. Data Point F1 was dominated with wetland vegetation (predominantly *Phalaris arundinacea* Reed Canary Grass). Two wetland hydrology secondary indicators were present – Geomorphic Position and FAC-Neutral Test. The soil profile contained soils with a matrix of 10YR 3/2 to eight inches, 10YR 3/2 with 7.5YR 5/8 redox features to fourteen inches and 10YR 4/1 with 7.5YR 4/1 redox features to sixteen inches. This data point appears to be within a wetland. Data Point F2 contained hydrophytic vegetation but did not contain hydric soils or exhibit wetland hydrology characteristics. This data point doesn't appear to be within a wetland.

Wetland I
Wetland I is located in the depression on the South side of SR 28 0.43 miles west of US 31. It is approximately 0.3011 acre in size. Data Point I1 was dominated with wetland vegetation (predominantly *Panicum virgatum* Wand Prairie/Switch Grass). Two secondary wetland hydrology indicators were present – Surface Soil Cracks and Geomorphic Position. The soil profile contained soils with a matrix of 10YR 4/1 with 10YR 5/8 redox features to seven inches and 10YR 2/1 with 10YR 5/1 redox features to thirteen inches. This data point appears to be within a wetland. Data Point I1 contained wetland vegetation but had non-hydric soil and did not exhibit wetland hydrology. This data point doesn't appear to be within a wetland.

Wetland Plot Data Summary
Table US 31
New Interchange Construction
Tipton County, Indiana
Designation Number (s): 1382317

PLOT	Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology	Within a Wetland
A1	Yes	Yes	Yes	No*
A2	No	No	No	No
B1	No	Yes	Yes	No
B2	No	No	No	No
C1	Yes	Yes	Yes	No*
C2	No	No	No	No
D1	No	No	No	No
E1	Yes	Yes	Yes	Yes
E2	No	No	No	No
F1	Yes	Yes	Yes	Yes
F2	Yes	No	No	No
G1	Yes	Yes	Yes	No*
G2	No	No	No	No
H1	Yes	Yes	Yes	No*
H2	No	No	No	No
I1	Yes	Yes	Yes	Yes
I2	Yes	No	No	No

* Classified as a roadside ditch.

Wetland Summary Table
US 31
New Interchange Construction
Tipton County, Indiana
Designation Number (s): 1382317

Wetland ID	Photos	Lat/Long	Type	Area (acres)	Quality	Likely Water of U.S.?
E	94-100	40.2755/86.1275	Palustrine Emergent	0.0113	Poor	Yes
F	108-135	40.2755/86.1136	Palustrine Emergent	0.0549	Poor	Yes
I	171-187	40.2752/86.1350	Palustrine Emergent	0.3011	Poor	Yes

Roadside Ditch Jurisdiction Determination

The project area was reevaluated in October, 2014 based on new guidance from the Louisville USACE District regarding wetlands in a roadside ditch. A roadside ditch is a non-jurisdictional feature that doesn't have relatively permanent flow. If the ditch meets the three wetland criteria but the area under consideration is wholly contained within the ditch and doesn't extend beyond

the banks it would not be considered a wetland. If a roadside ditch has an area that meets the three wetland criteria that extends beyond the banks then that area would be considered a wetland. The original report identified seven wetland areas in roadside ditches. Based on the new guidance four of the areas (A, C, G and H) have been reclassified as roadside ditches.

Roadside Ditch A

Roadside Ditch A (0.2523 acre) is located on the east side of the northbound lane of US 31 0.25 miles south of SR 28. It is approximately 0.2326 acre in size. Data Point A1 was dominated with wetland vegetation (predominantly *Phalaris arundinacea* Reed Canary Grass and *Typha angustifolia* Narrow-Leaf Cat-Tail). One wetland hydrology primary indicator was present – Oxidized Rhizopheres on Living Roots. In addition two secondary indicators were present – Geomorphic Position and FAC-Neutral Test. The soil profile contained soils with a matrix of 10YR 3/1 to two inches, 10YR 5/1 with 10YR 5/4 redox features to eight inches and 10YR 5/1 with 10YR 4/6 redox features to sixteen inches. Even though this data point meets the three wetland criteria it is wholly contained within a non-jurisdictional roadside ditch. It appears to meet the classification of a roadside ditch. See photos 32-42. Data Point A2 contained only 50% of OBL, FACW, or FAC species, non-hydric soil and did not exhibit wetland hydrology indicators. This data point doesn't appear to be within a wetland.

Roadside Ditch C

Roadside Ditch C (0.0329 acre) is located on the east side of the northbound lane of US 31 0.5 miles north of SR 28. It is approximately 0.0329 acre in size. Data Point C1 was dominated with wetland vegetation (predominantly *Persicaria pensylvanica* Pinkweed). Two wetland hydrology secondary indicators were present – Surface Soil Cracks and Geomorphic Position. The soil profile contained soils with a matrix of 10YR 4/1 to seven inches, 10YR 5/1 with 10YR 4/6 redox features to eleven inches and 10YR 3/1 with 10YR 6/2 and 10YR 6/6 redox features to twelve inches. Even though this data point meets the three wetland criteria it is wholly contained within a non-jurisdictional roadside ditch. It appears to meet the classification of a roadside ditch. See photos 73-85. Data Point C2 contained upland species, non-hydric soil and did not exhibit wetland hydrology indicators. This data point doesn't appear to be within a wetland.

Roadside Ditch G

Roadside Ditch G (0.0685 acre) is located west of the southbound lane of US 31 immediately south of SR 28. It is approximately 0.0685 acre in size. Data Point G1 was dominated with wetland vegetation (*Typha angustifolia* Reed Canary Grass). Two wetland hydrology primary indicators were present – Surface Water and Saturation. In addition two secondary indicators were present – Geomorphic Position and FAC-Neutral Test. The soil profile contained soils with a matrix of 10YR 4/1 with 10YR 4/6 redox features to ten inches and 10YR 5/1 with 7.5YR 5/6 redox features to sixteen inches. Even though this data point meets the three wetland criteria it is wholly contained within a non-jurisdictional roadside ditch. It appears to meet the classification of a roadside ditch. See photos 141-156. Data Point G2 contained only 50% of OBL, FACW, or FAC species, non-hydric soil and did not exhibit wetland hydrology indicators. This data point doesn't appear to be within a wetland.

Roadside Ditch H
Roadside Ditch H (0.3133 acre) is located on the west side of the southbound lane of US 31 from 0.34 miles south of SR 28 to CR W 250 S. It is approximately 0.3133 acre in size. Data Point H1 was dominated with wetland vegetation (predominantly *Leersia oryzoides* Rice Cut Grass. Two wetland hydrology primary indicators were present – Saturation and Inundation Visible on Aerial Imagery. In addition two secondary indicators were present – Crayfish Burrows and Geomorphic Position. The soil profile contained soils with a matrix of 10YR 4/2 to seven inches, 10YR 5/3 with 10YR 5/6 redox features to twelve inches and 10YR 6/1 with 10YR 5/6 redox features to sixteen inches. Even though this data point meets the three wetland criteria it is wholly contained within a non-jurisdictional roadside ditch. It appears to meet the classification of a roadside ditch. See photos 157-175. Data Point H2 contained only 50% of OBL, FACW, or FAC species, non-hydric soil and did not exhibit wetland hydrology indicators. This data point doesn't appear to be within a wetland.

Data Points B1 and B2
Data Points B1 and B2 are located on the east side of the northbound lane of US 31 0.15 miles south of SR 28. Data Point B1 did not contain wetland vegetation but did exhibit a primary hydric soil indictor – Depleted Matrix. The soil profile contained soils with a matrix of 10YR 4/1 to fourteen inches with 10YR 4/6 redox features. One wetland hydrology primary indicator was present – Oxidized Rhizopheres on Living Roots. In addition the site met the Geomorphic Position secondary indicator. Data Point B1 met only two of the three criteria necessary for a positive wetland determination and does not qualify as a wetland.
Data Point B2 contained upland species, non-hydric soil and did not exhibit wetland hydrology indicators.

Data Point D1
Data Point D1 is located northwest of the US 31 and SR 28 intersection in an agricultural field currently cultivated with soybeans. This area was evaluated because of the hydric soils present on the NRCS Soils Map and the dark shade visible on aerial photos. The soil profile contained soils with a matrix of 10YR 3/2 to fourteen inches. One wetland hydrology secondary indicator was present – Geomorphic Position. Data Point D1 did not meet any of the three criteria necessary for a positive wetland determination and does not qualify as a wetland.

Stormwater Basins X and Y
Stormwater Basin X and Stormwater Basin Y are located in the northeast quadrant of the project area. These stormwater detention basins were created on previous agricultural land to contain runoff from the adjacent industrial complex and are not considered to be wetlands.

Conclusions:
Field observations found three wetlands in the project area that have the potential to be impacted. Four other areas met the three wetland criteria but were classified as non-jurisdictional roadside ditches. One waterway (at two locations) was located within the right-of-way and exhibited Ordinary High Water Mark (OHWM) characteristics. This waterway is likely a Waters of the U.S. Every effort should be taken to avoid and minimize impacts to the wetlands and waterway. If impacts are necessary, then mitigation may be required. The INDOT Environmental Services Division should be contacted immediately if impacts will occur. The final determination of jurisdictional waters is ultimately made by the U.S. Army Corps of Engineers. This report is our best judgment based on the guidelines set forth by the Corps.

ATTACHMENT
PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): October 6, 2014

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Sandra Bowman
INDOT – Environmental Services Division
200 N Senate Ave, N642
Indianapolis, IN 46256

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: The US 31 New Interchange Construction project (DES 1382317) is located at the intersection of US 31 and SR 28. A new interchange will be constructed that includes a bridge to carry SR 28 over US 31, on- and off-ramps, and road widening, turn lanes and/or added travel lanes on SR 28. The purpose of this project is to improve safety and traffic flow at a heavily used intersection.

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

State: IN County/parish/borough: Tipton County City: Tipton
Center coordinates of site (lat/long in degree decimal format):
Lat. 41.28° N, Long. 87.18° W.
Universal Transverse Mercator:
Name of nearest waterbody: Dixon Creek
Identify (estimate) amount of waters in the review area:
Non-wetland waters: 600 linear feet; 21.5 width (ft) and/or ___ acre.
Cowardin Class: Riverine (R2UBH)
Stream Flow: Permanent
Wetlands: 0.3673 acres
Cowardin Class: Palustrine Emergent (PEM)

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal: N/A
Non-Tidal: N/A

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

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: .
☒ 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: _____.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: SSURGO Database, Tipton County.
☒ National wetlands inventory map(s). Cite name: USFWS NWI.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): _____
or ☒ Other (Name & Date): Site Photos August 7 and 19, 1013
☐ 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.

Sandra A. Bowman

_____ _____ 10/6/2014

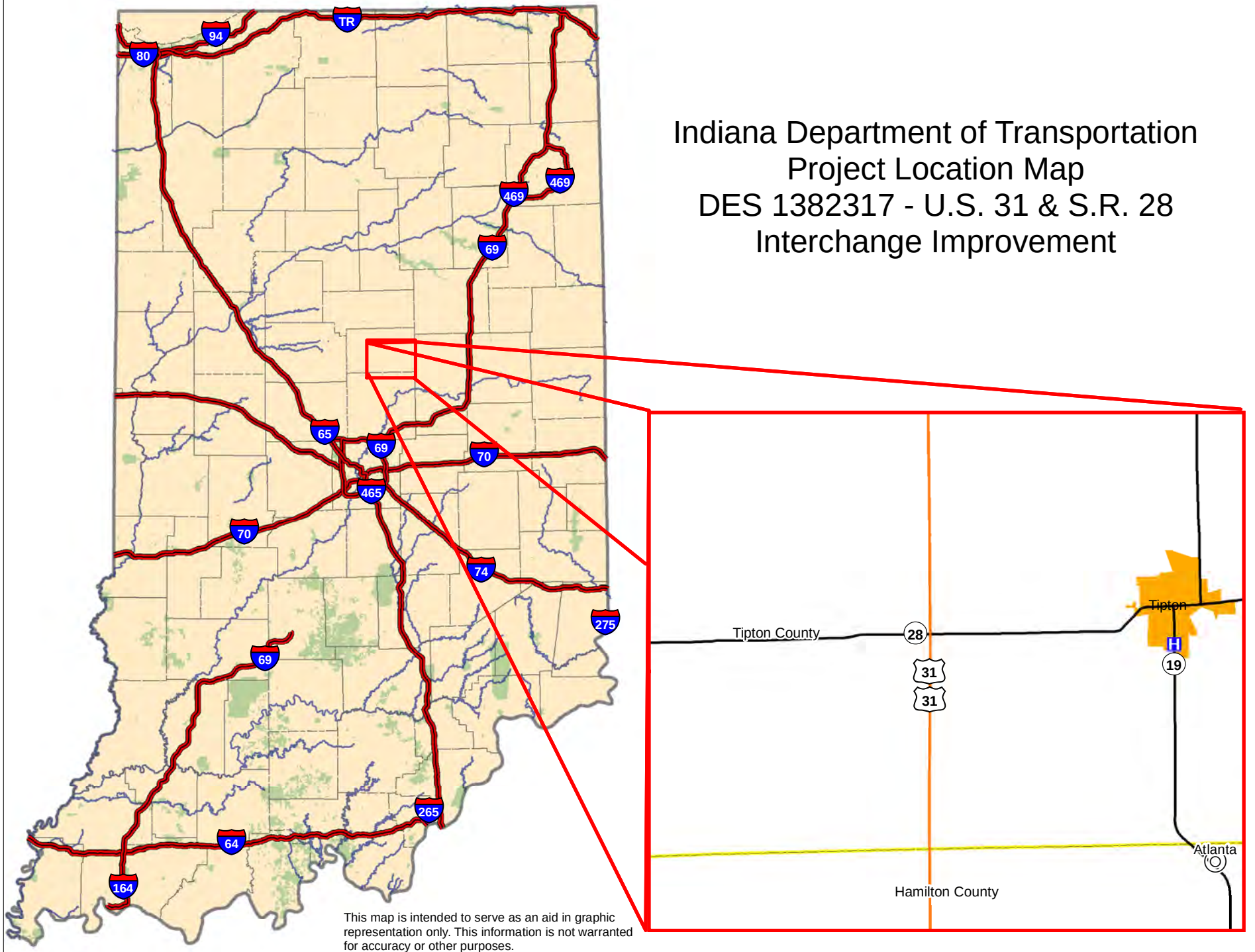
Signature and date of Regulatory Project Manager (REQUIRED)

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

WATERS OF THE U.S. AND WETLANDS

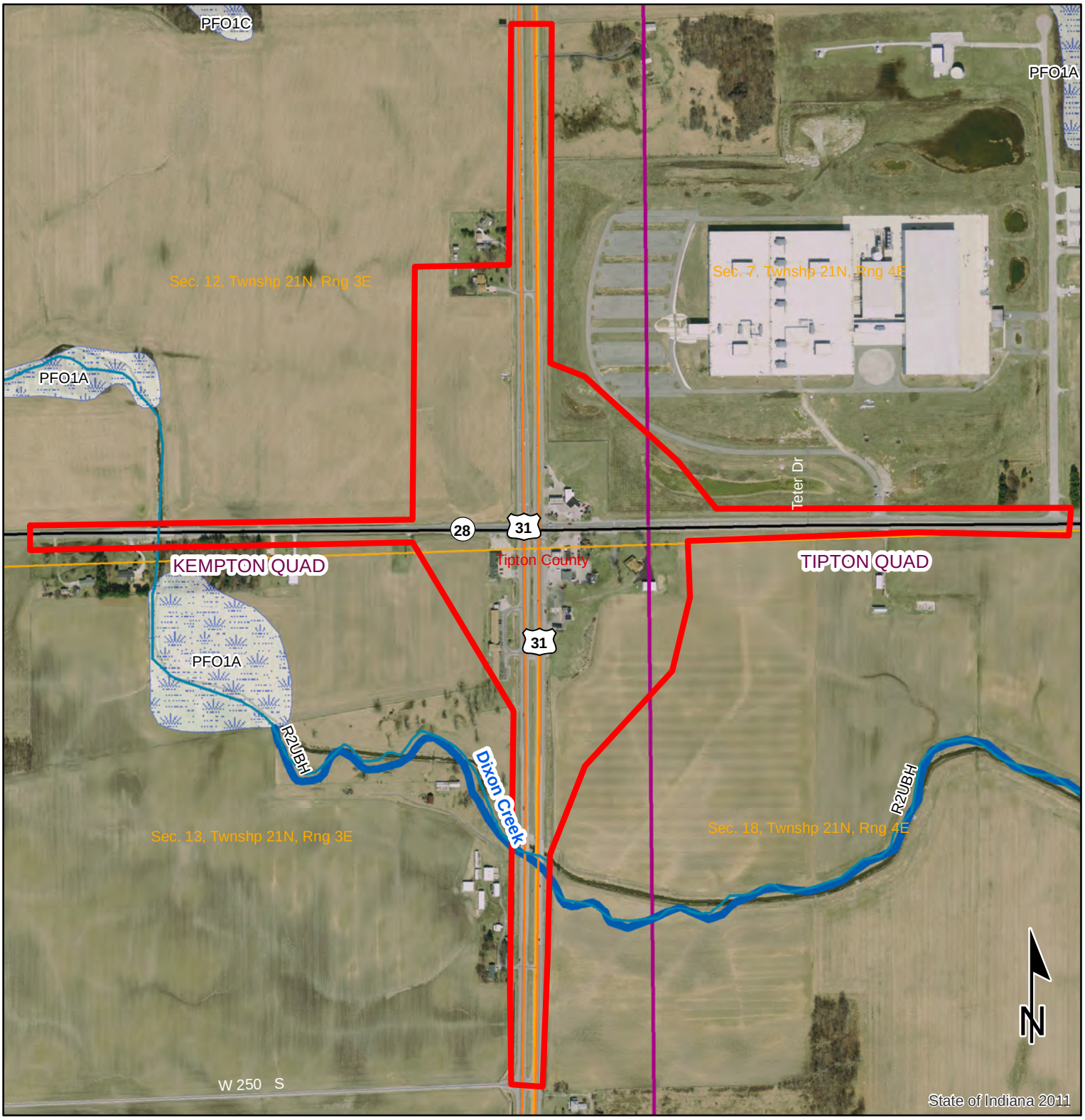
Site Number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
Wetland C	40.2906	86.1268	PEM	0.0113	Poor
Wetland F	40.2755	86.1136	PEM	0.0549	Poor
Wetland I	40.2752	86.1350	PEM	0.3011	Poor
			Total	0.3673	
Dixon Creek (at US 31)	40.2711	86.1271	Riverine Lower Perennial (R2UBH)	400 feet	Poor
Dixon Creek (at SR 28)	40.2753	86.1335	R2UBH	200 feet	Poor
			Total	600	

Indiana Department of Transportation
Project Location Map
DES 1382317 - U.S. 31 & S.R. 28
Interchange Improvement



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

Waters of the U.S. Determination - 2011 Aerial Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



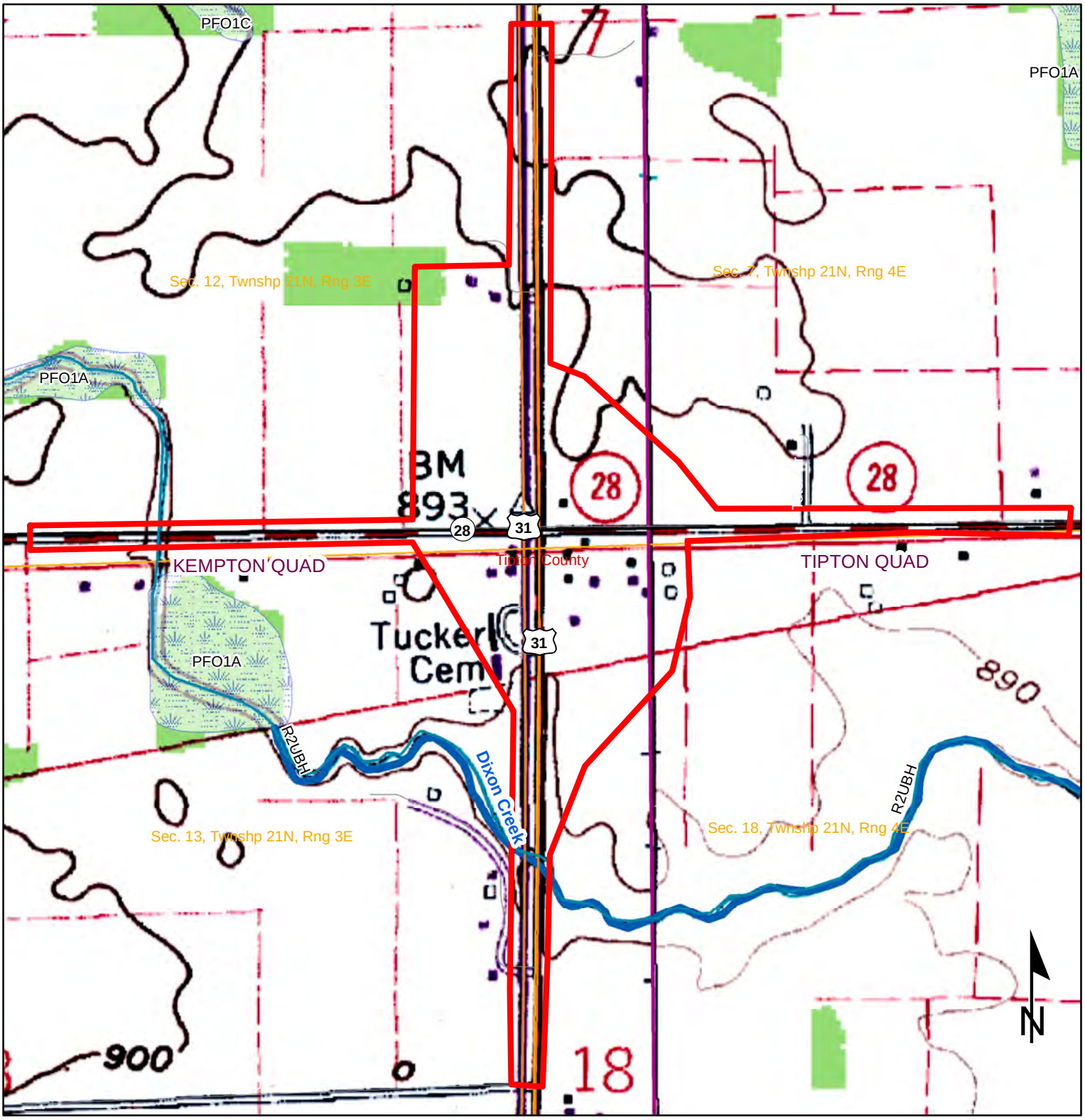
Miles
0 0.04 0.08 0.16 0.24 0.32

- NWI - Points
- NWI- Lines
- NWI Wetlands
- Section Town and Range
- County Boundary
- Investigation Area
- Interstate
- State Route
- US Route
- Local Road

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

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

Waters of the U.S. Determination - USGS Topographic Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



0 0.04 0.08 0.16 0.24 0.32 Miles

NWI - Points
NWI- Lines
NWI Wetlands
Section Town and Range
County Boundary
Investigation Area
Interstate
State Route
US Route
Local Road

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

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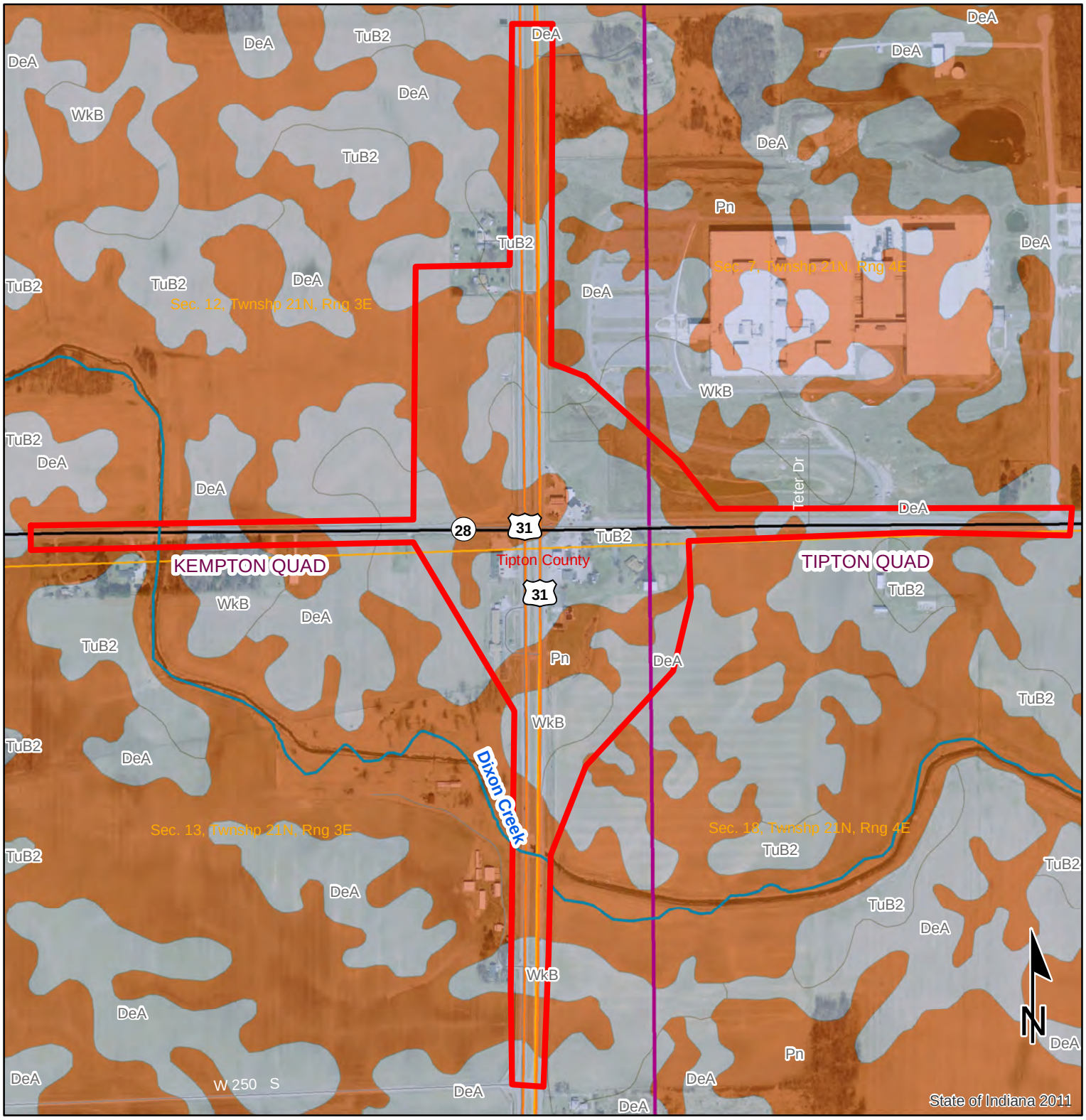
Waters of the U.S. Determination - NRCS Soils Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



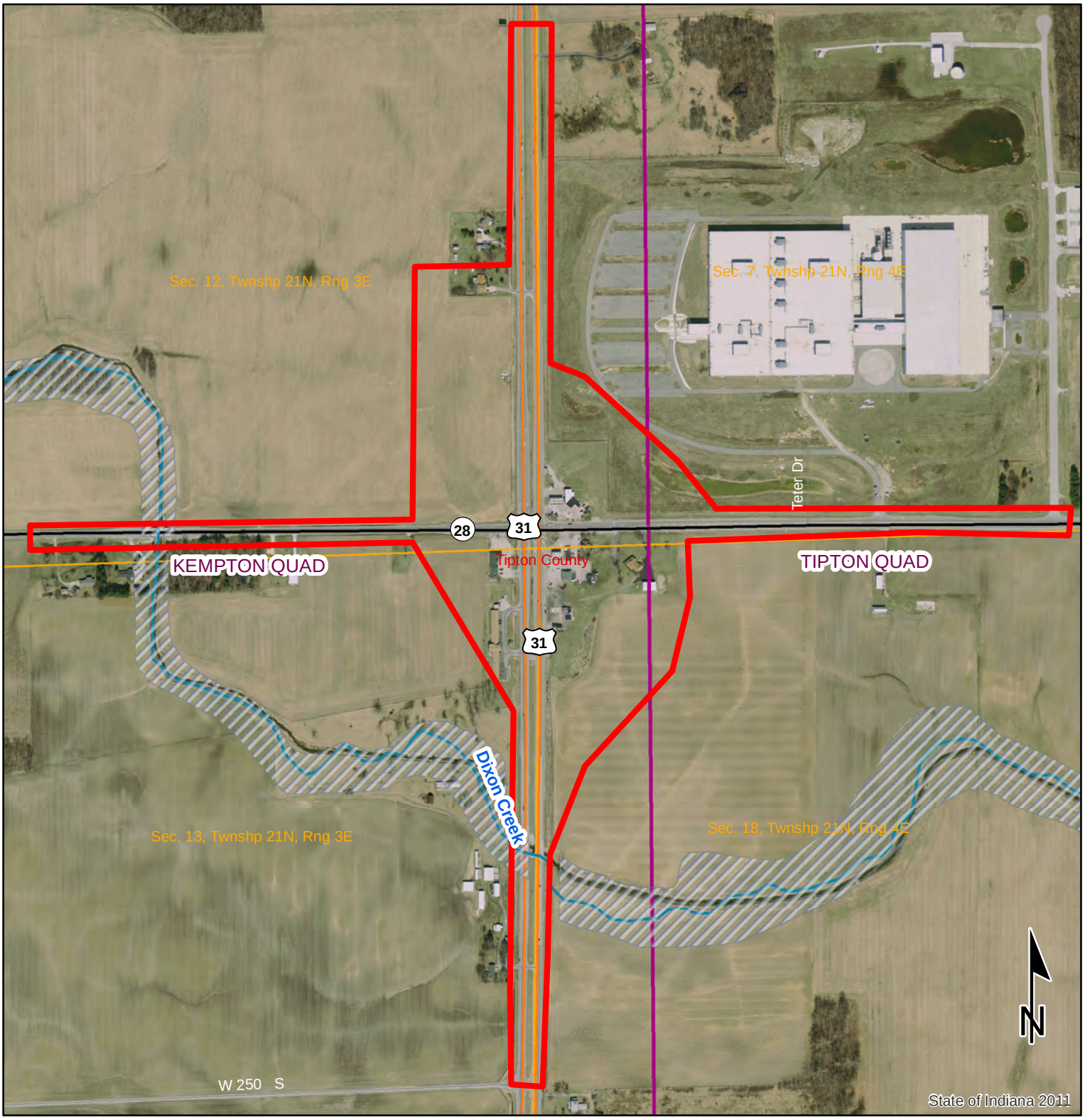
Miles
0 0.04 0.08 0.16 0.24 0.32

All hydric
Not hydric
Section Town and Range
County Boundary
Investigation Area
Interstate
State Route
US Route
Local Road

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

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

Waters of the U.S. Determination - Floodway Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



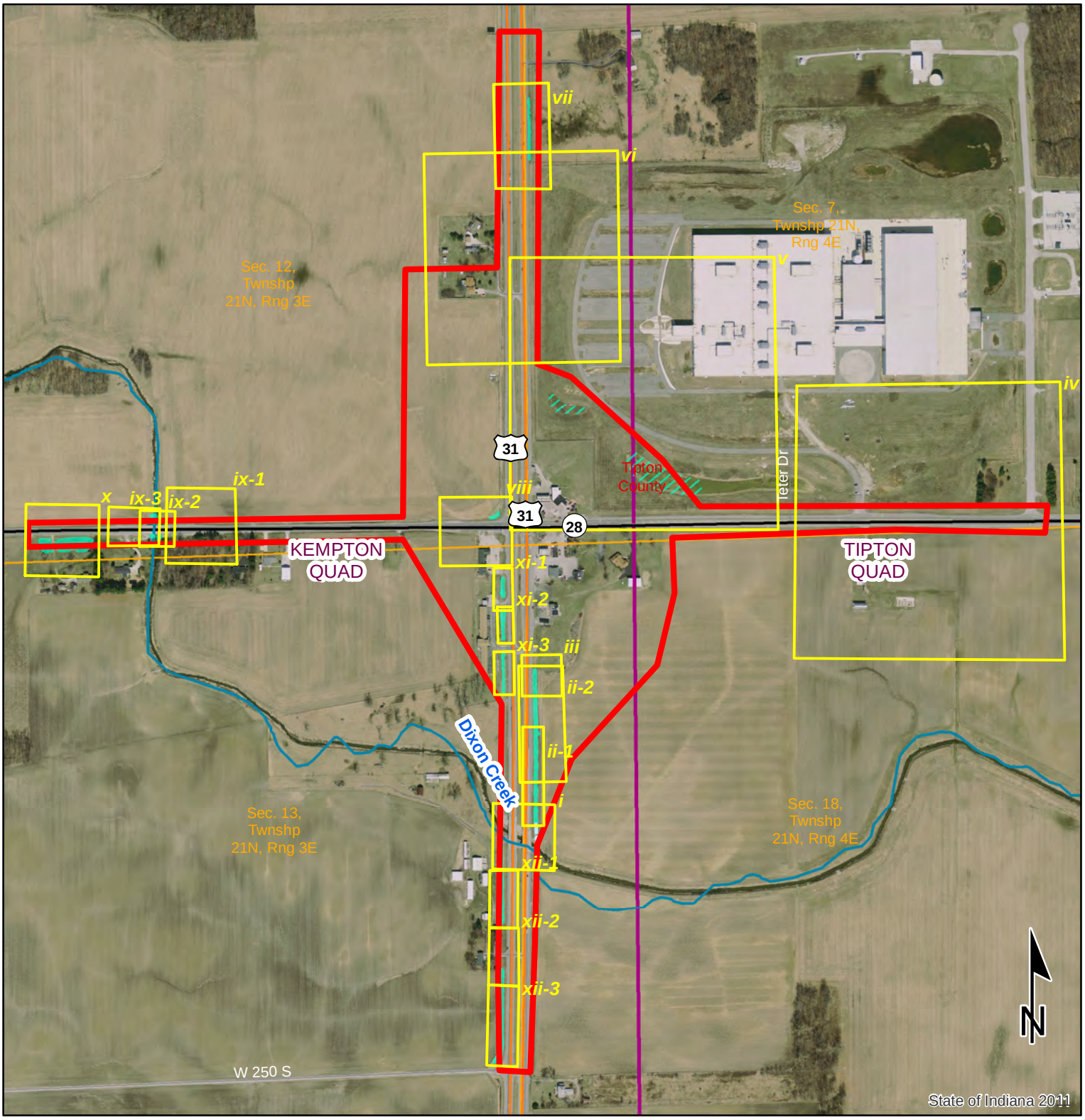
Miles
0 0.04 0.08 0.16 0.24 0.32

Floodway Zone A/ AE
Section Town and Range
County Boundary
Investigation Area
Interstate
State Route
US Route
Local Road

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

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

Waters of the U.S. Determination - General Features Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



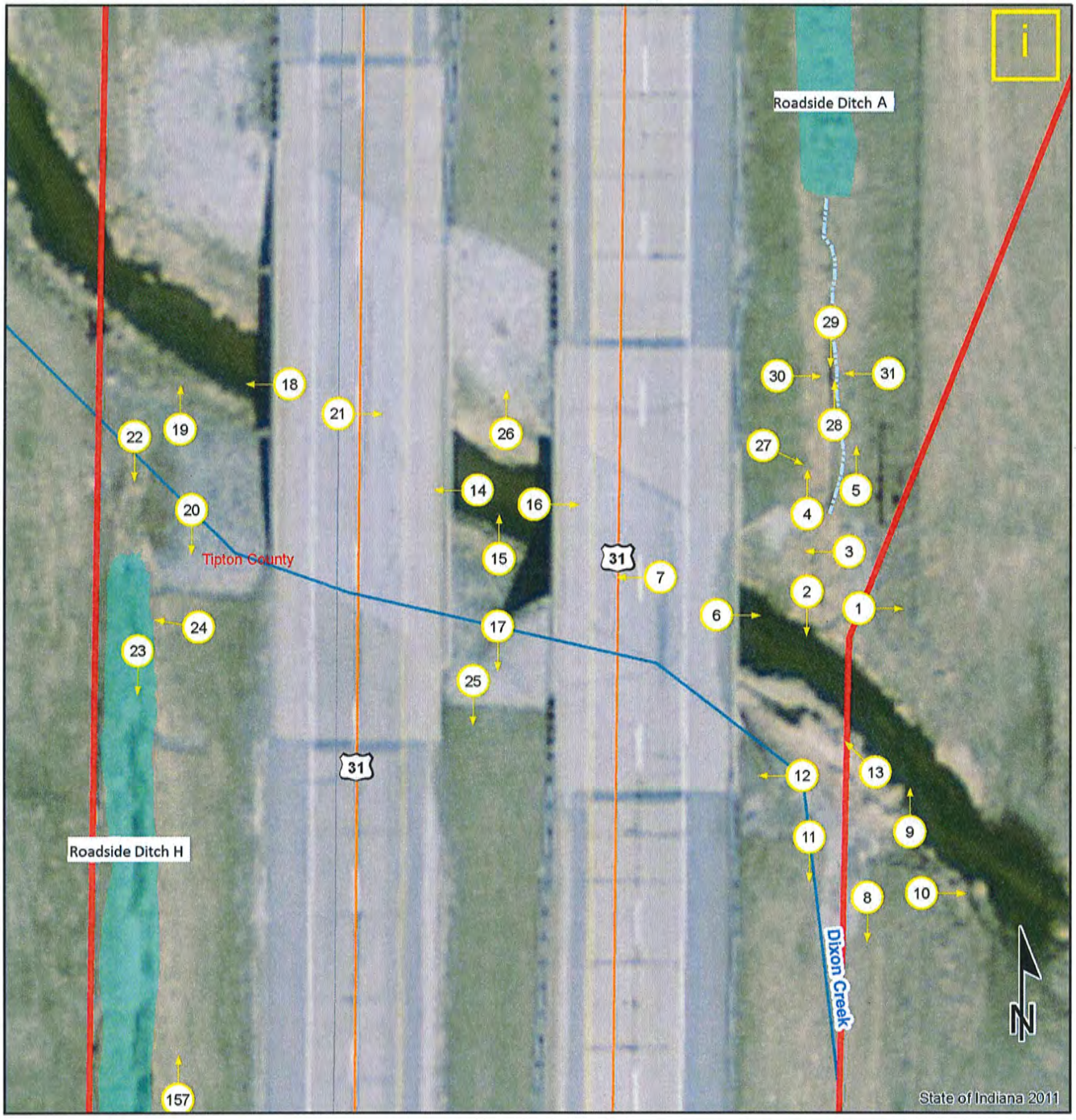
0 0.04 0.08 0.16 0.24 0.32 Miles

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

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

- NWI - Points
- NWI- Lines
- NWI Wetlands
- Section Town and Range
- County Boundary
- Investigation Area
- Interstate
- State Route
- US Route
- Local Road

Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.002 0.004 0.008 0.012 0.016

Photo Point
Waterways
Sampling Point
Roadside Ditch
Boundary
Investigation Area
Interstate
US Route
Local Road

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

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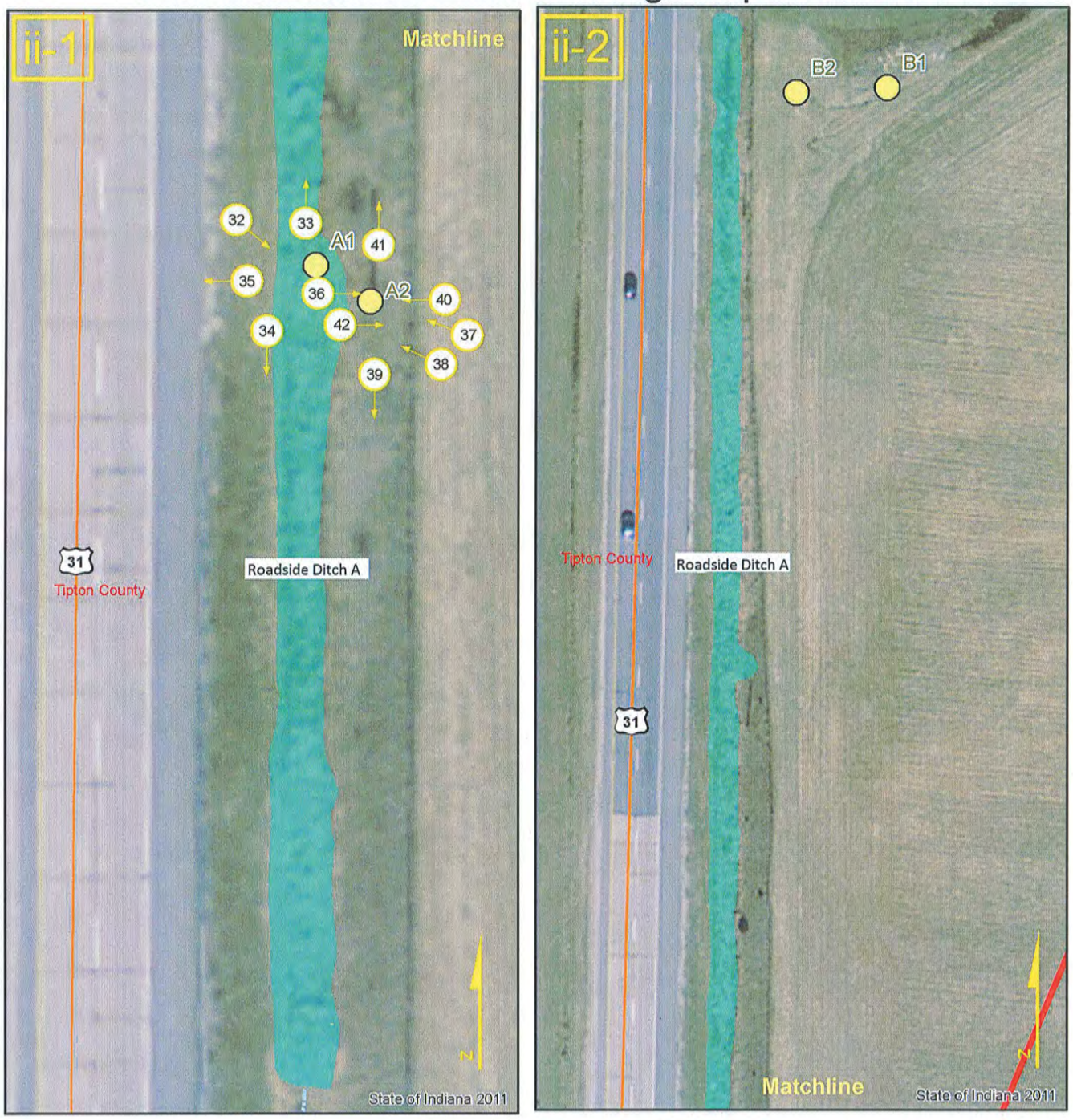
Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.00175 0.0035 0.007 0.0105 0.014

Photo Point
Waterways
Sampling Point
Roadside Ditch
Boundary
Investigation Area
Interstate
US Route
Local Road

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

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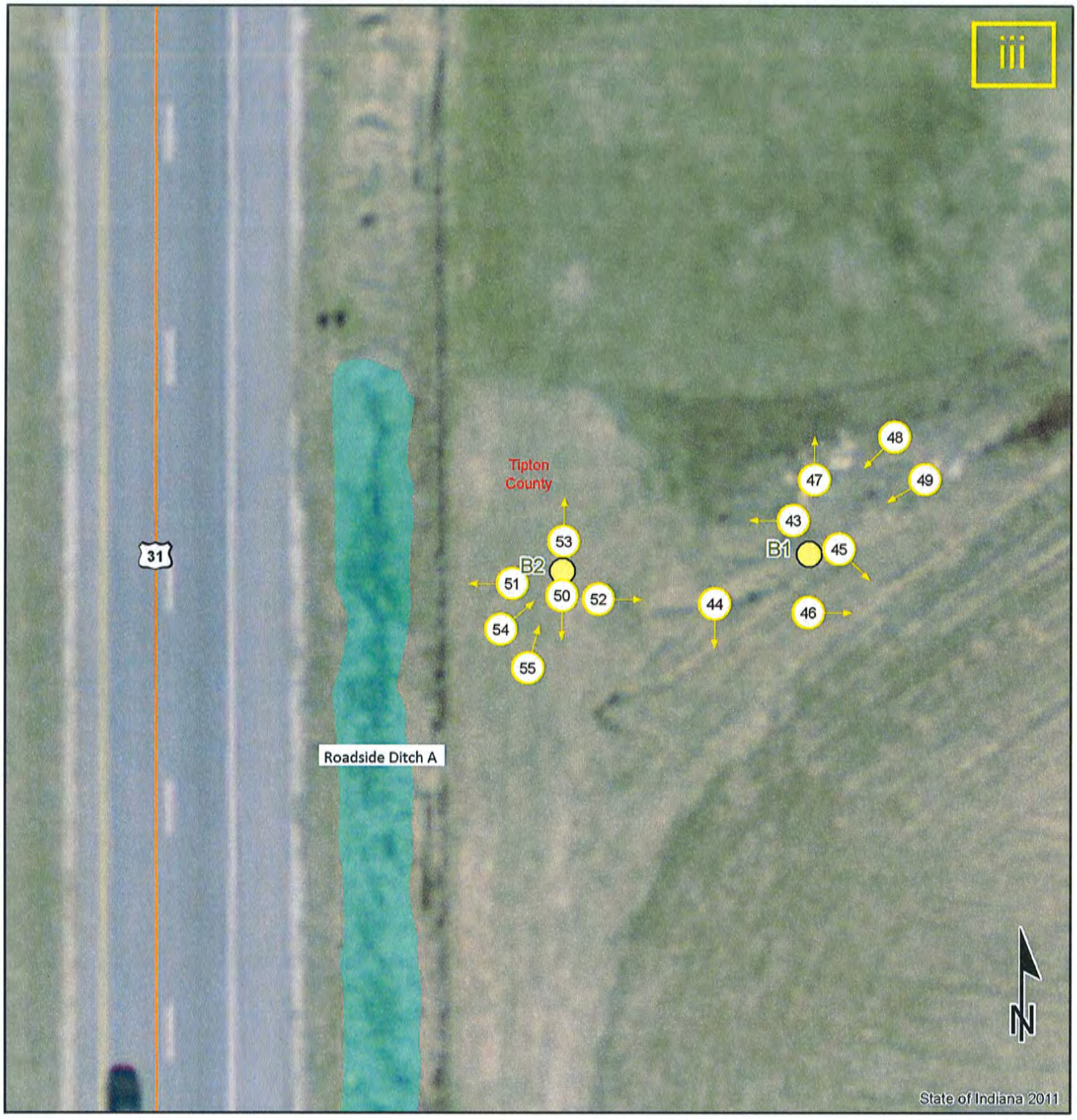
Pg 19

Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.0025 0.005 0.0075 0.01

Photo Point
Waterways
Sampling Point
Roadside Ditch
Boundary
Investigation Area
Interstate
US Route
Local Road

Sources: Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
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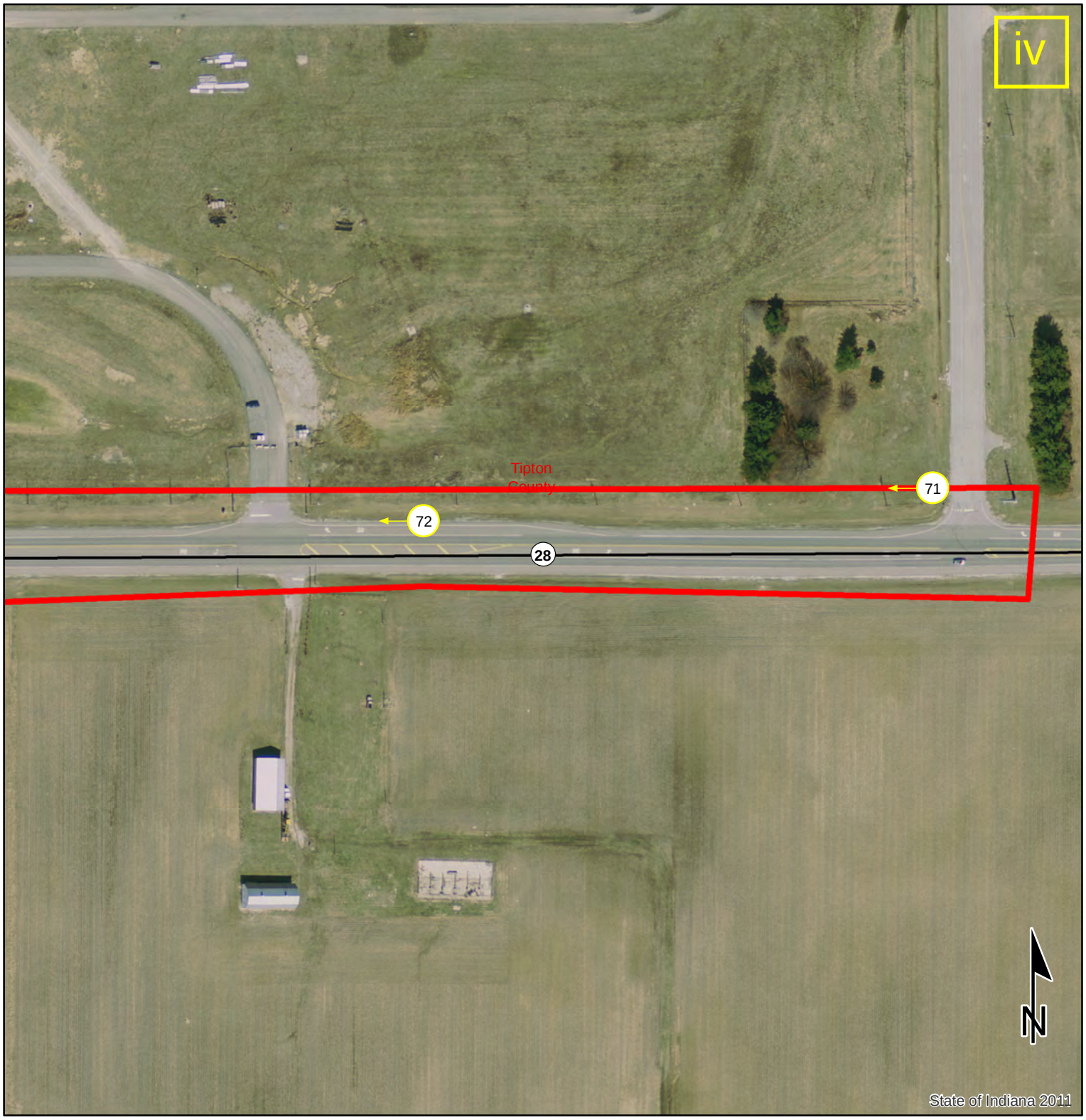
Pg 20

Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



0 0.01 0.02 0.04 0.06 0.08 Miles

Photo Point
Waterways
Sampling Point
Wetland Boundary
Investigation Area
Interstate
US Route
Local Road

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

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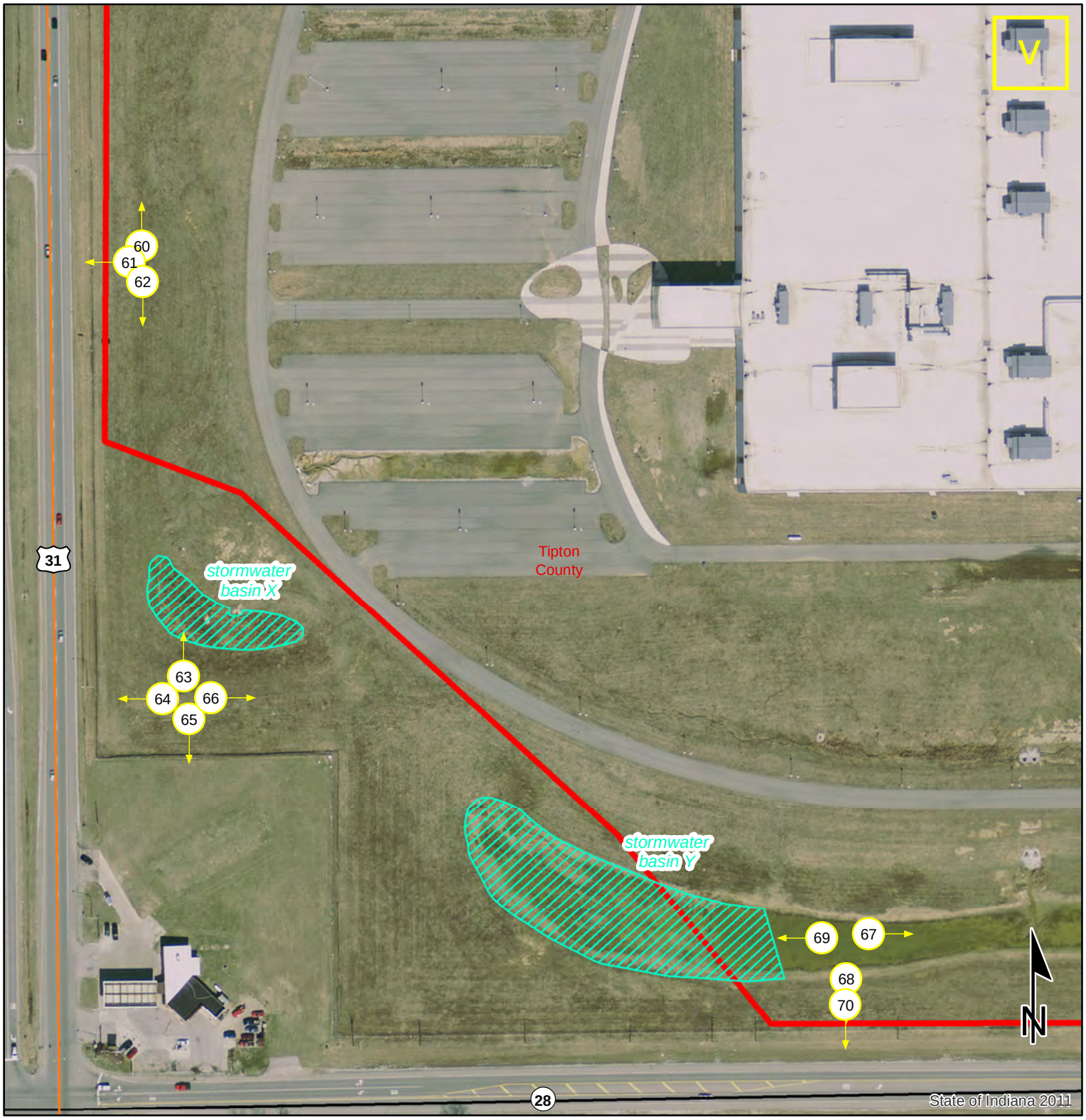
Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.01 0.02 0.04 0.06 0.08

Photo Point
Waterways
Sampling Point
Wetland Boundary
Investigation Area
Interstate
US Route
Local Road

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

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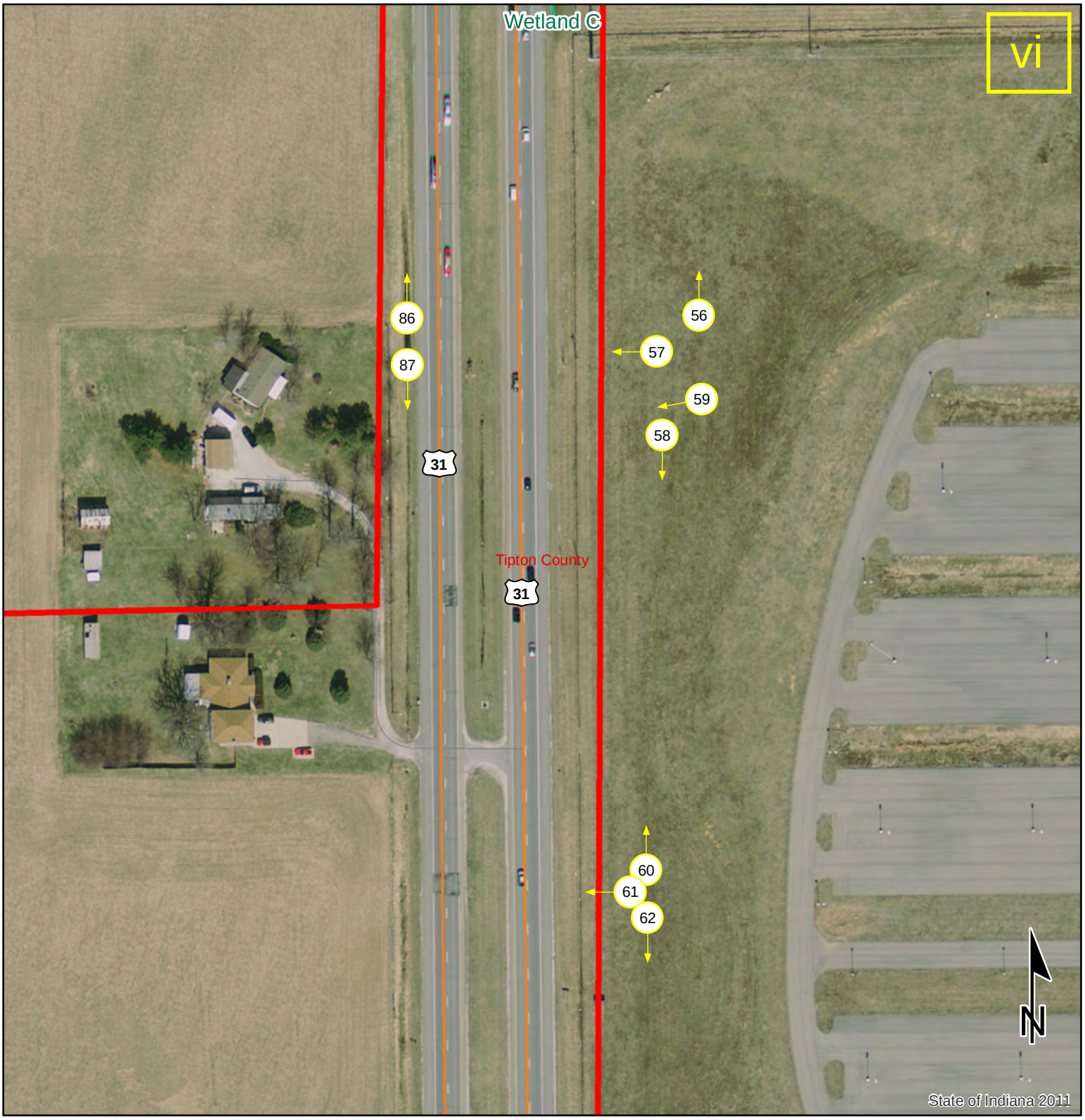
Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.0075 0.015 0.03 0.045 0.06

Photo Point
Waterways
Sampling Point
Wetland Boundary
Investigation Area
Interstate
US Route
Local Road

Sources: **Non Orthophotography Data** - Obtained from the State of Indiana Geographical Information Office Library
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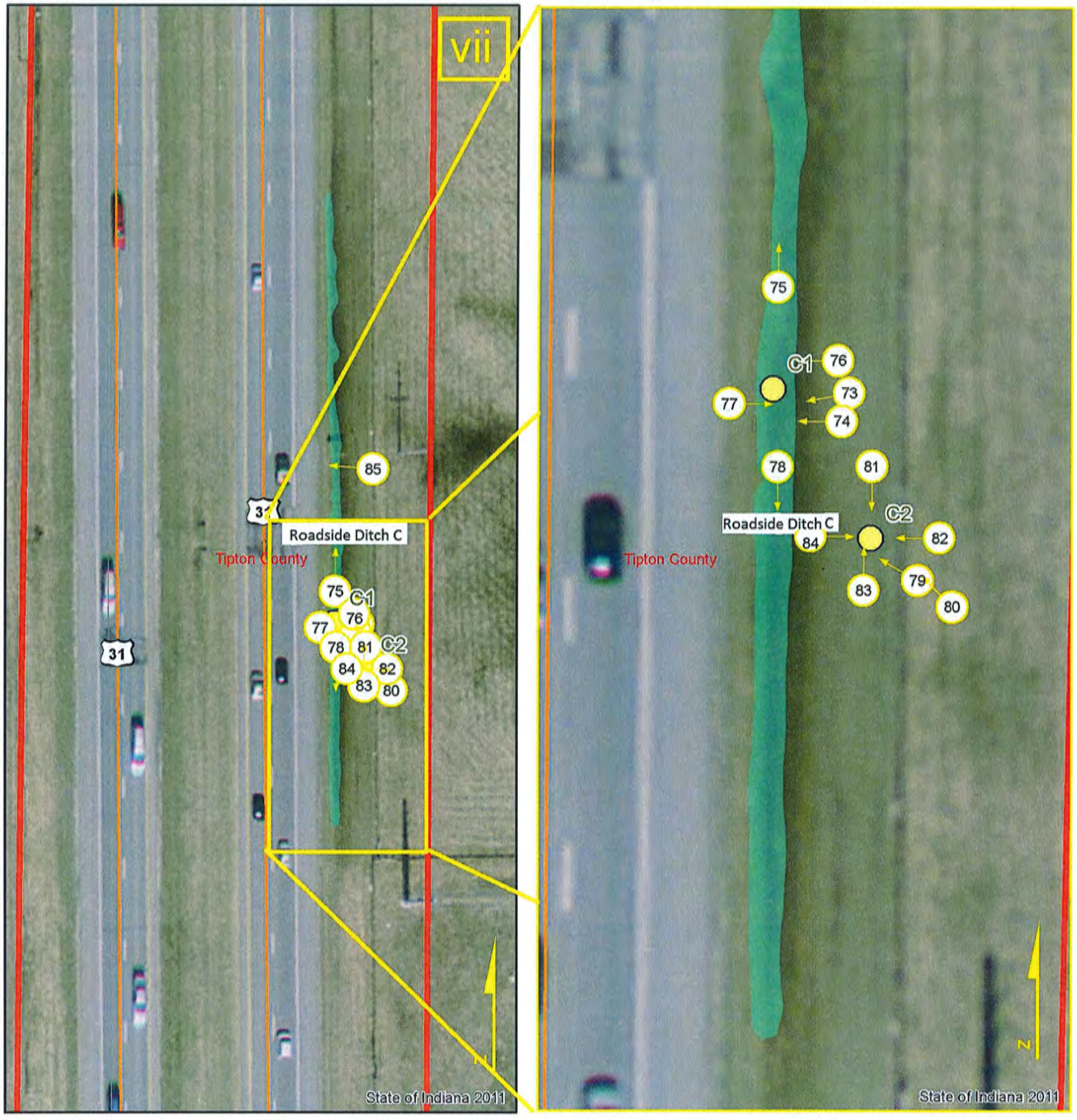
Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



0 0.004 0.008 0.016 0.024 0.032 Miles

Photo Point
Waterways
Sampling Point
Roadside Ditch
Boundary
Investigation Area
Interstate
US Route
Local Road

Sources: Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
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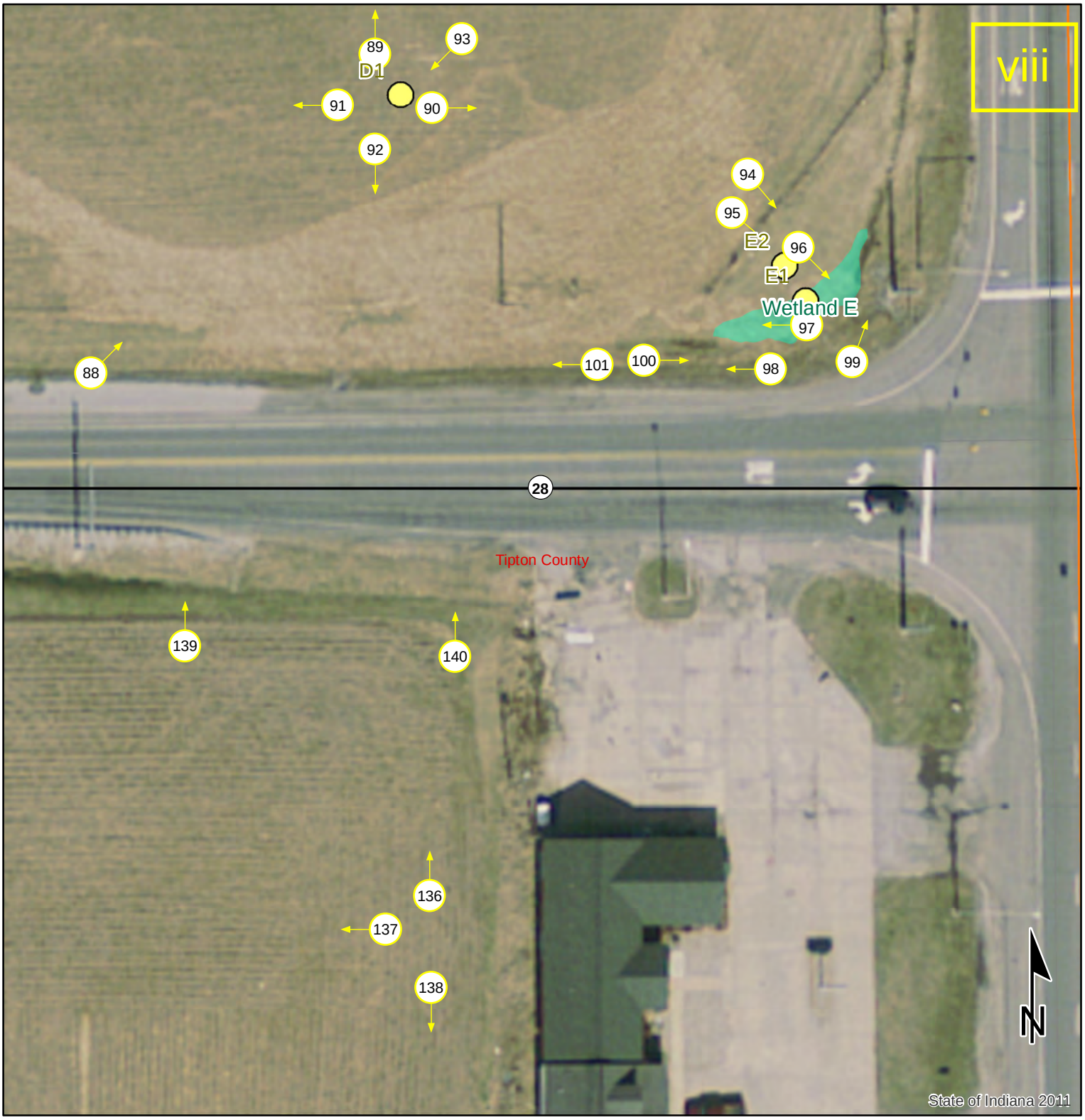
Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.0025 0.005 0.01 0.015 0.02

Photo Point
Waterways
Sampling Point
Wetland Boundary
Investigation Area
Interstate
US Route
Local Road

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

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Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement

Miles
0 0.00275 0.0055 0.011 0.0165 0.022

Photo Point
Waterways
Sampling Point
Wetland Boundary
Investigation Area
Interstate
US Route
Local Road

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

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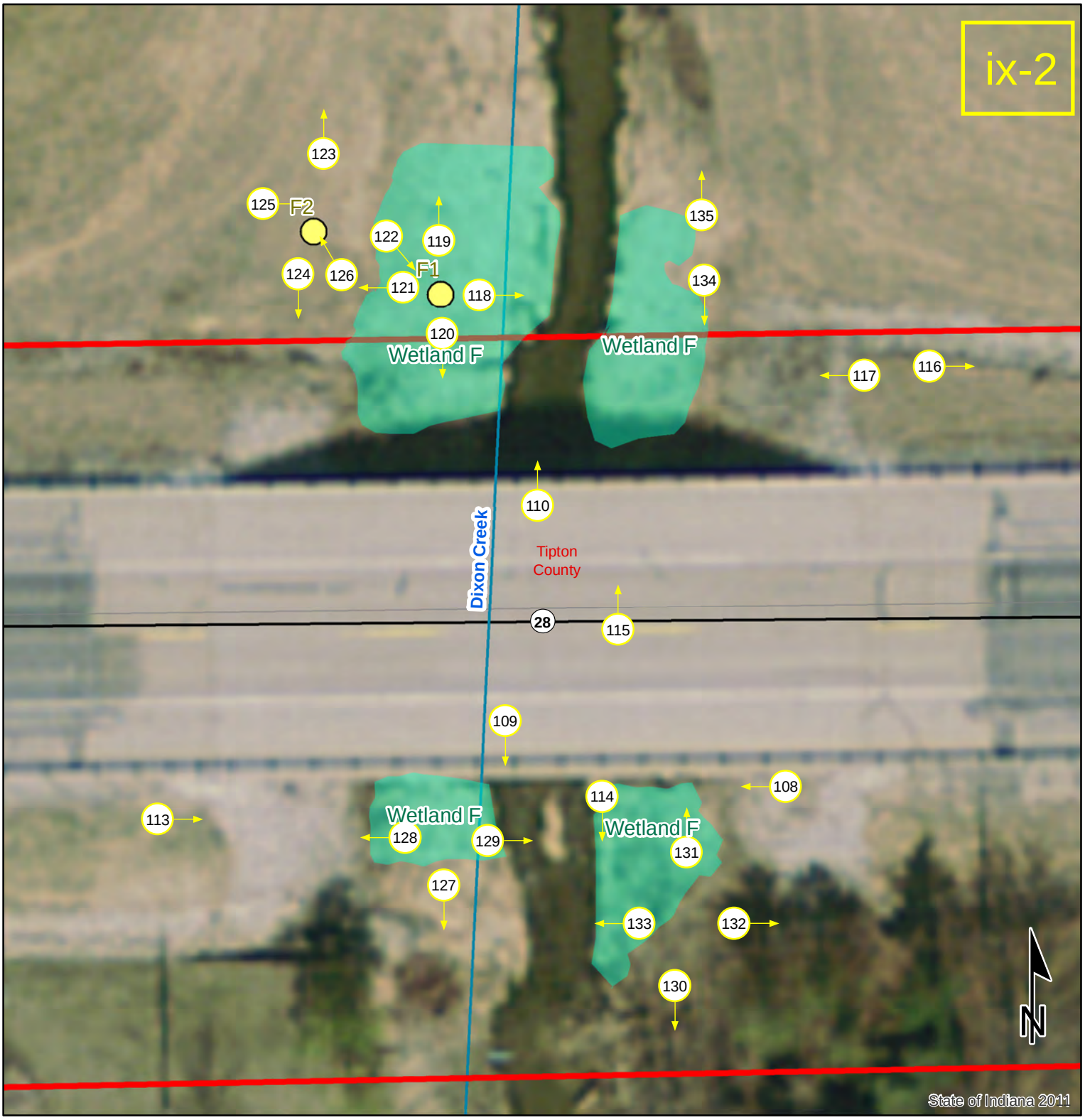
Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.00125 0.0025 0.005 0.0075 0.01

Photo Point
Waterways
Sampling Point
Wetland Boundary
Investigation Area
Interstate
US Route
Local Road

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

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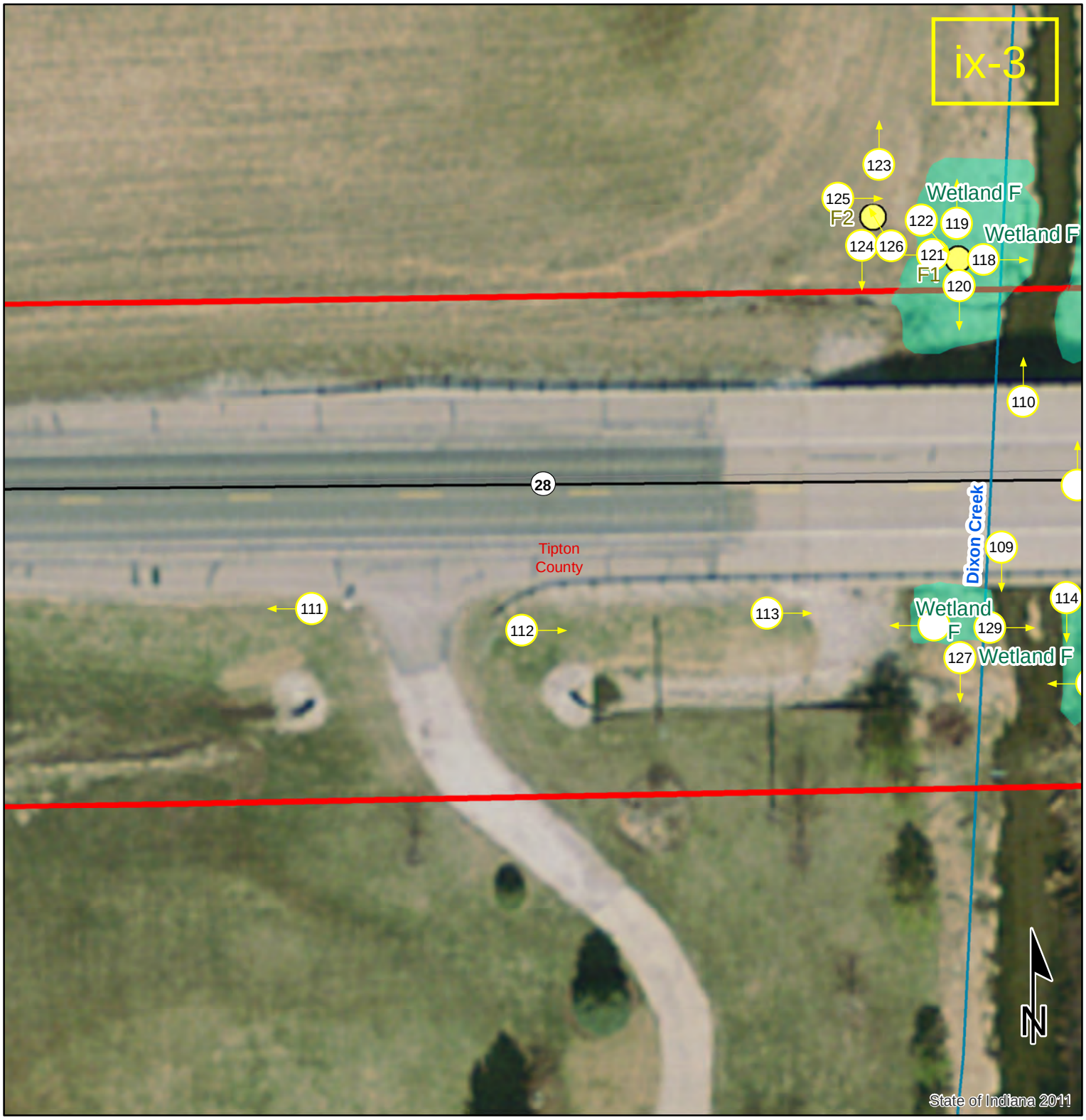
Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.0015 0.0035 0.007 0.0105 0.014

Photo Point
Waterways
Sampling Point
Wetland Boundary
Investigation Area
Interstate
US Route
Local Road

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

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Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement

Miles
0 0.0025 0.005 0.01 0.015 0.02

Photo Point
Waterways
Sampling Point
Wetland Boundary
Investigation Area
Interstate
US Route
Local Road

Sources: **Non Orthophotography Data** - Obtained from the State of Indiana Geographical Information Office Library
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Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
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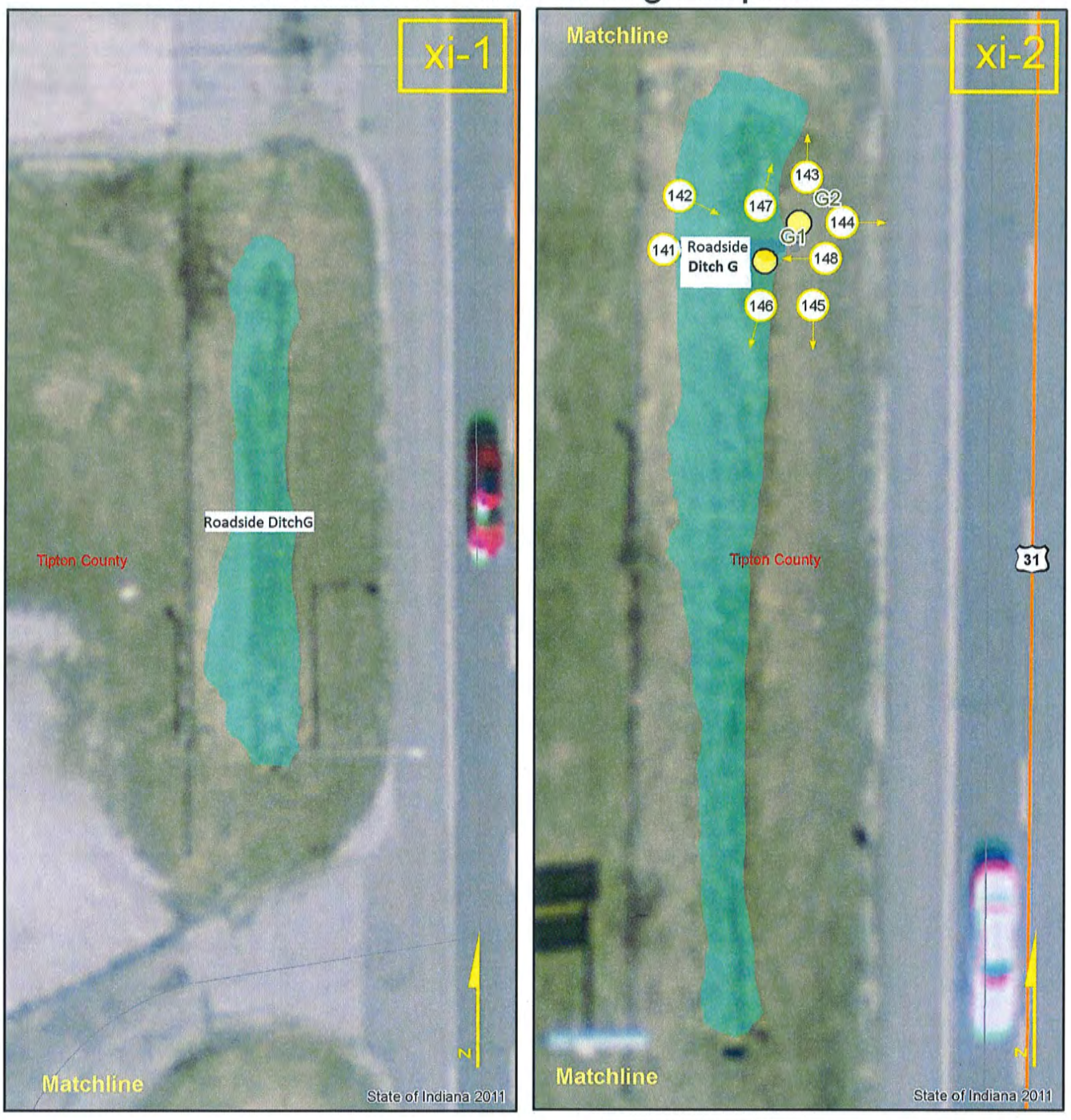

0 0.0015 0.003 0.006 0.009 0.012 Miles

Photo Point
Waterways
Sampling Point
Roadside Ditch
Boundary
Investigation Area
Interstate
US Route
Local Road

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

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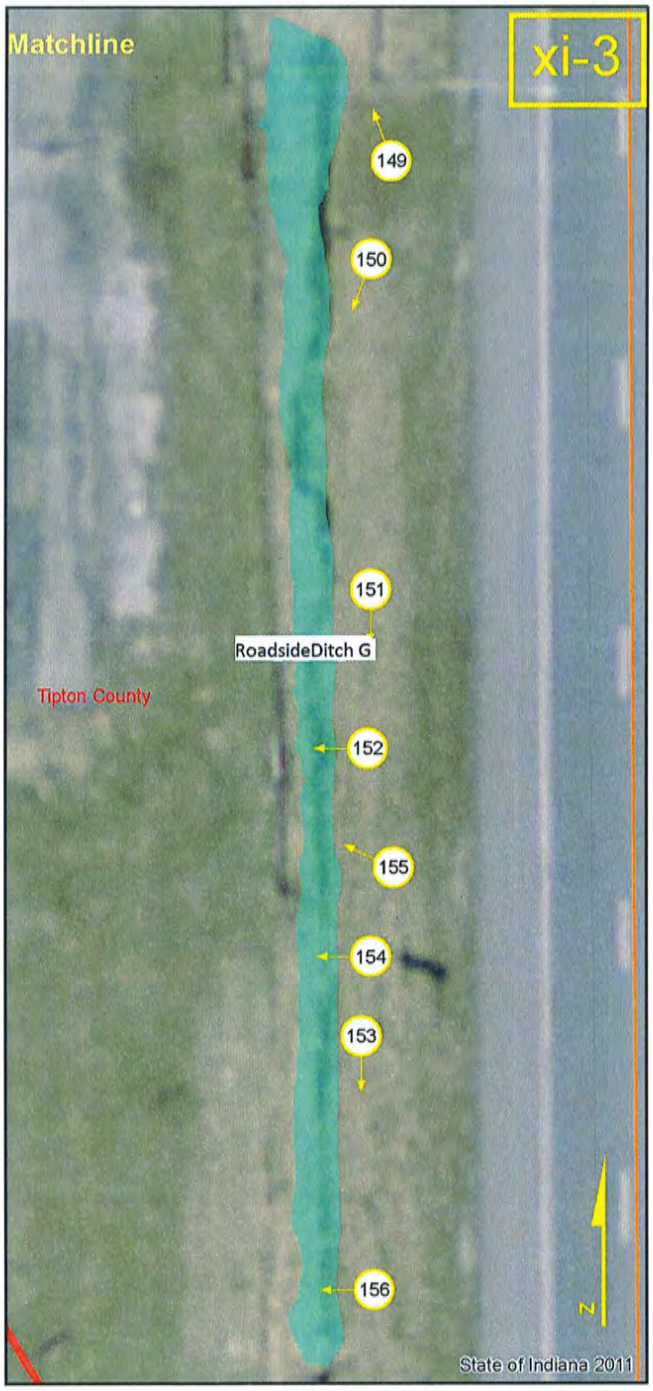
Pg 30

Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.0015 0.003 0.006 0.009 0.012

Photo Point
Waterways
Sampling Point
Roadside Ditch
Boundary
Investigation Area
Interstate
US Route
Local Road

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

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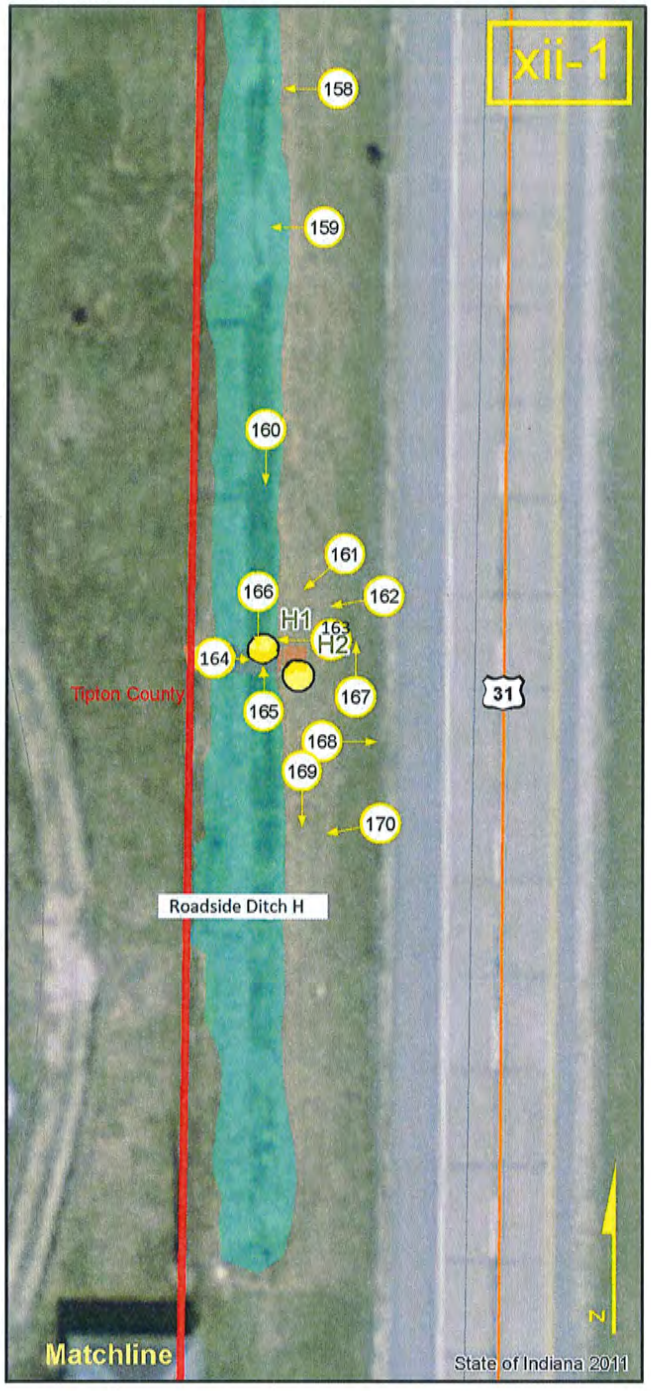
Pg 31

Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.002 0.004 0.008 0.012 0.016

Photo Point
Waterways
Sampling Point
Roadside Ditch
Boundary
Investigation Area
Interstate
US Route
Local Road

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

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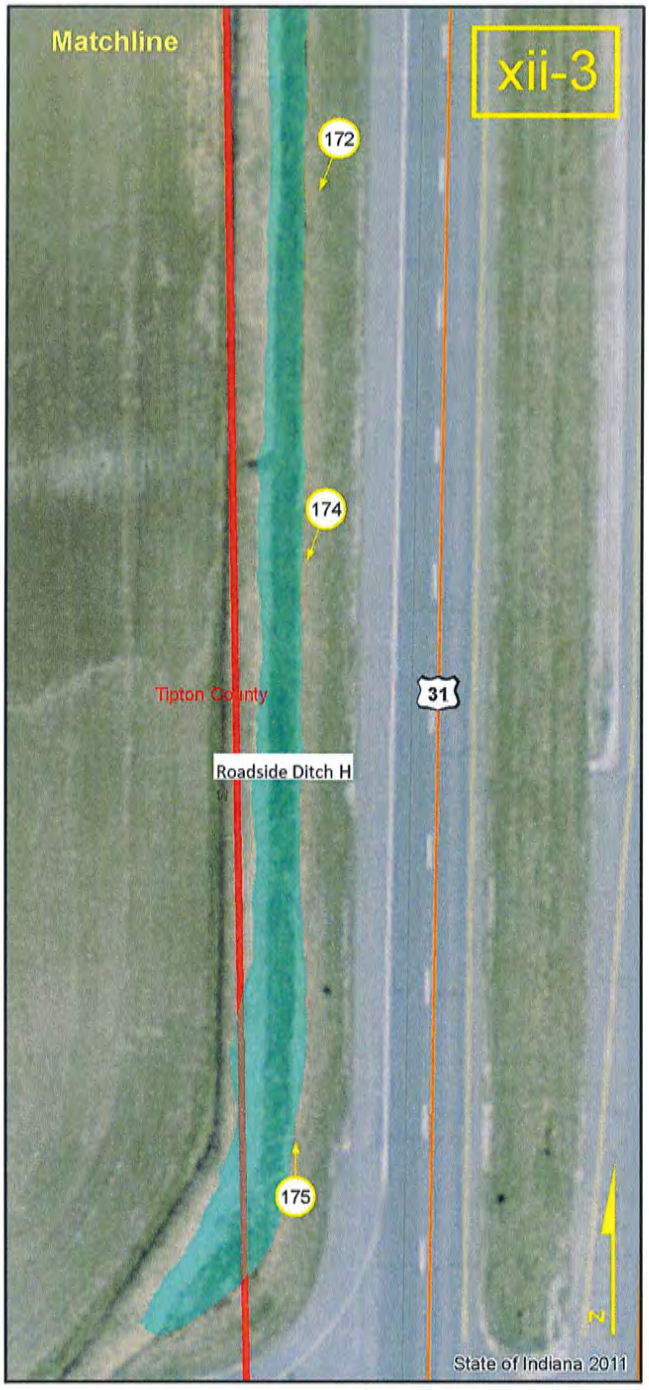
Pg 32

Waters of the U.S. Determination - Feature/Photo Map
U.S. 31 & S.R. 28, Tipton County, Indiana
Des No. 1382317 - Interchange Improvement



Miles
0 0.003 0.006 0.012 0.018 0.024

Photo Point
Waterways
Sampling Point
Roadside Ditch
Boundary
Investigation Area
Interstate
US Route
Local Road

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

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Pg 33

Waters Investigation/Wetland Delineation Photo Documentation

US 31 & SR 28 Interchange

INDOT DES 1382317

Performed by: R. Winebrinner, S. Bowman, J. Barnard

001 – View E of Dixon Cr, E of NB US 31.

002 – View S of Dixon Cr, E of NB US 31.

003 – View W of Dixon Cr, E of NB US 31.

004 – View N of Dixon Cr, E of NB US 31.

005 – View of riprap bottom of ditch in NE quad of Dixon Cr, E of NB US 31.

006 – View E of Dixon Cr from under NB US 31.

007 – View W of Dixon Cr from under NB US 31.

008 – View of riprap bottom of ditch in SE quad of Dixon Cr, E of NB US 31.

009 – View N of Dixon Cr from E side of NB US 31.

010 – View E of Dixon Cr, E of NB US 31

011 – View N of ditch in SE quad of Dixon Cr at E side of NB US 31.

012 – View W from ditch in SE quad of Dixon Cr at E side of NB US 31.

013 – View NW of Dixon Cr, E of NB US 31.

014 – View W of Dixon Cr from between SB and NB US 31

015 – View N of Dixon Cr from between SB and NB US 31.

016 – View E of Dixon Cr from between SB and NB US 31.

017 – View S from Dixon Cr between SB and NB US 31.

018 – View W of Dixon Cr, W of SB US 31.

019 – View N of Dixon Cr, W of SB US 31.

020 – View S of Dixon Cr, W of SB US 31.

021 – View E of Dixon Cr, W of SB US 31.

022 – View S of SW ditch of Dixon Cr, W of SB US 31.

023 – View S of SW ditch of Dixon Cr, W of SB US 31.

024 – View of SW ditch riprap bottom.

025 – View S from Dixon Cr from between SB and NB US 31.

026 – View N of Dixon Cr from between SB and NB US 31.

027 – View of riprap at bottom of NE ditch of Dixon Cr, E of NB US 31.

028 – View N of NE ditch from E side of NB US 31.

029 – View S of NE ditch of Dixon Cr, E of NB US 31.

030 – View E of NE ditch of Dixon Cr, E of NB US 31.

031 – View W of NE ditch of Dixon Cr, E of NB US 31.

032 – View of soil point A1.

033 – View N of Roadside Ditch A from point A1.

034 – View S of Roadside Ditch A from point A1.

035 – View W of Roadside Ditch A from point A1.

036 – View E of Roadside Ditch A from point A1.

037 – View of soil point A2.

038 – View of soil point A2.

039 – View S from soil point A2.

040 – View W from soil point A2.

041 – View N from soil point A2.

042 – View E from soil point A2.

043 – View W from soil point B1.

044 – View S from soil point B1.

045 – View SE from soil point B1.

046 – View E from soil point B1.

047 – View N from soil point B1.

048 – View of soil point B1.

049 – View of soil point B1.

050 – View S from soil point B2.

051 – View W from soil point B2.

052 – View E from soil point B2.

053 – View N from soil point B2.

054 – View of soil point B2.

055 – View of soil point B2.

056 – View N from north end of N detention basin.

057 – View W from north end of N detention basin.

058 – View S from north end of N detention basin.

059 – View of north end of N detention basin vegetation.

060 – View N from middle of N detention basin.

061 - View W from middle of N detention basin.

062 – View S from middle of N detention basin.

063 – View N of middle detention basin.

064 – View W from middle detention basin.

065 – View S from middle stormwater basin.

066 – View E from middle stormwater basin.

067 – View E from S stormwater basin.

068 – View S from S stormwater basin.

069 – View W from S stormwater basin.

070 – View S from S stormwater basin, showing stormwater standpipe/overflow.

071 – View W from plant access road.

072 – View W along SR 28 north ditch.

073 – View of soil point C1.

074 – View of soil point C1.

075 – View N of Roadside Ditch C from soil point C1.

076 – View W of Roadside Ditch C from soil point C1.

077 – View E of Roadside Ditch C from soil point C1.

078 – View S of Roadside Ditch C from soil point C1.

079 – View of soil point C2.

080 – View of soil point C2.

081 – View S from soil point C2.

082 – View W from soil point C2.

083 – View N from soil point C2.

084 – View E from soil point C2.

085 – View of Roadside Ditch C, showing typical vegetation and residue.

086 – View of W ditch on SB US 31, north of the interchange.

087 – View of W ditch on SB US 31, north of the interchange.

088 – View of N ditch on SR 28 WB, west of the interchange.

089 – View N from soil point D1.

090 – View E from soil point D1.

091 – View W from soil point D1.

092 – View S from soil point D1.

093 – View of soil point D1.

094 – View of soil point E1.

095 – View of soil point E1.

096 – View SE of Wetland E, NW quad of interchange.

097 – View W of Wetland E.

098 – View WNW of Wetland E.

099 – View N of Wetland E.

100 – View E of ditch leading to Wetland E.

101 – View W of ditch leading to Wetland E.

102 – View E of S ditch leading to Dixon Cr at SR 28.

103 – View W of S ditch leading to Dixon Cr at SR 28.

104 – View E of S ditch before entering Dixon Cr at SR 28.

105 – View W of S ditch before entering Dixon Cr at SR 28

106 – View E of S ditch just before entering Dixon Cr at SR 28.

107 – View W of S ditch just before entering Dixon Cr at SR 28.

108 – View W of Dixon Cr at SR 28 from SE quad of bridge.

109 - View S of Dixon Cr at SR 28 from bridge.

110 – View N of Dixon Cr at SR 28 from bridge.

111 – View W of S ditch from Wetland I to Dixon Cr.

112 – View E of S ditch from Wetland I to Dixon Cr.

113 – View E of Dixon Cr at SR 28 from SW quad of bridge.

114 – View S of Dixon Cr at SR 28 from under bridge.

115 – View N of Dixon Cr at SR 28 from under bridge.

116 – View E of NE ditch leading to Dixon Cr at SR 28.

117 – View W of NE ditch leading to Dixon Cr at SR 28.

118 – View E from soil point F1.

119 – View N from soil point F1.

120 – View S from soil point F1.

121 – View W from soil point F1.

122 – View of soil point F1.

123 – View N from soil point F2.

124 – View S from soil point F2.

125 – View E from soil point F2.

126 – View of soil point F2.

127 – View S from SW quad of Dixon Cr and SR 28; Wetland F.

128 – View W from SW quad of Dixon Cr and SR 28; Wetland F.

129 – View E from SW quad of Dixon Cr and SR 28; Wetland F.

130 – View S from SE quad of Dixon Cr and SR 28, Wetland F.

131 – View N from SE quad of Dixon Cr and SR 28; Wetland F.

132 – view E from SE quad of Dixon Cr and SR 28; Wetland F.

133 – View W of SE quad of Dixon Cr and SR 28; Wetland F.

134 – View S from NE quad of Dixon Cr and SR 28; Wetland F.

135 – View N from NE quad of Dixon Cr and SR 28; Wetland F.

136 – View N from farm field in SW quad of interchange.

137 – View W from farm field in SW quad of interchange.

138 View S from farm field in SW quad of interchange.

139 – View N of S ditch of SR 28, W of interchange.

140 – View N of S ditch of SR 28, just W of interchange.

141 – View of soil point G1.

142 – View of soil point G1.

143 – View N from soil point G2.

144 – View E from soil point G2.

145 – View S from soil point G2.

146 – View S from soil point G1.

147 – View N from soil point G1.

148 – View W of Roadside Ditch G, from point G2.

149 – View NW at pipe connecting three segments of Roadside Ditch G.

150 – View S of Roadside Ditch G from pipe.

151 – View S at Roadside Ditch G.

152 – View of typical vegetation in Roadside Ditch G.

153 – View S of typical Roadside Ditch G vegetation.

154 – View of milkweed found in Roadside Ditch G.

155 – View NW of Roadside Ditch G.

156 – View of Roadside Ditch G vegetation.

157 – View N from Roadside Ditch H to Dixon Cr.

158 – View NW at Roadside Ditch H.

159 – View W of Roadside Ditch H vegetation.

160 – View S at Roadside Ditch H.

161 – View of soil point H1.

162 – View of soil point H1.

163 – View W from soil point H1.

164 – View E from soil point H1.

165 – View N from soil point H1 of Roadside Ditch H.

166 – View S from soil point H1 of Roadside Ditch H.

167 – View N from soil point H2.

168 – View E from soil point H2.

169 – View S from soil point H2.

170 – View of vegetation in plot H2.

171 – View S of continued Roadside Ditch H through pipe.

172 – View S of Roadside Ditch H.

173 – View N of Roadside Ditch H where pipe outlets to out from residential property.

174 – View of Roadside Ditch H typical vegetation.

175 – View N of Roadside Ditch H.

176 – View N from soil point I1.

177 – View of soil point I1.

178 – View W from soil point I1.

179 – View E from soil point I1.

180 – View N from soil point I1.

181 – View S from soil point I1.

182 – Typical vegetation of Wetland I.

183 – Typical vegetation of Wetland I.

184 – View of soil point I2.

185 – View W from soil point I2.

186 – View E from soil point I2.

187 – View S from soil point I2.

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: A1

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 18, 21N, 4E

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): Concave

Slope (%): < 1 Lat: 40.2717 Long: 86.1268 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	Yes	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	Yes	
Wetland hydrology present?	Yes	

Remarks: (Explain alternative procedures here or in a separate report.) Area is wholly in a non-jurisdictional RSD and is not a wetland.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 10)			
1 *Phalaris arundinacea*	60	Y	FACW
2 *Typha angustifolia*	40	Y	OBL
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	40	x 1 =	40
FACW species	60	x 2 =	120
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		160 (B)

Prevalence Index = B/A = 1.60

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic vegetation present? Yes X No ____

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

Other plants in area - *Scirpus validis* (Soft-stem Bulrush), *Eleocharis sp.* (Spike-Rush), *Asclepias incarnata* (Swamp Milkweed)

SOIL **Sampling Point:** A1

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	100					Muck	
2-8	10YR 5/1	90	10YR 5/4	10	C	PL/M	Clay	
8-16	10YR 5/1	85	10YR 4/6	15	C	M	Clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric soil present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0 - 16	
Water table present?	Yes ___	No X	Depth (inches):	0 - 16	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0 - 16	**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: A2

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 18, 27N, 4E

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): concave

Slope (%): 10 Lat: 40.271729 Long: 86.12674 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	No	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	No	
Wetland hydrology present?	No	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: ____)			
1 *Equisetum arvense*	80	Y	FAC
2 *Bromus inermis*	60	Y	FACU
3 *Cirsium arvense*	5	N	FACU
4			
5			
6			
7			
8			
9			
10			
	145	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column totals	145 (A)		500 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes ____ No X

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

SOIL **Sampling Point:** A2

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

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					Loamy/clay/sand	
4-13	10YR 4/2	100						

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Yes _____ No X

Remarks:

Rock at 13", earthworms

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0 - 13	
Water table present?	Yes ___	No X	Depth (inches):	0 - 13	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0 - 13	**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No saturation, 10 % slope, roadside backslope

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WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: B1

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 18, 21N, 4E

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): Concave

Slope (%): < 1 Lat: 40.2687 Long: 86.77 Datum: NAD 83

Soil Map Unit Name: Wkb - Williamstown silt loam NWI Classification: None

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

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes ____ No ____

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? remarks.)

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

Hydrophytic vegetation present?	No	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	Yes	
Wetland hydrology present?	Yes	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 10)			
1 *Bromus inermis*	90	Y	FACU
2 *Apocynum cannabinum*	5	N	FAC
3 *Cirsium arvense*	2	N	FACU
4			
5			
6			
7			
8			
9			
10			
	97	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	92	x 4 =	368
UPL species	0	x 5 =	0
Column totals	97 (A)		383 (B)

Prevalence Index = B/A = 3.95

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes ____ No X

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

SOIL **Sampling Point:** B1

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/1	90	10YR 4/6	10	C	PL	clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0 - 14	
Water table present?	Yes ___	No X	Depth (inches):	0 - 14	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0 - 14	**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: B2

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 18, 27N, 4E

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): Concave

Slope (%): < 1 Lat: 40.2733 Long: 86.1267 Datum: NAD 83

Soil Map Unit Name: WkB - Williamstown silt loam NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	No	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	No	
Wetland hydrology present?	No	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 10)			
1 *Bromus inermis*	90	Y	FACU
2 *Convolvulus arvensis*	10	N	UPL
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	

Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	90	x 4 =	360
UPL species	10	x 5 =	50
Column totals	100 (A)		410 (B)

Prevalence Index = B/A = 4.10

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes ____ No X

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

SOIL **Sampling Point:** B2

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

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR 3/1	100						Worms present

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0 - 16	
Water table present?	Yes ___	No X	Depth (inches):	0 - 16	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0 - 16	**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: C1

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 7, 27N, 4E

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): Concave

Slope (%): < 1 Lat: 40.2806 Long: 86.1268 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	Yes	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	Yes	
Wetland hydrology present?	Yes	

Remarks: (Explain alternative procedures here or in a separate report.) Area is wholly in a non-jurisdictional RSD and is not a wetland.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 10)			
1 *Persicaria pensylvanica*	70	Y	FACW
2 *Eleocharis palustris*	15	N	OBL
3 *Alopecurus pratensis*	15	N	FACW
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	15	x 1 =	15
FACW species	85	x 2 =	170
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		185 (B)

Prevalence Index = B/A = 1.85

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes X No ____

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

Carex spp (Nut Sedge) in area.

SOIL **Sampling Point:** C1

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 4/1	100						
7-11	10YR 5/1	65	10YR 4/6	35	C	M		
11-12	10YR 3/1	80	10YR 6/2, 6/6	20	C	M		

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0 - 12	
Water table present?	Yes ___	No X	Depth (inches):	0 - 12	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0 - 12	**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: C2

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 7, 27N, 4E

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): None

Slope (%): < 1 Lat: 40.2806 Long: 86.1268 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	No	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	No	
Wetland hydrology present?	No	

Remarks: (Explain alternative procedures here or in a separate report.)

The data point is on the upland side of the transition from wetland on a gentle slope away from the creek.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 10)			
1 *Festuca arundinacea*	100	Y	FACU
2 *Cirsium arvense*	5	N	FACU
3			
4			
5			
6			
7			
8			
9			
10			
	105	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	105	x 4 =	420
UPL species	0	x 5 =	0
Column totals	105 (A)		420 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes ____ No X

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

SOIL **Sampling Point:** C2

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

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-13	10YR 3/2	100						

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric soil present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0 - 13	
Water table present?	Yes ___	No X	Depth (inches):	0 - 13	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0 - 13	**Wetland hydrology present?** **Yes** ___ **No** X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators.

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WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: D1

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 12, 27N, 3E

Landform (hillslope, terrace, etc.): Farm Field Local relief (concave, convex, none): None

Slope (%): < 1 Lat: 40.2757 Long: 86.128 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

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

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes ____ No ____

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? remarks.)

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

Hydrophytic vegetation present?	No	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	No	
Wetland hydrology present?	No	

Remarks: (Explain alternative procedures here or in a separate report.)

Problematic agricultural field.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0 = Total Cover		

Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0 = Total Cover		

Herb stratum (Plot size: 10)			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
	0 = Total Cover		

Woody vine stratum (Plot size: N/A)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 0 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	0 (A)		0 (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes ____ No X

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

Glycine spp. (soybean) production.

SOIL **Sampling Point:** D1

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

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-14	10YR 3/2	100						

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric soil present? Yes ___ No X

Remarks:

Farmed

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0 - 14	
Water table present?	Yes ___	No X	Depth (inches):	0 - 14	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0 - 14	**Wetland hydrology present?** **Yes** ___ **No** X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: E1

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 12, 21N, 3E

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): Concave

Slope (%): < 1 Lat: 40.2755 Long: 86.1275 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	Yes	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric soil present?	Yes	
Wetland hydrology present?	Yes	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 10)			
1 *Echinochloa crus-galli*	50	Y	FACW
2 *Schoenoplectus tabernaemontani*	40	Y	OBL
3 *Carex pensylvanica*	40	Y	UPL
4 *Persicaria pensylvanica*	5	N	FACW
5			
6			
7			
8			
9			
10			
	135	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	40	x 1 =	40
FACW species	55	x 2 =	110
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	40	x 5 =	200
Column totals	135 (A)		350 (B)

Prevalence Index = B/A = 2.59

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes X No ____

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

SOIL

Sampling Point: E1

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

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3.5	10YR 4/1	90	10YR 5/6	10	C	M		
3.5-7	10YR 3/2	100						
7-12	10YR 5/1	90	10YR 4/6	10	C	M		

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Yes X No ___

Remarks:

Farmed

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	X	No	___	Depth (inches): 4"
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland hydrology present? **Yes** X **No** ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/19/2013

Applicant/Owner: INDOT State: IN Sampling Point: E2

Investigator(s): Bowman, Winebrinner Section,Township, Range: Kempton, 12, 27N, 3E

Landform (hillslope, terrace, etc.): Farmfield Local relief (concave, convex, none): None

Slope (%): < 1 Lat: 40.2755 Long: 86.1275 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	No	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	No	
Wetland hydrology present?	No	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

		Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum	(Plot size: N/A)			
1				
2				
3				
4				
5				
		0	= Total Cover	
Sapling/Shrub stratum	(Plot size: N/A)			
1				
2				
3				
4				
5				
		0	= Total Cover	
Herb stratum	(Plot size: 10)			
1	*Festuca arundinacea*	90	Y	FACU
2	*Plantago lanceolata*	5	N	FAC
3	*Cirsium arvense*	3	N	FACU
4				
5				
6				
7				
8				
9				
10				
		98	= Total Cover	
Woody vine stratum	(Plot size: N/A)			
1				
2				
		0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	93	x 4 =	372
UPL species	0	x 5 =	0
Column totals	98 (A)		387 (B)

Prevalence Index = B/A = 3.95

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes ____ No X

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

SOIL **Sampling Point:** E2

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

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8	10YR 6/2	100						
8 - 16								Unconsolidated Fill

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Yes _____ No X

Remarks:

Farmed

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0 - 16	
Water table present?	Yes ___	No X	Depth (inches):	0 - 16	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0 - 16	**Wetland hydrology present?** **Yes** ___ **No** X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: F1

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 12, 21N, 3E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None

Slope (%): < 1 Lat: 40.2755 Long: 86.1336 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	Yes	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric soil present?	Yes	
Wetland hydrology present?	Yes	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Herb stratum (Plot size: 10)			
1 *Phalaris arundinacea*	100	Y	FACW
2 *Typha angustifolia*	10	N	OBL
3 *Convolvulus arvensis*	5	N	UPL
4 *Cirsium arvense*	5	N	FACU
5			
6			
7			
8			
9			
10			
	120 = Total Cover		
Woody vine stratum (Plot size: N/A)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	10	x 1 =	10
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	5	x 5 =	25
Column totals	120 (A)		255 (B)

Prevalence Index = B/A = 2.13

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes X No ____

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

SOIL **Sampling Point:** F1

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100						
8-14	10YR 3/2	90	7.5YR 5/8	10	RM	PL		Worm
14-16	10YR 4/1	90	7.5YR 4/1	10		PL	Sandy	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Yes X No ___

Remarks:

Farmed

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0-16	
Water table present?	Yes ___	No X	Depth (inches):	0-16	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0-16	**Wetland hydrology present?** **Yes** X **No** ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: F2

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 12, 27N, 3E

Landform (hillslope, terrace, etc.): Farm Field Local relief (concave, convex, none): None

Slope (%): < 1 Lat: 40.2755 Long: 86.1337 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	Yes	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	No	
Wetland hydrology present?	No	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 10)			
1 *Morus rubra*	10	Y	FAC
2			
3			
4			
5			
	10	= Total Cover	
Herb stratum (Plot size: 10)			
1 *Setaria pumila*	80	Y	FAC
2 *Daucus carota*	60	Y	UPL
3 *Convolvulus arvensis*	10	N	UPL
4			
5			
6			
7			
8			
9			
10			
	150	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	90	x 3 =	270
FACU species	0	x 4 =	0
UPL species	70	x 5 =	350
Column totals	160 (A)		620 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes X No ___

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

SOIL **Sampling Point:** F2

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

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-14	10 YR 3/2	100						

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric soil present? Yes ___ No X

Remarks:

Farmed

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0 - 14	
Water table present?	Yes ___	No X	Depth (inches):	0 - 14	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0 - 14	**Wetland hydrology present?** **Yes** ___ **No** X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: G1

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 13, 27N, 3E

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): Concave

Slope (%): < 1 Lat: 40.2741 Long: 86.1273 Datum: NAD 83

Soil Map Unit Name: TuB2 - Tuscola, till substratum-Strawn complex NWI Classification: None

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

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes ____ No ____

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? remarks.)

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

Hydrophytic vegetation present?	Yes	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	Yes	
Wetland hydrology present?	Yes	

Remarks: (Explain alternative procedures here or in a separate report.) Area is wholly in a non-jurisdictional RSD and is not a wetland.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 10)			
1 *Typha angustifolia*	100	Y	OBL
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	100	x 1 =	100
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		100 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic vegetation present? Yes X No ____

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

SOIL **Sampling Point:** G1

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

Depth	Matrix		Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10 YR 4/1	97	10 YR 4/6	3	C	M	Clay	Saturated
10-16	10 YR 5/1	82	7.5 YR 5/6	2	C	M	Sandy/Loam	Loam

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric soil present? Yes X No ___

Remarks:

Saturated to 10"

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes X	No ___	Depth (inches):	1"	
Water table present?	Yes ___	No X	Depth (inches):	16"	
Saturation present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	10"	**Wetland hydrology present?** **Yes** X **No** ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: G2

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 13, 27N, 3E

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): None

Slope (%): < 1 Lat: 40.2741 Long: 86.1273 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

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

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes ____ No ____

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? remarks.)

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

Hydrophytic vegetation present?	No	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	No	
Wetland hydrology present?	No	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 10)			
1 *Schedonorus arundinaceus*	70	Y	FACU
2 *Festuca rubra*	70	Y	FAC
3			
4			
5			
6			
7			
8			
9			
10			
	140	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column totals	140 (A)		490 (B)

Prevalence Index = B/A = 3.50

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes ____ No X

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

SOIL **Sampling Point:** G2

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	50						
0-18	10 YR 5/6	50						

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric soil present? Yes ___ No X

Remarks:

Saturated to 10"

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):		
Water table present?	Yes ___	No X	Depth (inches):		
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):		

Wetland hydrology present? **Yes** ___ **No** X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: H1

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 13, 27N, 3E

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): Concave

Slope (%): < 1 Lat: 40.2703 Long: 86.1274 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

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

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes ____ No ____

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? remarks.)

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

Hydrophytic vegetation present?	Yes	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	Yes	
Wetland hydrology present?	Yes	

Remarks: (Explain alternative procedures here or in a separate report.) Area is wholly in a non-jurisdictional RSD and is not a wetland.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 10)			
1 *Leersia oryzoides*	90	Y	OBL
2 *Scirpus cyperinus*	5	N	OBL
3 *Asclepias incarnata*	3	N	OBL
4 *Typha angustifolia*			OBL
5 *Phalaris arundinacea*			FACW
6 *Verbena hastata*			FACW
7 *Solanum dulcamara*			FAC
8			
9			
10			
	98	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	98	x 1 =	98
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	98 (A)		98 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic vegetation present? Yes X No ____

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

SOIL

Sampling Point: H1

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

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 4/2	100					Sandy/Loam	
7-12	10YR 5/3	80	10YR 5/6	20	C	M	Sandy/Clay Loam	Clay with sand veins
12-16	10YR 6/1	85	10YR 5/6	15	C	M	Clayey	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0-16	
Water table present?	Yes ___	No X	Depth (inches):	0-16	
Saturation present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	0-7	**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: H2

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 13, 27N, 3E

Landform (hillslope, terrace, etc.): Roadside Ditch Side Slope Local relief (concave, convex, none): None

Slope (%): < 1 Lat: 40.2702 Long: 86.1274 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	No	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	No	
Wetland hydrology present?	No	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 10)			
1 *Schedonorus arundinaceus*	70	Y	FACU
2 *Festuca rubra*	70	Y	FAC
3 *Cirsium arvense*	5	N	FACU
4			
5			
6			
7			
8			
9			
10			
	145	= Total Cover	
Woody vine stratum (Plot size: N/A)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	75	x 4 =	300
UPL species	0	x 5 =	0
Column totals	145 (A)		510 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes ____ No X

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

SOIL **Sampling Point:** H2

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

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	10YR 3/2	50					Sandy	
0-18	10YR 5/6	50						

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Yes ___ No X

Remarks:

Rocky

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):		
Water table present?	Yes ___	No X	Depth (inches):		
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):		

Wetland hydrology present? **Yes** ___ **No** X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/19/2013

Applicant/Owner: INDOT State: IN Sampling Point: I1

Investigator(s): Bowman, Winebrinner Section,Township, Range: Kempton, 12, 21N, 3E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave

Slope (%): < 1 Lat: 40.2752 Long: 86.135 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	Yes	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric soil present?	Yes	
Wetland hydrology present?	Yes	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Sapling/Shrub stratum (Plot size: N/A)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Herb stratum (Plot size: 10)			
1 *Panicum virgatum*	80	Y	FAC
2 *Cyperus esculentus*	25	Y	FACW
3 *Rumex crispus*	10	N	FAC
4			
5			
6			
7			
8			
9			
10			
	115 = Total Cover		
Woody vine stratum (Plot size: N/A)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	90	x 3 =	270
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	115 (A)		320 (B)

Prevalence Index = B/A = 2.78

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic vegetation present? Yes X No ____

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

SOIL **Sampling Point:** I1

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 4/1	85	10YR 5/8	15	C	M	Sandy	
7-13	10YR 2/1	92	10YR 5/1	8	D	M	Sandy/Loam	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Yes X No ___

Remarks:

Rocky

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0 - 13	
Water table present?	Yes ___	No X	Depth (inches):	0 - 13	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0 - 13	**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Depressional area that is tiled and has been partially filled by landowner

DES 1382317 New Interchange Construction

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: US 31/SR 28 City/County: Tipton/Tipton Sampling Date: 8/7/2013

Applicant/Owner: INDOT State: IN Sampling Point: I2

Investigator(s): Barnard, Bowman, Winebrinner Section,Township, Range: Kempton, 12, 21N, 3E

Landform (hillslope, terrace, etc.): Roadside Ditch Side Slope Local relief (concave, convex, none): None

Slope (%): < 1 Lat: 40.2753 Long: 86.135 Datum: NAD 83

Soil Map Unit Name: Pn - Patton silty clay loam, sandy substratum NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the 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? remarks.)

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

Hydrophytic vegetation present?	Yes	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric soil present?	No	
Wetland hydrology present?	No	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

		Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: N/A)				
1				
2				
3				
4				
5				
		0	= Total Cover	
Sapling/Shrub stratum (Plot size: N/A)				
1				
2				
3				
4				
5				
		0	= Total Cover	
Herb stratum (Plot size: 10)				
1	*Festuca rubra*	80	Y	FAC
2	*Plantago lanceolata*	45	Y	FAC
3				
4				
5				
6				
7				
8				
9				
10				
		125	= Total Cover	
Woody vine stratum (Plot size: N/A)				
1				
2				
		0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	125	x 3 =	375
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	125 (A)		375 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphogical Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic vegetation present? Yes X No ____

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

SOIL **Sampling Point:** I2

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

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/1	100						
14-16	10YR 3/1	100						

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

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

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Yes ___ No X

Remarks:

Rocky

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	0-16	
Water table present?	Yes ___	No X	Depth (inches):	0-16	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	0-16	**Wetland hydrology present?** **Yes** ___ **No** X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix H
Early Coordination

Early Coordination Letter Sent Out
Early Coordination Responses

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204-2216
Phone: (317) 232-5348 Fax: (317) 233-4929

Michael R. Spence, Governor
Michael B. Cline, Commissioner

INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

May 23, 2014

«FirstName» «LastName», «Title»
«ServiceName»
«Address1»
«Address2»
«City», «State» «Zip»

Re: Des. No.: 1382317, US 31 at SR 28 Interchange, Tipton County, IN

The Indiana Department of Transportation intends to construct an interchange at U.S. 31 and SR 28 in Tipton County to replace the signalized intersection there (Figures 1, 2, and 3 [graphics follow this letter]). The project is part of a broader effort to upgrade U.S. 31 to freeway status. The need is to improve the safety and mobility of U.S. 31 as a high-speed commerce corridor between Indianapolis and South Bend. The purpose is to rebuild the at-grade intersection of U.S. 31 and SR 28 as a grade-separated interchange to improve safety, reduce travel times, and promote economic development around the interchange area.

This letter is part of the early coordination phase of the environmental review process. We request comments from you in your area of expertise regarding any possible environmental effects. **Please use the above designation number (1382317) and description in your reply.** We will incorporate your comments into a study of the project's environmental impacts.

This project is located on U.S. 31, at SR 28, approximately four miles west of the City of Tipton, in Tipton County. This section of U.S. 31 is functionally classified as a Principal Arterial and is part of the National Highway System. SR 28 has a functional classification of Principal Arterial to the east of U.S. 31 and Minor Arterial to the west. SR 28 was added to the National Highway System as a MAP-21 Principal Arterial.

U.S. 31 is a four-lane divided highway with 12' travel lanes, 4' left shoulders, and 10' right paved shoulders, separated by a 50' grass depressed median. Side slopes are typically 2:1 or flatter. U.S. 31 and SR 28 are generally level. Partial access control right-of-way exists along both sides of U.S. 31. Posted speeds are 60 mph along U.S. 31 and 55 mph along SR 28.

SR 28 west of U.S. 31 is two lanes with 11' travel lanes and 4' paved shoulders. SR 28 east of U.S. 31 is three lanes, narrowing to two lanes east of CR 560 West, approximately 0.5 mile east of U.S. 31. The three-lane section of east SR 28 consists of two 12' travel lanes, a 14' left turn lane, and 8' paved shoulders. The approximate existing right-of-way is 180-200 feet along U.S. 31, 60 feet along west SR 28 and 80 feet along east SR 28.

U.S. 31 bridges Dixon Creek (west to east flow) with a pair of mainline structures approximately 0.25 mile south of SR 28. Both structures were last rehabilitated with a deck overlay in 1993 and are in fair to good condition (NBS ratings of the four primary structure elements are 6 or greater).

Figure 4 shows the project site, including Tucker Cemetery, Dixon Creek, and the recently completed Chrysler Transmission Plant.

The Preferred Alternative, 5, will bridge SR 28 over U.S. 31 on an alignment just to the south of SR 28's present alignment (Figure 5). (Other alternatives have a similar total footprint, but Alternative 5 minimizes land needs and impacts.) The interchange design is a variation of a diamond with the eastbound to southbound movement via a loop ramp in the northwest quadrant, due to the presence of Tucker Cemetery in the southwest quadrant. The interchange limits will have full access control. Ramp ends will be served by roundabouts (Figure 6), which will have curb and gutter drainage. Chrysler will have direct egress from their facility in the northeast quadrant to the east roundabout.

The new interchange will include a new three-span independent ramp bridge over Dixon Creek for the northbound off ramp to SR 28. It would have a deck 32' wide and approximately 100' long.

The primary methods for maintaining traffic during construction will be via detour or maintaining traffic on temporary pavement. The nearest official state highway detours are SR 19 (five miles east of U.S. 31), and SR 26 (ten miles north of SR 28). Use of local roads instead would require an agreement between INDOT and Tipton County. Maintenance of traffic is assisted by the design of Alternative 5 because the bridge can be constructed off of the existing SR 28 alignment, as the approaches to the roundabouts can be skewed. This off-line construction will likely reduce the SR 28 traffic impacts to a short-duration detour as the roundabout approaches are tied into existing pavement.

Zoning and land use in the vicinity of the project is primarily agricultural (Figures 7 and 8), with commercial and industrial use at the project site. The northeast and southeast corners of the intersection have gas stations. There is also a restaurant on the southeast corner. There is vacant commercial land on the southwest corner, plus a motel. Of note, Chrysler Corporation has constructed its Tipton Transmission Plant in the northeast quadrant and is expected to expand its workforce from 200 to 850 in the coming years.

Permanent right-of-way expansion at this point is expected to involve on the order of 50 acres of land, involving 22 property owners and 10 relocations.

INDOT will soon be undertaking a Cemetery Development Plan to examine effects on Tucker Cemetery

URS subconsultant Shrewsbury & Associates will perform wetlands determinations. The INDOT Cultural Resources Section will investigate the areas of additional right-of-way for archaeological and historic resources for compliance with Section 106 compliance. The results of this investigation will be forwarded to the State Historic Preservation Officer for review and concurrence.

Environmental document approval is scheduled for completion in November 2014, with design complete by the end of the year. Real estate efforts are to conclude by September of 2015, with project letting in a similar timeframe.

Should we not receive your response within thirty (30) calendar days from the date of this letter, it will be assumed that your agency feels that there will be no adverse effects incurred as a result of the proposed project. However, should you find that an extension to the response time is necessary; a reasonable amount may be granted upon request. If you have any questions regarding this matter, please feel free to contact Ted Stone of The Corradino Group at 502.587.7221. Thank you in advance for your input.

Sincerely,

Ted Stone

Ted Stone
The Corradino Group, Inc.
200 South Fifth, Suite 503N
Louisville, Kentucky 40202

cc and Attachments – see following page

CC LIST

FirstName	LastName	Title	ServiceName	Address1	Address2	City	State	Zip	Red Flag	Other
		Field Supervisor	U.S. Fish and Wildlife Service	Bloomington Field Office	620 South Walker St.	Bloomington	IN	47403-2121	X	
		State Conservationist	Natural Resource Conservation Service	6013 Lakeside Blvd.		Indianapolis	IN	46278		CP-106
		Office of Aviation	Indiana Department of Transportation	Room N955, IGC North	100 North Senate Ave.	Indianapolis	IN	46204		Append Q
		Regional Environmental Coordinator	National Park Service	Midwest Regional Office	601 Riverfront Dr.	Omaha	NE	68102		
			Federal Highway Administration	Federal Office Bldg., Room 254	575 No. Pennsylvania St.	Indianapolis	IN	46204	X	
		Environ. Coordinator, Div. of Fish and Wildlife	Indiana Dept. of Natural Resources	Room W264, IGC South	402 W. Washington St.	Indianapolis	IN	46204	X	2 copies
		Field Environ. Officer, Chicago Reg. Office	U.S. Dept. of Housing & Urban Dev.	Metcalf Federal Bldg.	77 W. Jackson Blvd., Room 2401	Chicago	IL	60604		
		Chief, Groundwater Section	Indiana Dept. of Environmental Mgmt.	100 N. Senate Ave.		Indianapolis	IN	46204	X	Wellhead Form
		Environmental Scoping Mgr.	INDOT -- Greenfield District Office	32 S. Broadway St.		Greenfield	IN	46140-2247	X	
		Chief, Environmental Resources	Dept. of the Army, Louisville Dist., Corps of Eng.	ATTN: CEPMP-P-E	P.O. Box 59	Louisville	KY	40201-0059	X	
		County Drain Board	Tipton County	101 E. Jefferson St.		Tipton	IN	46072	X	
Jeff	Sheridan	Executive Director	Tipton County Economic Development Corp.	136 E. Jefferson St.		Tipton	IN	46072		
Tom	Dolesal	Vice President, Commercial Lender	First Farmers Bank & Trust	P.O. Box 690		Converse	IN	46919-0690		
Ron	Warren		Tipton County Economic Development Corp.	136 E. Jefferson St.		Tipton	IN	46072		
Joe	VanBibber	Vice President	Tipton County Commissioners	c/o Tipton County Auditor	101 E. Jefferson St.	Tipton	IN	46072		
Mike	Cline	Member	Tipton County Commissioners	c/o Tipton County Auditor	101 E. Jefferson St.	Tipton	IN	46072		
Phil	Heron	President	Tipton County Commissioners	c/o Tipton County Auditor	101 E. Jefferson St.	Tipton	IN	46072		
Dennis	Henderson		Tipton County Council		101 E. Jefferson St.	Tipton	IN	46072		
Beth	Roach		Tipton County Council		101 E. Jefferson St.	Tipton	IN	46072		
Jason	Henderson	County Surveyor	Tipton County		101 E. Jefferson St., Rm 102	Tipton	IN	46072		
Brett	Morris	Highway Dept. Director	Tipton County		101 E. Jefferson St.	Tipton	IN	46072		
Don	Havens	Mayor	City of Tipton	113 Court Street	P.O. Box 288	Tipton	IN	46072		
Kevin	Tolloty	Planning Director	Tipton County Plan Commission	101 E. Jefferson St. #111		Tipton	IN	46072	X	
		VIA E-MAIL: IGSenvir@indiana.edu	Indiana Geological Survey							Append. R
		http://www.in.gov/idem/enviroreview/hwy_earlyenviroreview.html	Indiana Dept. of Environmental Mgmt.							
Rick	Clark	rclark@indot.in.gov	Public Hearings	Indiana Dept. of Transportation	100 N. Senate Ave.	Indianapolis	IN	46204	X	

Graphics

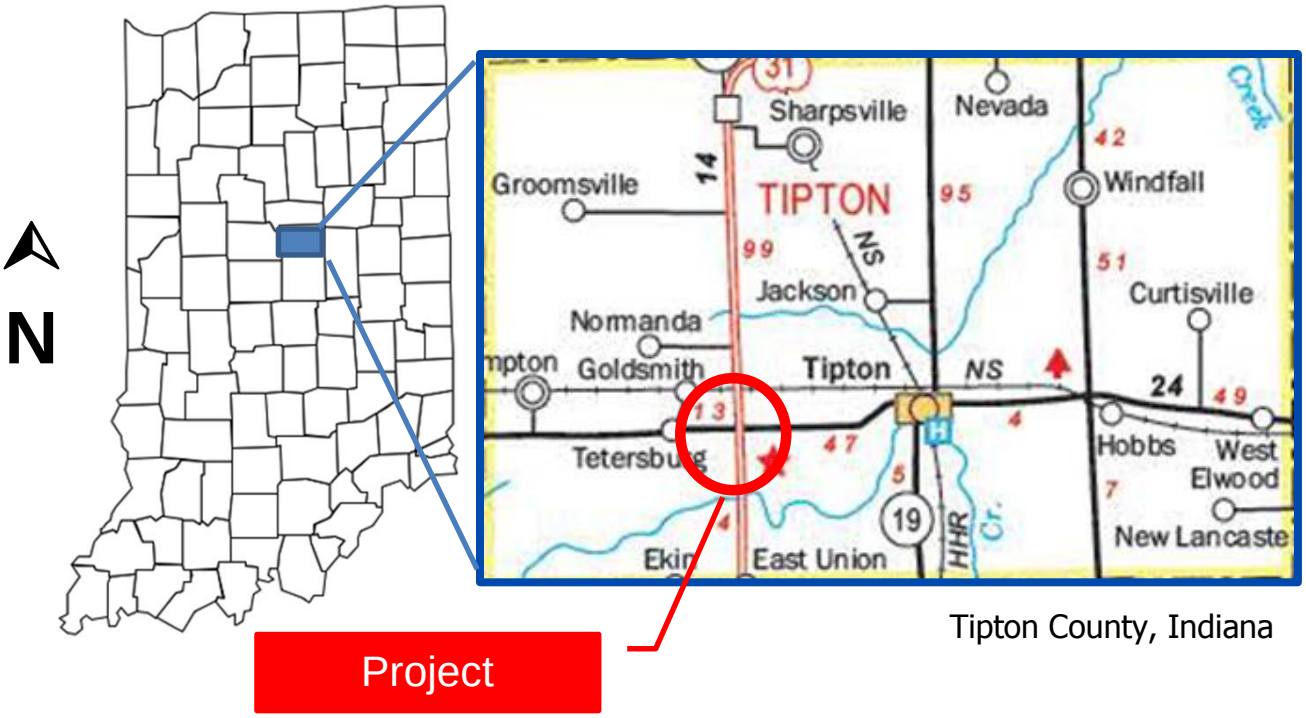


Figure 1 - Project Location

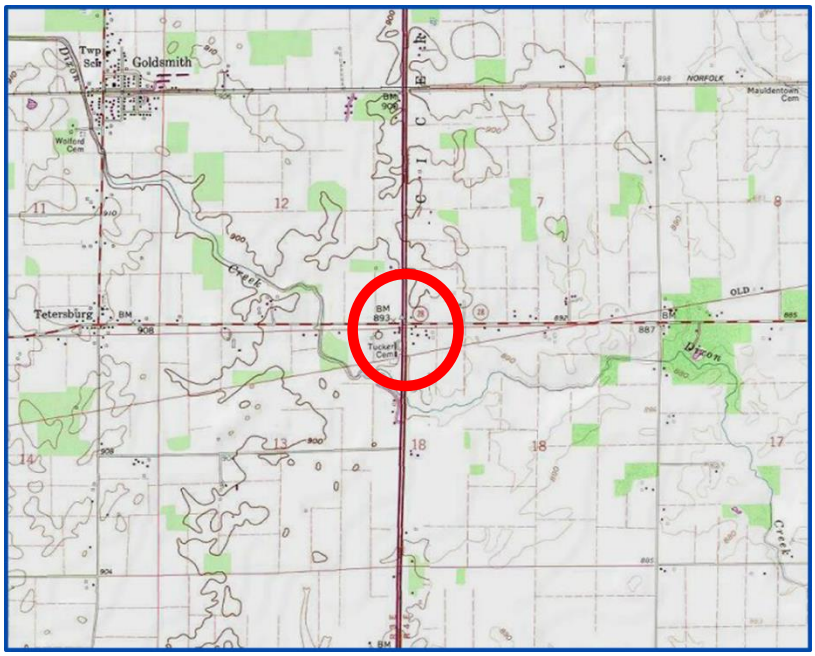


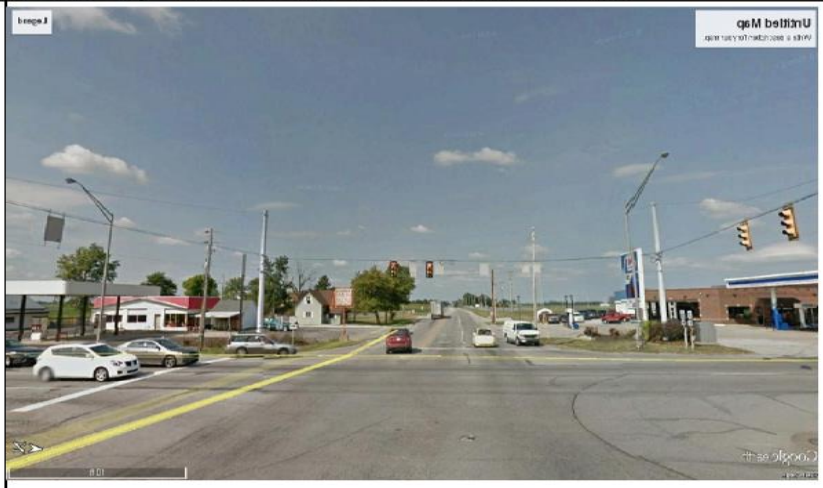
Figure 2 – Topographic Map

Figure 3 – Ground Level Photos

orth Leg of Intersection (US 31) View to North

South Leg of Intersection (US 31) View to South

West Leg of Intersection (SR 28) View to West



East Leg of Intersection (SR 28) View to East

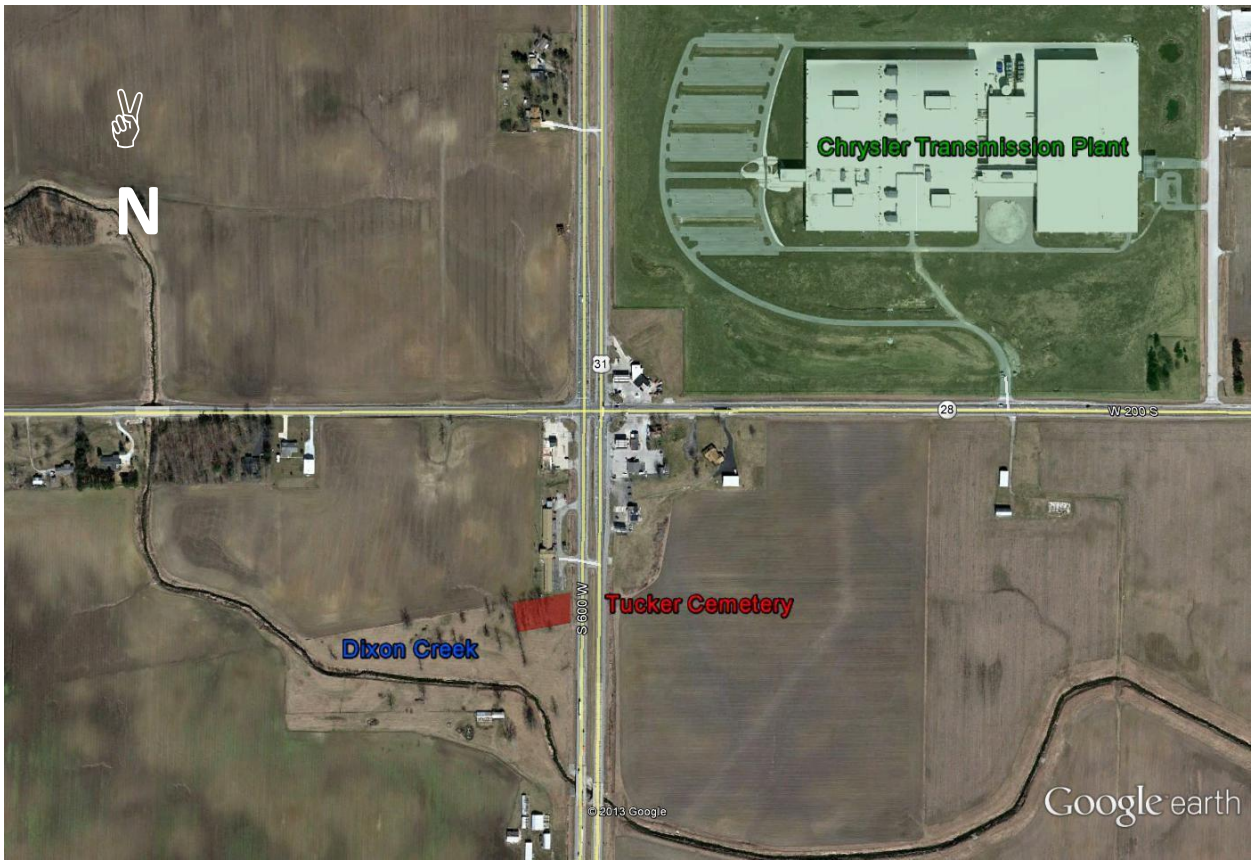


Figure 4 - Project Site

Source: **Google Earth.** 40°16’31.30”N 86°07’37.45”W. *Image date:* February 26, 2012

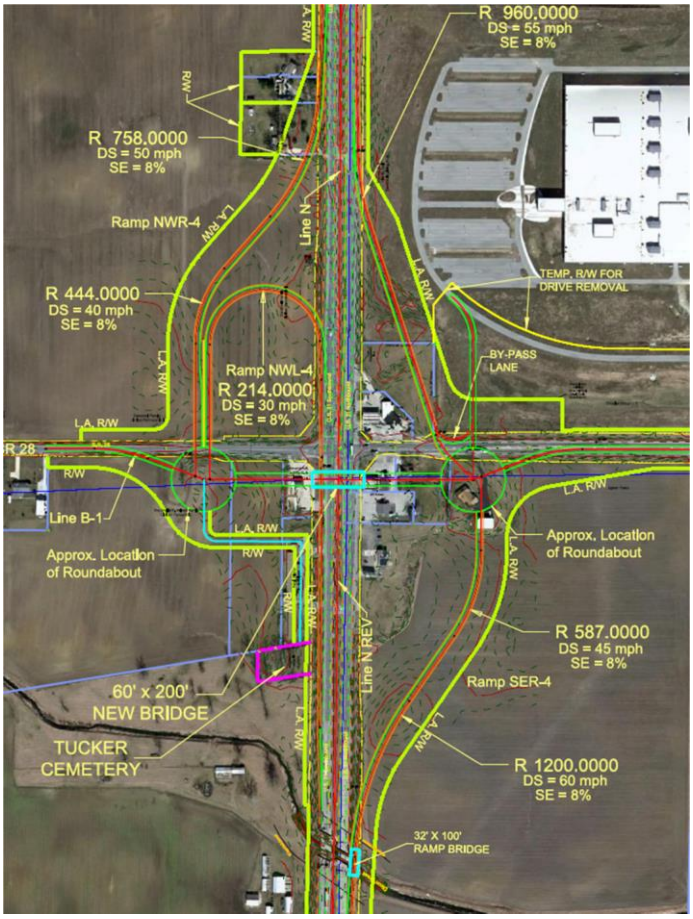


Figure 5 – Alternative 5 Layout

Highlights:

SR 28 Cross Section: Two 12' travel lanes (one lane per direction) + one 12-14' left turn lane (to match existing), 10' paved shoulders, 3:1 or flatter grade. Curbed sections will be required in and around the roundabouts.

SR 28 Profile grade: 3.5% grade

Ramp Cross Section: 16' ramp lane, 4' left paved and 8' paved right shoulders, 4:1 or flatter within clear zone.

Additional Right-of-way: 50.1 Acres, 22 Property Owners, 10 relocations

Temporary R/W: 9.9 Acres

Lighting: Partial lighting at roundabouts

Drainage: Open ditch drainage

Intersection traffic control: Roundabouts

Tucker Cemetery Impact: Up to 20' of taking

Access for Chrysler Corporation: Relocated drive access to east roundabout

Design exceptions: None anticipated

Figure 6 – Alternative 5 Roundabout Details

Source: Engineering Report: Des ***1382317***

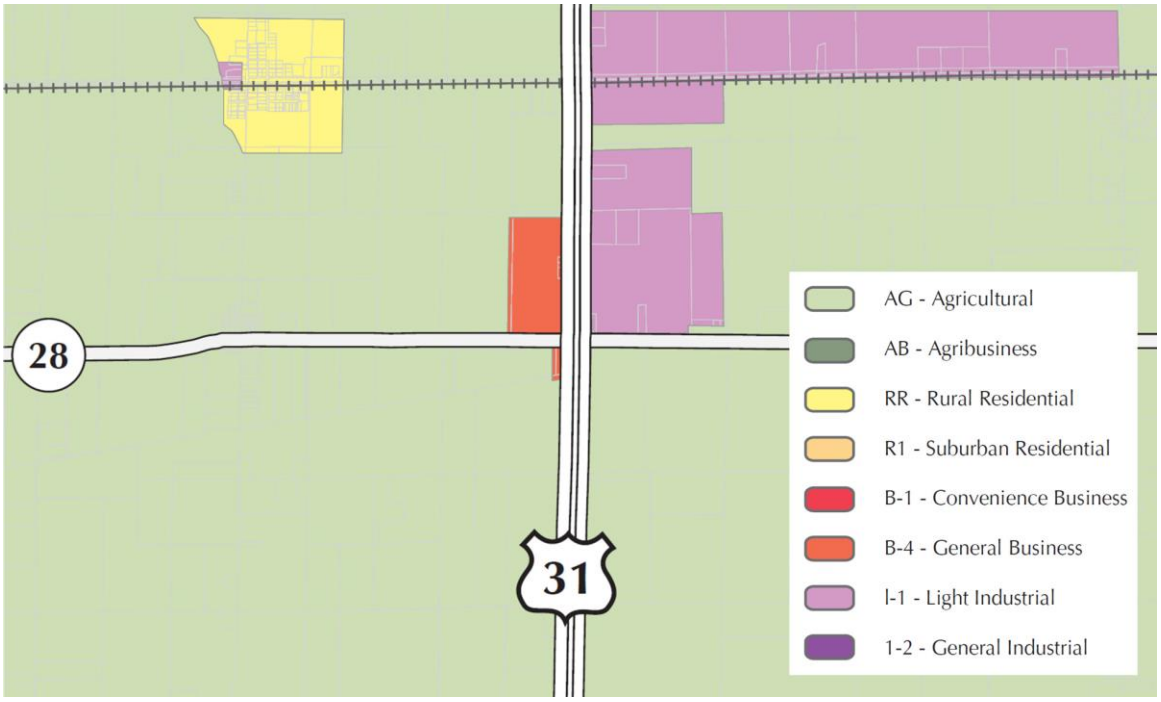


Figure 7 – Current Zoning

Source: **Tipton County Comprehensive Plan** Adopted July 12, 2013.

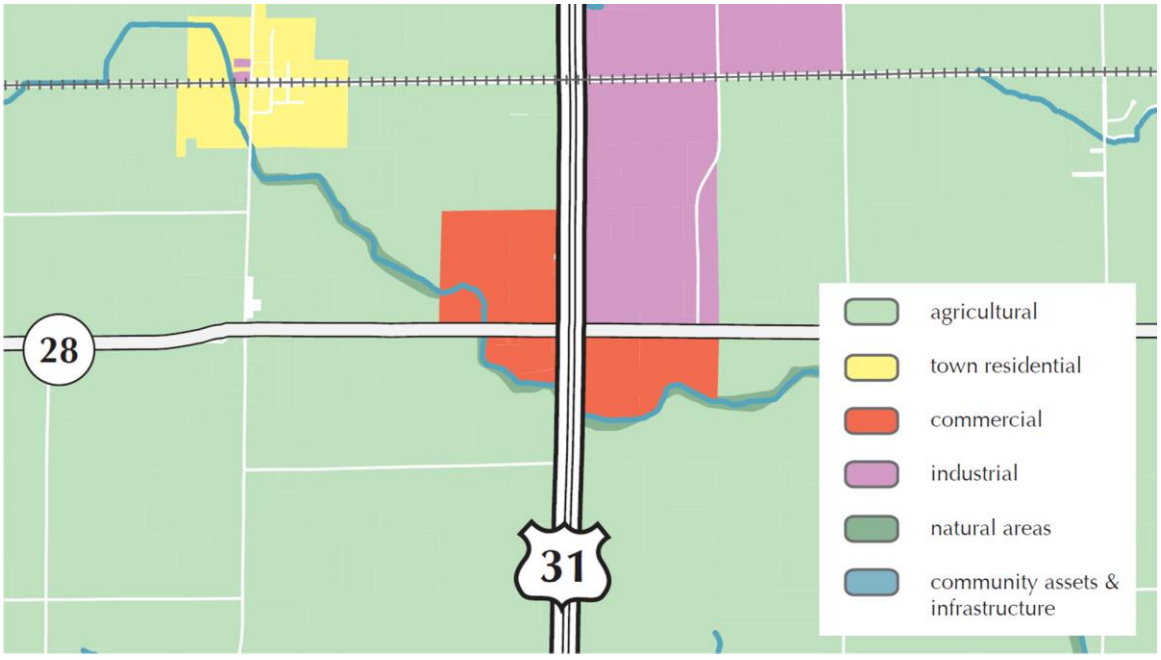


Figure 8 – Land Use Plan

Source: **Tipton County Comprehensive Plan** Adopted July 12, 2013.

Ted Stone

From: McWilliams, Robin <robin_mcwilliams@fws.gov>
Sent: Wednesday, June 18, 2014 10:50 AM
To: Ted Stone
Subject: Des. 1382317; US 31 at SR 28 interchange. Tipton County

Dear Mr. Stone,

This responds to your recent letter, requesting our comments on the aforementioned project.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (l6 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of l969, the Endangered Species Act of l973, and the U. S. Fish and Wildlife Service's Mitigation Policy.

Based on a review of the information you provided, the U.S. Fish and Wildlife Service has no objections to the project as currently proposed. This precludes the need for further consultation on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. However, should new information arise pertaining to project plans or a revised species list be published, it will be necessary for the Federal agency to reinitiate consultation.

The northern long-eared bat (*Myotis septentrionalis*) (NLEB) is currently proposed for listing under the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). The final listing decision for the NLEB is expected in October 2014. At this time, no critical habitat has been proposed for the NLEB. The state of Indiana is within the known range of the NLEB. During the summer, NLEBs typically roost singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and/or snags (typically ≥3 inches dbh). Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on presence of cavities or crevices or presence of peeling bark. It has also been occasionally found roosting in structures like barns and sheds (particularly when suitable tree roosts are unavailable). They forage for insects in upland and lowland woodlots and tree lined corridors. During the winter, NLEBs predominately hibernate in caves and abandoned mine portals. Additional habitat types may be identified as new information is obtained.

Pursuant to Section 7(a)(4) of the ESA, federal action agencies are required to confer with the Service if their proposed action is likely to **jeopardize** the continued existence of the NLEB (50 CFR 402.10(a)). Action agencies may also voluntarily confer with the Service if the proposed action may affect a proposed species. Species proposed for listing are not afforded protection under the ESA; however as soon as a listing becomes effective, the prohibition against jeopardizing its continued existence and "take" applies **regardless of an action's stage of completion**. If the agency retains any discretionary involvement or control over on-the-ground actions that may affect the species after listing, section 7 applies.

Based on the project description and information, we do not anticipate any adverse impacts to the northern long-eared bat. This precludes the need for further consultation on this species for this project under Section 7 of the Endangered Species Act (as amended).

We appreciate the opportunity to comment at this early stage of project planning. If project plans change such that fish and wildlife habitat may be affected, please recoordinate with our office as soon as possible. If you have any questions about our recommendations, please call (812)334-4261.

Sincerely,

Robin McWilliams Munson

Robin McWilliams Munson

U.S. Fish and Wildlife Service
620 South Walker Street
Bloomington, Indiana 46403
812-334-4261 Fax: 812-334-4273

Temporary Schedule through July 28th
Monday, Tuesday, Wednesday - 7:30a-4:00p
Thursday - telework 8:30a-10:30a

USDA
United States Department of Agriculture

Natural Resources Conservation Service
Indiana State Office
6013 Lakeside Boulevard
Indianapolis, IN 46278
317-290-3200

June 12, 2014

Ted Stone
The Corradino Group, Inc.
200 South Fifth, Suite 503N
Louisville, Kentucky 40202

Dear Mr. Stone,

The proposed project regarding the construction of an interchange at US 31 and SR 28 in Tipton County, Indiana, as referred to in your letter received May 29, 2014, will cause a conversion of prime farmland.

The attached packet of information is for your use in completing Parts VI and VII of the AD-1006. After completion, the federal funding agency needs to forward one copy to NRCS for our records.

If you need additional information, please contact Rick Neilson at 317-295-5875.

Sincerely,

Jane E. Hardisty

JANE E. HARDISTY
State Conservationist

Enclosures

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 5/27/14	4. Sheet 1 of 1
1. Name of Project U.S. 31 @ SR 28 Interchange	5. Federal Agency Involved Federal Highway Administration	
2. Type of Project Intersection to interchange conversion	6. County and State Tipton County, Indiana	

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 5-29-14	2. Person Completing Form RWN
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☒ NO ☐		4. Acres Irrigated / Average Farm Size 240 Ac
5. Major Crop(s) Corn	6. Farmable Land in Government Jurisdiction Acres: 165,889 % 100	7. Amount of Farmland As Defined in FPPA Acres: 166,232 % 100
8. Name Of Land Evaluation System Used LESA	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS 6/11/14

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	50			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	0			
C. Total Acres In Corridor	5,120			
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland	24.4			
B. Total Acres Statewide And Local Important Farmland	0			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.015			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	58			
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*	87			
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))* — Maximum Points				
1. Area in Nonurban Use — 15	15			
2. Perimeter in Nonurban Use — 10	10			
3. Percent Of Corridor Being Farmed — 20	10			
4. Protection Provided By State And Local Government — 20	0			
5. Size of Present Farm Unit Compared To Average — 10	7			
6. Creation Of Nonfarmable Farmland — 25	0			
7. Availablility Of Farm Support Services — 5	5			
8. On-Farm Investments — 20	4			
9. Effects Of Conversion On Farm Support Services — 25	1			
10. Compatibility With Existing Agricultural Use — 10	2			
TOTAL CORRIDOR ASSESSMENT POINTS — 160	54	0	0	0
PART VII *(To be completed by Federal Agency)*				
Relative Value Of Farmland (From Part V) — 100	87	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment) — 160	54	0	0	0
TOTAL POINTS *(Total of above 2 lines)* — 260	141	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
Corridor A	24.4	10 JULY 2014	YES ☐ NO ☑

5. Reason For Selection:

TED STONE
Signature of Person Completing this Part:

DATE 10 JULY 2014

NOTE: Complete a form for each segment with more than one Alternate Corridor

THIS IS NOT A PERMIT

State of Indiana
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Early Coordination/Environmental Assessment

DNR #: ER-17637 **Request Received:** May 29, 2014

Requestor: The Corradino Group, Inc.
Ted Stone
200 South Fifth, Suite 503N
Louisville, KY 40202

Project: US 31 at SR 28 interchange construction, about 4 miles west of the City of Tipton; Des #1382317

County/Site info: Tipton

The Indiana Department of Natural Resources has reviewed the above referenced project per your request. Our agency offers the following comments for your information and in accordance with the National Environmental Policy Act of 1969.

If our agency has regulatory jurisdiction over the project, the recommendations contained in this letter may become requirements of any permit issued. If we do not have permitting authority, all recommendations are voluntary.

Regulatory Assessment: This proposal will require the formal approval of our agency for construction in a floodway pursuant to the Flood Control Act (IC 14-28-1), unless it qualifies for a bridge exemption (see enclosure). Please include a copy of this letter with the permit application if the project does not meet the bridge exemption criteria.

Natural Heritage Database: The Natural Heritage Program's data have been checked.
To date, no plant or animal species listed as state or federally threatened, endangered, or rare have been reported to occur in the project vicinity.

Fish & Wildlife Comments: Avoid and minimize impacts to fish, wildlife, and botanical resources to the greatest extent possible, and compensate for impacts. A bank stabilization and revegetation plan should be submitted with the permit application, if required.

For purposes of maintaining fish passage through a crossing structure, the Environmental Unit recommends bridges rather than culverts and bottomless culverts rather than box or pipe culverts. Wide culverts are better than narrow culverts, and culverts with shorter through lengths are better than culverts with longer through lengths. If box or pipe culverts are used, the bottoms should be buried a minimum of 6" (or 20% of the culvert height/pipe diameter, whichever is greater up to a maximum of 2') below the stream bed elevation to allow a natural streambed to form within or under the crossing structure. Crossings should: span the entire channel width (a minimum of 1.2 times the bankful width); maintain the natural stream substrate within the structure; have a minimum openness ratio (height x width / length) of 0.25; and have stream depth and water velocities during low-flow conditions that are approximate to those in the natural stream channel. The new, replacement, or rehabbed structure should not create conditions that are less favorable for wildlife passage under the structure compared to the current conditions.

The additional measures listed below should be implemented to avoid, minimize, or compensate for impacts to fish, wildlife, and botanical resources:
1. Revegetate all bare and disturbed areas with a mixture of grasses (excluding all varieties of tall fescue), legumes, and native shrub and hardwood tree species as soon as possible upon completion.
2. Appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction

Attachments: A - Bridge Exemption Criteria

THIS IS NOT A PERMIT

State of Indiana
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Early Coordination/Environmental Assessment

site; maintain these measures until construction is complete and all disturbed areas are stabilized.
3. Seed and protect all disturbed streambanks and slopes that are 3:1 or steeper with erosion control blankets (follow manufacturer's recommendations for selection and installation); seed and apply mulch on all other disturbed areas.

Contact Staff: Christie L. Stanifer, Environ. Coordinator, Fish & Wildlife
Our agency appreciates this opportunity to be of service. Please contact the above staff member at (317) 232-4080 if we can be of further assistance.

Date: June 18, 2014

Christie L. Stanifer
Environ. Coordinator
Division of Fish and Wildlife

Attachments: A - Bridge Exemption Criteria

The Flood Control Act (IC 14-28-1) contains a provision (Section 22), which exempts certain bridge projects from its permitting requirement. Specifically, the Act states:

A permit is not required for "a construction or reconstruction project on a state or county highway bridge in a rural area that crosses a stream having an upstream drainage area of not more than fifty (50) square miles..."

Therefore, in order for a bridge project to be exempt, it must:

- be a state or county highway department project;
- be a bridge;
- be located in a rural area; and
- cross a stream having an upstream drainage area of less than 50 square miles.

The initial criterion is very specific - the structure must be a state or county highway department project.

The second requirement mandates that the project be a bridge (for this provision, the Department of Natural Resources considers a culvert to be a bridge). Projects such as bank protection, spoil disposal, borrow pits, etc. are not automatically exempt. Anyone proposing to undertake a non-bridge related activity should consult with the Division of Water's Technical Services Section staff at 317-232-4160 (or toll free at 1-877-928-3755) regarding the applicability of the exemption prior to initiating work.

The third criterion states that the project must be located in a rural area. The phrase "rural area" is defined as an area:

- where the lowest floor elevation, including a basement, of any residential, commercial, or industrial building impacted by the project is at least 2 feet above the 100 year flood elevation with the project in place;
- located outside the corporate boundaries of a consolidated or an incorporated city or town; and
- located outside of the territorial authority for comprehensive planning (generally, a 2 mile planning buffer around a city or town).

The final criterion limits the exemption to a project crossing a stream having an upstream drainage area of less than 50 square miles. The drainage area includes all land area contributing to runoff above the project site and is determined from the United States Geological Survey 7½ minute series quadrangle maps. The Department of Natural Resources will determine the drainage area upon written request.

This exemption has been grossly misunderstood and liberally applied in the past. As a result, the Department of Natural Resources is taking a firm stance on future violations. If challenged, it will be the responsibility of the person claiming the exemption to prove to the Department that all 4 criteria have been satisfied. Failure to do so will result in the Department initiating litigation with the potential for the imposition of fines in amounts up to $10,000 per day.

Note: This exemption only applies to the Flood Control Act. If a bridge is to be constructed over a navigable waterway, or over or near a public freshwater lake, a permit will be required.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We Protect Hoosiers and Our Environment.
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov
Michael R. Pence
Governor
Thomas W. Easterly
Commissioner

June 16, 2014

66-33
Mr. Ted Strong
The Corrandino Group
200 South Fifth Street, Suite 503N
Louisville, Kentucky 40202

Dear Mr. Strong:

RE: Wellhead Protection Area Proximity Determination
Designation Number 1382317,
Intersection Of US 31 And State Road 28, Tipton County

Upon review of the above referenced site, it has been determined that the site **is located** within a Wellhead Protection Area. This information is accurate to the best of our knowledge. However, there are in some cases, a few factors that could impact the accuracy of this determination. For example, some Wellhead Protection Area Delineations have not been submitted or many have not been approved by this office. In these cases, we use a 3,000 foot fixed radius buffer to make the proximity determination. To find the status of a Public Water Supply System's Wellhead Protection Area Delineation, please visit our tracking database at http://www.in.gov/idem/4289.htm.

Note, the Drinking Water Branch has launched a new self service feature which allows one to determine a wellhead proximity without submitting the application form. Use the following instructions: 1) Go to http://idemmaps.idem.in.gov/apps/whpa/ ; 2) Using the icon/tools in the upper right hand corner of the application, zoom to your site location or address; and 3) Once you have located your site of interest click on the "I" icon, and then using your mouse click on your location. The site wellhead protection area proximity determination will be displayed below the icon tools in the upper right hand corner of tool. In the future, please consider using this self service feature if it is suitable for your needs.

If you have any additional questions, please feel free to contact me at the address above or at (317) 234-7476.

Sincerely,

James Sullivan, Chief
Ground Water Section
Drinking Water Branch
Office of Water Quality

JS:gml

From:	jcheard tds.net
To:	Ted Stone
Subject:	Fwd: INDOT Project
Date:	Thursday, July 17, 2014 12:58:15 PM

Ted,
Here is our response from our Well Head person. Hope this is what you are after.
Jeff Heard

---------- Forwarded message ----------
From: **Northam, Tim** <tim.northam@peerlessmidwest.com>
Date: Thu, Jul 17, 2014 at 12:39 PM
Subject: INDOT Project
To: "jcheard@tds.net" <jcheard@tds.net>

Jeff,

I have no concerns regarding the taking of right of way and proposed construction layout as it relates to the West Well Field WHPA. However, INDOT should be aware that any pre-existing soil/groundwater contamination encountered during construction (i.e gas stations at the intersection of 31 and 28) will need to be addressed promptly. Also during construction, contractors working on this project (i.e. fueling, pesticide application, above ground chemical/fuel storage) must be diligent to reduce the potential for chemical and fuel spills. Secondary containment for fuel/chemical storage and training of construction personnel regarding best management practices for spill containment and cleanup, and spill reporting in the WHPA should be a requirement.

Tim Northam, PG

Sr. Hydrogeologist

17707 Sun Park Drive

Westfield, IN 46074

(317) 896-2987 Office

(317) 896-3748 Fax

(317) 695-7639 Cell

Indiana Department of Environmental Management

IDEM > Proposed Roadway Letter

Indiana Department of Environmental Management

We make Indiana a cleaner, healthier place to live.

Mike Pence
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis , Indiana 46206

(317) 232-8603
800) 451-6027
www.IN.gov/idem

The Corradino Group
Ted Stone
200 S Fifth Street
Suite 503N
Louisville , IN 40202

, IN

Date

To Engineers and Consultants Proposing Roadway Construction Projects:

RE: INDOT Project Des 1382317. A full access-control interchange at US 31 and SR 28 in Tipton County will replace the signalized intersection, four miles west of the City of Tipton. The Preferred Alternative will bridge SR 28 over US 31 on an alignment just to the south of SR 28â€™s present alignment. The interchange will be a diamond with a loop ramp in the northwest quadrant to avoid impacts to Tucker Cemetery in the southwest quadrant.

This letter from the Indiana Department of Environmental Management (IDEM) serves as a standardized response to enquiries inviting IDEM comments on roadway construction, reconstruction, or other improvement projects within existing roadway corridors when the proposed scope of the project is beneath the threshold requiring a formal National Environmental Policy Act-mandated Environmental Assessment or Environmental Impact Statement. As the letter attempts to address all roadway-related environmental topics of potential concern, it is possible that not every topic addressed in the letter will be applicable to your particular roadway project.

For additional information on specific roadway-related topics of interest, please visit the appropriate Web pages cited below, many of which provide contact information for persons within the various program areas who can answer questions not fully addressed in this letter. Also please be mindful that some environmental requirements may be subject to change and so each person intending to include a copy of this letter in their project documentation packet is advised to download the most recently revised version of the letter; found at: http://www.in.gov/idem/5283.htm.

To ensure that all environmentally-related issues are adequately addressed, IDEM recommends that you read this letter in its entirety, and consider each of the following issues as you move forward with the planning of your proposed roadway construction, reconstruction, or improvement project:

WATER AND BIOTIC QUALITY

1. Section 404 of the Clean Water Act requires that you obtain a permit from the U.S. Army Corps of Engineers (USACE) before discharging dredged or fill materials into any wetlands or other waters, such as rivers, lakes, streams, and ditches. Other activities regulated include the relocation, channelization, widening, or other such alteration of a stream, and the mechanical clearing (use of heavy construction equipment) of wetlands. Thus, as a project owner or sponsor, it is your responsibility to ensure that no wetlands are disturbed without the proper permit. Although you may initially refer to the U.S. Fish and Wildlife Service National Wetland

Inventory maps as a means of identifying potential areas of concern, please be mindful that those maps do not depict jurisdictional wetlands regulated by the USACE or the Department of Environmental Management. A valid jurisdictional wetlands determination can only be made by the USACE, using the 1987 Wetland Delineation Manual.

USACE recommends that you have a consultant check to determine whether your project will abut, or lie within, a wetland area. To view a list of consultants that have requested to be included on a list posted by the USACE on their Web site, see USACE Permits and Public Notices (http://www.lrl.usace.army.mil/orf /default.asp) and then click on "Information" from the menu on the right-hand side of that page. Their "Consultant List" is the fourth entry down on the "Information" page. Please note that the USACE posts all consultants that request to appear on the list, and that inclusion of any particular consultant on the list does not represent an endorsement of that consultant by the USACE, or by IDEM.

Much of northern Indiana (Newton, Lake, Porter, LaPorte, St. Joseph, Elkhart, LaGrange, Steuben, and Dekalb counties; large portions of Jasper, Starke, Marshall, Noble, Allen, and Adams counties; and lesser portions of Benton, White, Pulaski, Kosciusko, and Wells counties) is served by the USACE District Office in Detroit (313-226-6812). The central and southern portions of the state (large portions of Benton, White, Pulaski, Kosciosko, and Wells counties; smaller portions of Jasper, Starke, Marshall , Noble, Allen, and Adams counties; and all other Indiana counties located in north-central, central, and southern Indiana) are served by the USACE Louisville District Office (502-315-6733).

Additional information on contacting these U.S. Army Corps of Engineers (USACE) District Offices, government agencies with jurisdiction over wetlands, and other water quality issues, can be found at http://www.in.gov/idem/4396.htm. IDEM recommends that impacts to wetlands and other water resources be avoided to the fullest extent.

2. In the event a Section 404 wetlands permit is required from the USACE, you also must obtain a Section 401 Water Quality Certification from the IDEM Office of Water Quality Wetlands Program. To learn more about the Wetlands Program, visit: http://www.in.gov/idem/4384.htm.

3. If the USACE determines that a wetland or other water body is isolated and not subject to Clean Water Act regulation, it is still regulated by the state of Indiana . A State Isolated Wetland permit from IDEM's Office of Water Quality (OWQ) is required for any activity that results in the discharge of dredged or fill materials into isolated wetlands. To learn more about isolated wetlands, contact the OWQ Wetlands Program at 317-233-8488.

4. If your project will involve over a 0.5 acre of wetland impact, stream relocation, or other large-scale alterations to water bodies such as the creation of a dam or a water diversion, you should seek additional input from the OWQ Wetlands Program staff. Consult the Web at: http://www.in.gov/idem/4384.htm for the appropriate staff contact to further discuss your project.

5. Work within the one-hundred year floodway of a given water body is regulated by the Department of Natural Resources, Division of Water. The Division issues permits for activities regulated under the follow statutes:
    - IC 14-26-2 Lakes Preservation Act 312 IAC 11
    - IC 14-26-5 Lowering of Ten Acre Lakes Act No related code
    - IC 14-28-1 Flood Control Act 310 IAC 6-1
    - IC 14-29-1 Navigable Waterways Act 312 IAC 6
    - IC 14-29-3 Sand and Gravel Permits Act 312 IAC 6
    - IC 14-29-4 Construction of Channels Act No related code

    For information on these Indiana (statutory) Code and Indiana Administrative Code citations, see the DNR Web site at: http://www.in.gov/dnr/water/9451.htm . Contact the DNR Division of Water at 317-232-4160 for further information.

    The physical disturbance of the stream and riparian vegetation, especially large trees overhanging any affected water bodies should be limited to only that which is absolutely necessary to complete the project. The shade provided by the large overhanging trees helps maintain proper stream temperatures and dissolved oxygen for aquatic life.

6. For projects involving construction activity (which includes clearing, grading, excavation and other land disturbing activities) that result in the disturbance of one (1), or more, acres of total land area, contact the Office of Water Quality â€“ Watershed Planning Branch (317/233-1864) regarding the need for of a Rule 5 Storm Water Runoff Permit. Visit the following Web page
    - http://www.in.gov/idem/4902.htm

    To obtain, and operate under, a Rule 5 permit you will first need to develop a Construction Plan (http://www.in.gov /idem/4917.htm#constreq), and as described in 327 IAC 15-5-6.5 (http://www.in.gov/legislative/iac/T03270/A00150 [PDF], pages 16 through 19). Before you may apply for a Rule 5 Permit, or begin construction, you must submit your Construction Plan to your county Soil and Water Conservation District (SWCD) (http://www.in.gov/isda/soil/contacts/map.html).

    Upon receipt of the construction plan, personnel of the SWCD or the Indiana Department of Environmental Management will review the plan to determine if it meets the requirements of 327 IAC 15-5. Plans that are deemed deficient will require re-submittal. If the plan is sufficient you will be notified and instructed to submit the verification to IDEM as part of the Rule 5 Notice of Intent (NOI) submittal. Once construction begins, staff of the SWCD or Indiana Department of Environmental Management will perform inspections of activities at the site for compliance with the regulation.

Please be mindful that approximately 149 Municipal Separate Storm Sewer System (MS4) areas are now being established by various local governmental entities throughout the state as part of the implementation of Phase II federal storm water requirements. All of these MS4 areas will eventually take responsibility for Construction Plan review, inspection, and enforcement. As these MS4 areas obtain program approval from IDEM, they will be added to a list of MS4 areas posted on the IDEM Website at: http://www.in.gov/idem/4900.htm.

If your project is located in an IDEM-approved MS4 area, please contact the local MS4 program about meeting their storm water requirements. Once the MS4 approves the plan, the NOI can be submitted to IDEM.

Regardless of the size of your project, or which agency you work with to meet storm water requirements, IDEM recommends that appropriate structures and techniques be utilized both during the construction phase, and after completion of the project, to minimize the impacts associated with storm water runoff. The use of appropriate planning and site development and appropriate storm water quality measures are recommended to prevent soil from leaving the construction site during active land disturbance and for post construction water quality concerns. Information and assistance regarding storm water related to construction activities are available from the Soil and Water Conservation District (SWCD) offices in each county or from IDEM.

7. For projects involving impacts to fish and botanical resources, contact the Department of Natural Resources - Division of Fish and Wildlife (317/232-4080) for addition project input.

8. For projects involving water main construction, water main extensions, and new public water supplies, contact the Office of Water Quality - Drinking Water Branch (317-308-3299) regarding the need for permits.

9. For projects involving effluent discharges to waters of the State of Indiana , contact the Office of Water Quality - Permits Branch (317-233-0468) regarding the need for a National Pollutant Discharge Elimination System (NPDES) permit.

10. For projects involving the construction of wastewater facilities and sewer lines, contact the Office of Water Quality - Permits Branch (317-232-8675) regarding the need for permits.

AIR QUALITY

The above-noted project should be designed to minimize any impact on ambient air quality in, or near, the project area. The project must comply with all federal and state air pollution regulations. Consideration should be given to the following:

1. Regarding open burning, and disposing of organic debris generated by land clearing activities; some types of open burning are allowed (http://www.in.gov/idem/4148.htm) under specific conditions. You also can seek an open burning variance from IDEM.

   However, IDEM generally recommends that you take vegetative wastes to a registered yard waste composting facility or that the waste be chipped or shredded with composting on site (you must register with IDEM if more than 2,000 pounds is to be composted; contact 317/232-0066). The finished compost can then be used as a mulch or soil amendment. You also may bury any vegetative wastes (such as leaves, twigs, branches, limbs, tree trunks and stumps) onsite, although burying large quantities of such material can lead to subsidence problems, later on.

   Reasonable precautions must be taken to minimize fugitive dust emissions from construction and demolition activities. For example, wetting the area with water, constructing wind barriers, or treating dusty areas with chemical stabilizers (such as calcium chloride or several other commercial products). Dirt tracked onto paved roads from unpaved areas should be minimized.

   Additionally, if construction or demolition is conducted in a wooded area where blackbirds have roosted or abandoned buildings or building sections in which pigeons or bats have roosted for 3-5 years precautionary measures should be taken to avoid an outbreak of histoplasmosis. This disease is caused by the fungus Histoplasma capsulatum, which stems from bird or bat droppings that have accumulated in one area for 3-5 years. The spores from this fungus become airborne when the area is disturbed and can cause infections over an entire community downwind of the site. The area should be wetted down prior to cleanup or demolition of the project site. For more detailed information on histoplasmosis prevention and control, please contact the Acute Disease Control Division of the Indiana State Department of Health at (317) 233-7272.

2. The U.S. EPA and the Surgeon General recommend that people not have long-term exposure to radon at levels above 4 pCi/L. (For a county-by-county map of predicted radon levels in Indiana, visit: http://www.in.gov/idem/4145.htm.)

   The U.S. EPA further recommends that all homes (and apartments within three stories of ground level) be tested for radon. If in-home radon levels are determined to be 4 pCi/L, or higher, EPA recommends a follow-up test. If the second test confirms that radon levels are 4 pCi/L, or higher, EPA recommends the installation of radon-reduction measures. (For a list of qualified radon testers and radon mitigation (or reduction) specialists visit: http://www.in.gov/isdh/regsvcs/radhealth/pdfs/radon_testers_mitigators_list.pdf.) It also is recommended that radon reduction measures be built into all new homes, particularly in areas like Indiana that have moderate to high predicted radon levels.

   To learn more about radon, radon risks, and ways to reduce exposure visit: http://www.in.gov/isdh/regsvcs/radhealth/radon.htm,

http://www.in.gov/idem/4145.htm, or http://www.epa.gov/radon/index.html.

3. With respect to asbestos removal: all facilities slated for renovation or demolition (except residential buildings that have (4) four or fewer dwelling units and which will not be used for commercial purposes) must be inspected by an Indiana-licensed asbestos inspector prior to the commencement of any renovation or demolition activities. If regulated asbestos-containing material (RACM) that may become airborne is found, any subsequent demolition, renovation, or asbestos removal activities must be performed in accordance with the proper notification and emission control requirements.

   If no asbestos is found where a renovation activity will occur, or if the renovation involves removal of less than 260 linear feet of RACM off of pipes, less than 160 square feet of RACM off of other facility components, or less than 35 cubic feet of RACM off of all facility components, the owner or operator of the project does not need to notify IDEM before beginning the renovation activity.

   For questions on asbestos demolition and renovation activities, you can also call IDEM's Lead/Asbestos section at 1-888-574-8150.

   However, in all cases where a demolition activity will occur (even if no asbestos is found), the owner or operator must still notify IDEM 10 working days prior to the demolition, using the form found at http://www.in.gov/icpr/webfile/formsdiv/44593.pdf.

   Anyone submitting a renovation/demolition notification form will be billed a notification fee based upon the amount of friable asbestos containing material to be removed or demolished. Projects that involve the removal of more than 2,600 linear feet of friable asbestos containing materials on pipes, or 1,600 square feet or 400 cubic feet of friable asbestos containing material on other facility components, will be billed a fee of $150 per project; projects below these amounts will be billed a fee of $50 per project. All notification remitters will be billed on a quarterly basis.

   For more information about IDEM policy regarding asbestos removal and disposal, visit: http://www.in.gov/idem/4983.htm.

4. With respect to lead-based paint removal: IDEM encourages all efforts to minimize human exposure to lead-based paint chips and dust. IDEM is particularly concerned that young children exposed to lead can suffer from learning disabilities. Although lead-based paint abatement efforts are not mandatory, any abatement that is conducted within housing built before January 1, 1978 , or a child-occupied facility is required to comply with all lead-based paint work practice standards, licensing and notification requirements. For more information about lead-based paint removal visit: http://www.in.gov/isdh/19131.htm.

5. Ensure that asphalt paving plants are permitted and operate properly. The use of cutback asphalt, or asphalt emulsion containing more than seven percent (7%) oil distillate, is prohibited during the months April through October. See 326 IAC 8-5-2 , Asphalt Paving Rule (http://www.ai.org/legislative/iac/T03260/A00080.PDF).

6. If your project involves the construction of a new source of air emissions or the modification of an existing source of air emissions or air pollution control equipment, it will need to be reviewed by the IDEM Office of Air Quality (OAQ). A registration or permit may be required under 326 IAC 2 (View at: www.ai.org/legislative/iac/t03260/a00020.pdf.) New sources that use or emit hazardous air pollutants may be subject to Section 112 of the Clean Air Act and corresponding state air regulations governing hazardous air pollutants.

7. For more information on air permits visit: http://www.in.gov/idem/4223.htm, or to initiate the IDEM air permitting process, please contact the Office of Air Quality Permit Reviewer of the Day at (317) 233-0178 or OAMPROD atdem.state.in.us.

LAND QUALITY

In order to maintain compliance with all applicable laws regarding contamination and/or proper waste disposal, IDEM recommends that:

1. If the site is found to contain any areas used to dispose of solid or hazardous waste, you need to contact the Office of Land Quality (OLQ)at 317-308-3103.

2. All solid wastes generated by the project, or removed from the project site, need to be taken to a properly permitted solid waste processing or disposal facility. For more information, visit http://www.in.gov/idem/4998.htm.

3. If any contaminated soils are discovered during this project, they may be subject to disposal as hazardous waste. Please contact the OLQ at 317-308-3103 to obtain information on proper disposal procedures.

4. If PCBs are found at this site, please contact the Industrial Waste Section of OLQ at 317-308-3103 for information regarding management of any PCB wastes from this site.

5. If there are any asbestos disposal issues related to this site, please contact the Industrial Waste Section of OLQ at 317-308-3103 for information regarding the management of asbestos wastes (Asbestos removal is addressed above, under Air Quality).

6. If the project involves the installation or removal of an underground storage tank, or involves contamination from an underground storage tank, you must contact the IDEM Underground Storage Tank program at 317/308-3039. See: http://www.in.gov/idem/4999.htm.

FINAL REMARKS

Should you need to obtain any environmental permits in association with this proposed project, please be mindful that IC 13-15-8 requires that you notify all adjoining property owners and/or occupants within ten days your submittal of each permit application. However, if you are seeking multiple permits, you can still meet the notification requirement with a single notice if all required permit applications are submitted with the same ten day period.

Should the scope of the proposed project be expanded to the extent that a National Environmental Policy Act Environmental Assessment (EA) or Environmental Impact Statement (EIS) is required, IDEM will actively participate in any early interagency coordination review of the project.

Meanwhile, please note that this letter does not constitute a permit, license, endorsement or any other form of approval on the part of the Indiana Department of Environmental Management regarding any project for which a copy of this letter is used. Also note that is it the responsibility of the project engineer or consultant using this letter to ensure that the most current draft of this document, which is located at http://www.in.gov/idem/5284.htm, is used.

Sincerely,

Thomas W. Easterly
Commissioner

Signature(s) of the Applicant

I acknowledge that the following proposed roadway project will be financed in part, or in whole, by public monies.

Project Description

INDOT Project Des 1382317. A full access-control interchange at US 31 and SR 28 in Tipton County will replace the signalized intersection, four miles west of the City of Tipton. The Preferred Alternative will bridge SR 28 over US 31 on an alignment just to the south of SR 28â€™s present alignment. The interchange will be a diamond with a loop ramp in the northwest quadrant to avoid impacts to Tucker Cemetery in the southwest quadrant.

With my signature, I do hereby affirm that I have read the letter from the Indiana Department of Environment that appears directly above. In addition, I understand that in order to complete that project in which I am interested, with a minimum of impact to the environment, I must consider all the issues addressed in the aforementioned letter, and further, that I must obtain any required permits.

Date: 12/31/14

Signature of the INDOT
Project Engineer or Other Responsible Agent _____

Date: 12/31/14

Signature of the
For Hire Consultant TED STONE

Ted Stone

INDIANA GEOLOGICAL SURVEY
611 N. Walnut Grove Ave., Bloomington, IN 47405-2208 • (812) 855-7636
http://igs.indiana.edu • IGSinfo@indiana.edu

Project No. _____ DES No. 1382317

Project Description US 31 at SR 28 Intersection to Interchange conversion

Tipton County

Name of Organization requesting early coordination:

Corradino for INDOT

QUESTIONNAIRE FOR THE INDIANA GEOLOGICAL SURVEY

1) Do unusual and/or problem ( ) geographic, ( ) geological, ( ) geophysical, or ( ) topographic features exist within the project limits? Describe:

NO

2) Have existing or potential mineral resources been identified in this area? Describe:

NO

3) Are there any active or abandoned mineral resources extraction sites located nearby?
Describe: NO

This information was furnished by:

Marni D. Karaffa , Research Geologist
611 N Walnut Grove, Bloomington, IN 47405
(812) 855-7428 / (812) 855-2862
karaffam@indiana.edu

Wednesday, June 18, 2014

Appendix I
Noise Report

From:	Bales, Ronald
To:	Muench, Tim
Cc:	Gary Mroczka; Ted Stone
Subject:	RE: Des 1382317 US 31 at SR 28 Final Noise Report and TNM files
Date:	Wednesday, November 19, 2014 1:09:19 PM
Attachments:	image002.png image003.png image004.png image005.png image006.png

A Traffic Noise Analysis report was completed by Corradino on November 18, 2014 for the US 31 at SR 28 Interchange Project, Tipton County, Indiana. The project will involve construction of a new interchange with full access control and a grade separation elevating SR 28 over U.S. 31. The project will also include roundabout terminals on SR 28 for the on- and off-ramps for U.S. 31.. The traffic noise analysis evaluated noise impacts and potential mitigation measures for this project.

The traffic noise analysis identified one (1) impacted receptor in the design year (2031). This receptor represents a single-family home with driveway access to U.S. 31, positioned right in front of the home. Due to the location of the drive, a noise barrier would not be feasible in this location.

Therefore we are not recommending noise barriers be included in this project. A reevaluation of the noise analysis will occur during final design. If during final it has been determined that conditions have changed such that noise abatement is feasible and reasonable, the abatement measures might be provided. The final decision on the installation of any abatement measures will be made upon the completion of the project's final design and the public involvement processes.

This e-mail serves as approval of the traffic noise analysis report.

Please let us know if you would like to view the full report or discuss further. Thank you.

Ron Bales
Senior Environmental Manager
100 North Senate Ave., Room 642
Indianapolis, IN 46204
Office: (317) 234-4916
Email: rbales@indot.in.gov

From: Ted Stone [mailto:Tstone@CORRADINO.com]
Sent: Tuesday, November 18, 2014 3:47 PM
To: Bales, Ronald
Cc: Gary Mroczka
Subject: RE: Des 1382317 US 31 at SR 28 Final Noise Report and TNM files

Ron – thanks for your prompt review. We made the requested changes. Below is a page by page response to comments.

CORRADINO

Noise Study Report

U.S. 31 and State Road 28 Interchange

Tipton County, Indiana

Des. #1382317

Submitted to:

URS Corporation

Submitted by:

Corradino LLC, Inc.

Ted Stone

Ted Stone

November 18, 2014

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Executive Summary

The project is located in Tipton County, Indiana, at the intersection of U.S. 31 and State Road 28, approximately four miles west of the city of Tipton. The project will involve construction of a new interchange with full access control and a grade separation elevating SR 28 over U.S. 31. The project will also include roundabout terminals on SR 28 for the on- and off-ramps for U.S. 31.

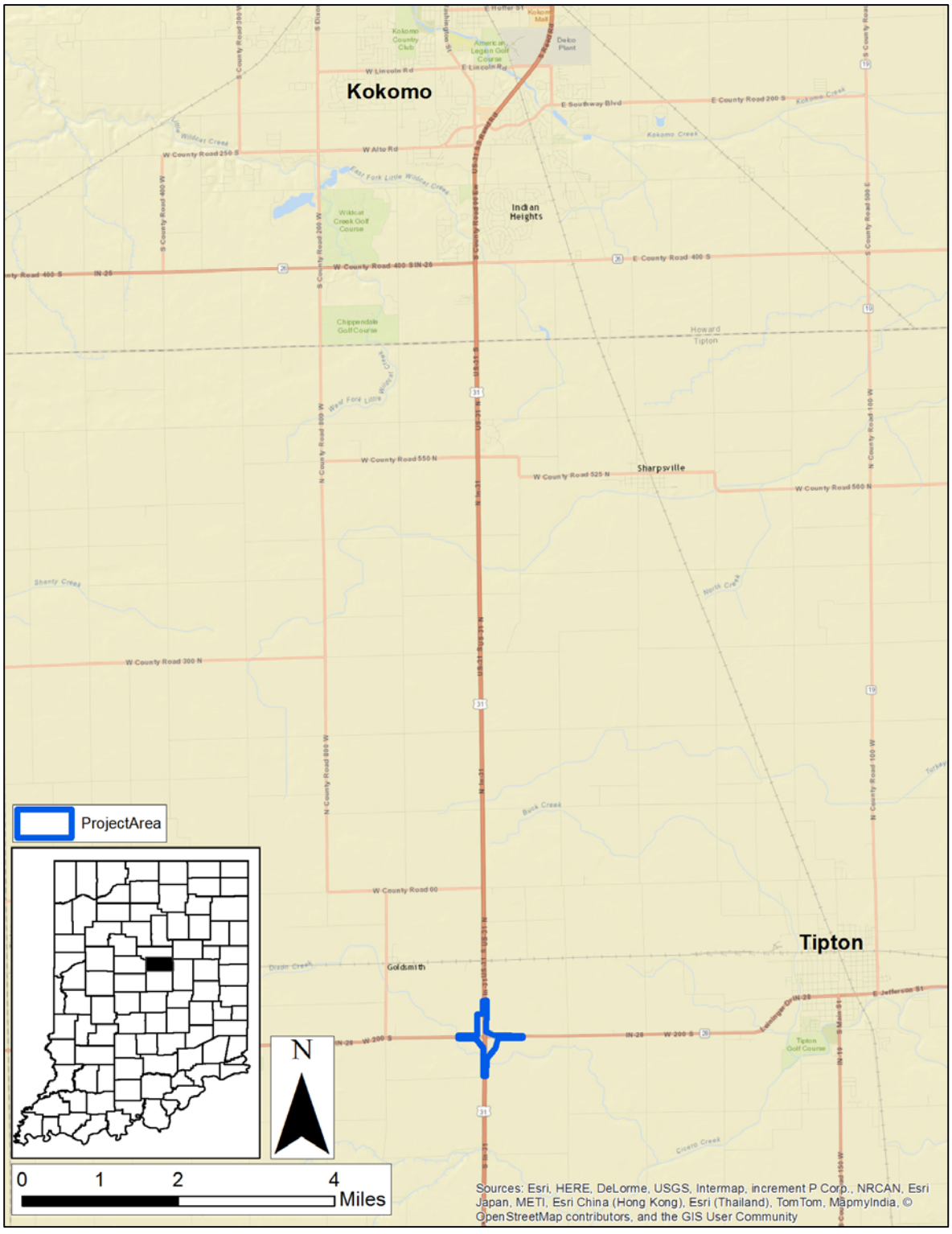
Because roadway capacity will be added through eliminating the traffic signal and a vertical alignment change, and federal funds are involved, under 23 CFR, part 772, the project is considered a "Type I" noise project. This means a noise analysis should be performed to determine whether the project will cause noise impacts and, if so, whether there are feasible and reasonable ways to mitigate those impacts.

This noise analysis follows the guidance in the Federal Highway Administration's (FHWA's) *Highway Traffic Noise: Analysis and Abatement Guidance* (December 2011) and the Indiana Department of Transportation's (INDOT's) *Procedural Manual for Preparing Environmental Documents* and its *Traffic Noise Analysis Procedure* (July 2011).

Noise measurements were made in conformance with FHWA's guidance at three locations, two on the west project leg and one on the south (Figure 2). Homes within 500 feet on the north leg of the project will be acquired, leaving no sensitive receptors. There are no homes or other sensitive receptors on the east leg of the project.

The Federal Highway Administration (FHWA) has developed Noise Abatement Criteria (NAC) that states have adopted (Table 1). These criteria guide how noise impacts are defined and thus, when abatement (mitigation) should be tested. Residential receptors fall into activity category B. The applicable noise criterion for this land use is 67 dB(A), defined in terms of the one-hour equivalent noise level, expressed as Leq (1h). Tucker Cemetery in the southwest project quadrant falls into Activity Category C, with the same criterion of 67 dB(A). Because Part 772 defines potential impacts in terms of noise levels approaching or exceeding the NAC and INDOT's *Traffic Noise Analysis Procedure* defines approaching as one decibel, the effective value for impact analysis in Indiana for activity categories B and C is 66 dB(A), rather than 67 dB(A). Commercial uses, including motels and restaurants, fall into NAC activity category E, with an effective criterion of 71 dB(A). Retail uses, together with industrial and trucking/logistics/warehousing, and agriculture are in NAC activity category F, for which there is no noise impact criterion.

Figure 1
Project Area



Source: ESRI and Corradino LLC

Table 1

FHWA - Noise Abatement Criteria (NAC), Hourly A-Weighted Sound Level-decibels (dB(A))

Activity Category	Activity Criteria $L_{eq}(1h)$	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential, if the area is to continue to serve its intended purpose.
B*	67 (Exterior)	Residential.
C*	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	Undeveloped lands that are not permitted

* Includes undeveloped lands permitted for this activity category.

Source: Federal Highway Administration – 23 CFR 772.

Summary of Analysis

Existing Conditions – Analysis using the Traffic Noise Model (TNM2.5) validated the noise measurements obtained in the field within the standard 3 dB(A). Measurements in July 2014, ranged between 55 and 74 dB(A). Once the TNM2.5 noise model was validated for the measurement sites, additional receptors were tested in the corridor. Seven receptors were run in the TNM2.5 noise model, representing single-family homes and Tucker Cemetery.

No Build Alternative – The No Build Alternative (2031) would experience noise levels very similar to build noise levels because the project will not attract significant new traffic. Traffic is estimated to increase by less than one percent from 2014 to 2031.

Build Alternative – This alternative would result in noise levels ranging from 58 to 66 dB(A), with one receptor predicted by TNM2.5 to experience an impact. Additionally, with traffic increasing by less than one percent, a substantial impact will not occur. The criteria for a substantial impact is a 15.0 dB(A) increase. A 100% increase in traffic would only produce a 3 dB(A) increase.

Conclusions

Under the **Build Alternative**, no mitigation is required. One receptor was predicted by TNM2.5 to be impacted based on the new design and 2031 traffic estimates. Because this receiver represents a single-family home with driveway access to U.S. 31, positioned right in front of the home, a noise wall is not feasible in this location. The driveway is directly in the noise path between U.S 31 and the home.

Based on INDOT and (FHWA) guidelines, the thresholds for the opportunity for a public hearing include acquisition of greater than one-half acre of new right-of-way, substantial change to the layout or function of connecting roadways or the existing facility, substantial adverse impacts on abutting property, or significant social, economic, environmental or other effects. Because the proposed project will acquire 30+ acres of right-of-way a public hearing will be conducted.

A reevaluation of the noise analysis will occur during final design. If during final design it has been determined that conditions have changed such that noise abatement is feasible and reasonable, abatement measures might be provided. The final decision on the installation of any abatement measure(s) will be made upon the completion of the project's final design and the public involvement processes.

1. Project History and Project Background

This project is needed to address safety and mobility at the existing at-grade intersection. U.S. 31 is a high-speed commerce corridor connecting Indianapolis and South Bend. The signal will be replaced by a grade separated interchange that will improve safety, reduce travel times, and promote economic development in the project area.

2. Existing Infrastructure and Proposed Changes

U.S. 31 is classified as a Principal Arterial and part of the National Highway System. SR 28 is classified as a Principal Arterial east of U.S. 31 and a Minor Arterial to the west. U.S. 31 is a four-lane divided highway with 12' travel lanes. SR 28 is a two-lane highway with 11' travel lanes. They are currently served by a signalized intersection. The preferred alternative will create a full access-controlled interchange and a grade separation with SR 28 passing over U.S. 31. Roundabouts will be added on both sides of U.S. 31 along SR 28 providing connections to on- and off-ramps. A direct connection will be added to the eastern roundabout for traffic exiting the Chrysler Plant and headed north. The project will also include a local access road from SR 28 to Tucker Cemetery in the southwest quadrant.

3. Existing Noise Environment

Project area land use is predominately farmland with industrial use in the northeast quadrant. The entire project area was considered a single Common Noise Environment as the project will make U.S. 31 a freeway section through the project length. The project area north-south is approximately one mile long. Terrain is consistently flat through the entire corridor.

Noise measurements were made in conformance with FHWA's guidance at four locations (Figure 2 and Appendix A). Table 2 indicates the relationship between the measurement sites and the receptors they represent.

Table 2.
Measurements Sites and Related Receptors

Measurement Site	Single Family Homes	Cemetery
North	0[1]	
South	1	1[2]
East	0[3]	
West	2	
Total Dwelling Units Equivalents		4

Source: Corradino LLC

[1] A measurement was taken to validate the model, however the 3 homes at the north end of the project will be acquired by the project.

[2] The cemetery is considered to represent 1 equivalent dwelling unit – see Appendix B

[3] Homes to the east, in the end, are more than 500' from the east project limit.

Seven receivers were modeled in the proposed project area. This included receptors representing 6 single-family homes and one cemetery equal to 1 dwelling unit equivalent (DUE). (See Appendix B for the calculations related to DUEs.) Traffic counts by vehicle type were collected during the noise measurements and were used to validate the model.

The noise measurement locations represent worst case locations for all sensitive receptors. The homes are subject to NAC B and the cemetery is subject to NAC C. In both cases this means 67 dB(A) less the approach factor of 1 dB(A), for an effective level of 66 dB(A).

As noted on the Noise Data Sheets in Appendix A, a Quest 2900 Sound Level Meter was used, set on slow response, and A-weighting. A Quest QC-20 Acoustic Calibrator emitting 94 dB(A) was used to calibrate the meter before and after the measurements (calibration certificates follow the Noise Data Sheets). The locations of the sites are as noted in Figure 2. The setup height was five feet on a tripod and the tripod was set away from reflective surfaces. All measurements and traffic counts were 15 minutes in duration. Leq (1h) and Lmax were recorded at each site.

Table 3 shows the noise levels measured July 31, 2014. More description is provided below for each individual site, and Noise Data sheets showing the field results and graphics are provided in Appendix A. The TNM2.5 computer model runs validated the field measurements within 3 dB(A).

Table 3
2014 Measured vs. Modeled Noise Levels

Measurement Site	2014 Measured Level	2014 Estimated Noise Level	Difference
North	55.5	56.0	-0.5
South	73.9	73.7	0.2
East	60.3	60.7	-0.4
West	68.2	70.1	-1.9

Source: Corradino LLC

Figure 2
Measurement Sites

Source: ESRI and Corradino LLC

North Measurement Site

This measurement was taken at the north end of the Chrysler parking lot, approximately 420' off of U.S. 31. This site was selected to represent the single family home north of the Chrysler property, however that prpoerty will be taken as part of the project. This site was still useful in validating the TNM2.5 noise model.

Source: ESRI and Corradino LLC

South Measurement Site

This measurement was taken approximately 50' off of U.S. 31 in the side yard of the single family home on this property. The location was chosen because it was the least intrusive location on the property.

Source: ESRI and Corradino LLC

East Measurement Site
This measurement was taken approximately 120' off of SR 28 next to the Chrysler Plant's service drive. This measurement represents two single-family homes immediately to the east.

Source: ESRI and Corradino LLC

West Measurement Site
This measurement was taken approximately 30' off of SR 28 directly across from two single-family homes. This site was chosen because it was less intrusive than measuring across the road in yards. The measurement represents three single-family homes on the south side of SR 28.

Source: ESRI and Corradino LLC

4. Analysis Methodology

This noise analysis follows the guidance in the Federal Highway Administration's (FHWA's) *Highway Traffic Noise: Analysis and Abatement Guidance* (July 2010) and the Indiana Department of Transportation's (INDOT's) *Traffic Noise Analysis Procedure* (July 2011).

Noise measurements were made in conformance with FHWA guidance at three locations that represent residences and a cemetery within 500 feet of the project area (the analysis distance criterion set in INDOT's *Traffic Noise Analysis Procedure)*. The noise measurement locations generally represent worst case locations for all sensitive receptors in what are considered noise sensitive areas.

The residences fall into land use category B in terms of FHWA's Noise Abatement Criteria (NAC) (Table 1). The applicable noise criterion for this land use is 67 dB(A) in terms of the one-hour equivalent noise level, expressed as L_{eq} (1h). Because Part 772 defines potential impacts in terms of noise levels approaching or exceeding the NAC and INDOT's *Traffic Noise Analysis Procedure* defines approaching as one decibel, the effective value for impact analysis in Indiana for land use category B is 66 dB(A), rather than 67 dB(A). The cemetery falls into NAC land use category C, which is subject to the same NAC dB(A) criterion. Industrial and agriculture uses are in NAC activity category F, for which there is no noise impact criterion.

The FHWA approved TNM2.5 was used to model the noise measurement sites. Traffic counted during the noise measurements (2014) was used to validate the TNM2.5. The purpose of the validation process is to assure that site conditions, such as elevation, tree zones, ground zones, and terrain lines are properly accounted for in the model. All existing modeled values were within 3 dB(A) of the measured values, validating the TNM2.5 model (Table 3).

The TNM2.5 was used to estimate future (2031) build noise levels. TNM2.5 sound level results for all receivers can be found in Appendix C.

Traffic and Other TNM2.5 Input

URS provided 2014 and 2031 AADTs[1], as well as 2031 DHV and truck percentages. These amounts were used to determine traffic inputs for TNM2.5 (Table 4). The traffic amounts provided were split evenly between the northbound and southbound lanes for U.S. 31. Traffic was split evenly for eastbound and westbound SR 28.

On U.S. 31, the design speed of 70 mph was used for cars and motorcycles. 65 mph was used for trucks and buses, following current Indiana posted speed limits. On SR 28, 55 mph was used for the eastern and western ends of the project area. Adjustments were made to individual segments to represent realistic speeds in and between the roundabouts.

All receptors within 500 feet of the project area were modeled. The project area is open and flat and did not require terrain lines or tree zones.

[1]URS, *Engineering Assessment*, U.S. 31 and State Road 28 Interchange, November 26, 2013.

Table 4
Traffic Inputs for TNM2.5
Build Conditions (2031)

U.S. 31					
Total DHV 2031	1840	NB (50%)	MPH	SB (50%)	MPH
Auto		814	70	814	70
Med		37	65	37	65
Heavy		69	65	69	65
Bus		4	65	4	65
Moto		4	70	4	65
SR 28 - Boonville-New Harmony Road					
Total DHV 2031	644	EB (50%)	MPH	WB (50%)	MPH
Auto		277	55	227	55
Med		16	55	16	55
Heavy		29	55	29	55
Bus		1	55	1	55
Moto		1	55	1	55

Source: Corradino LLC

5. Future Noise Environment

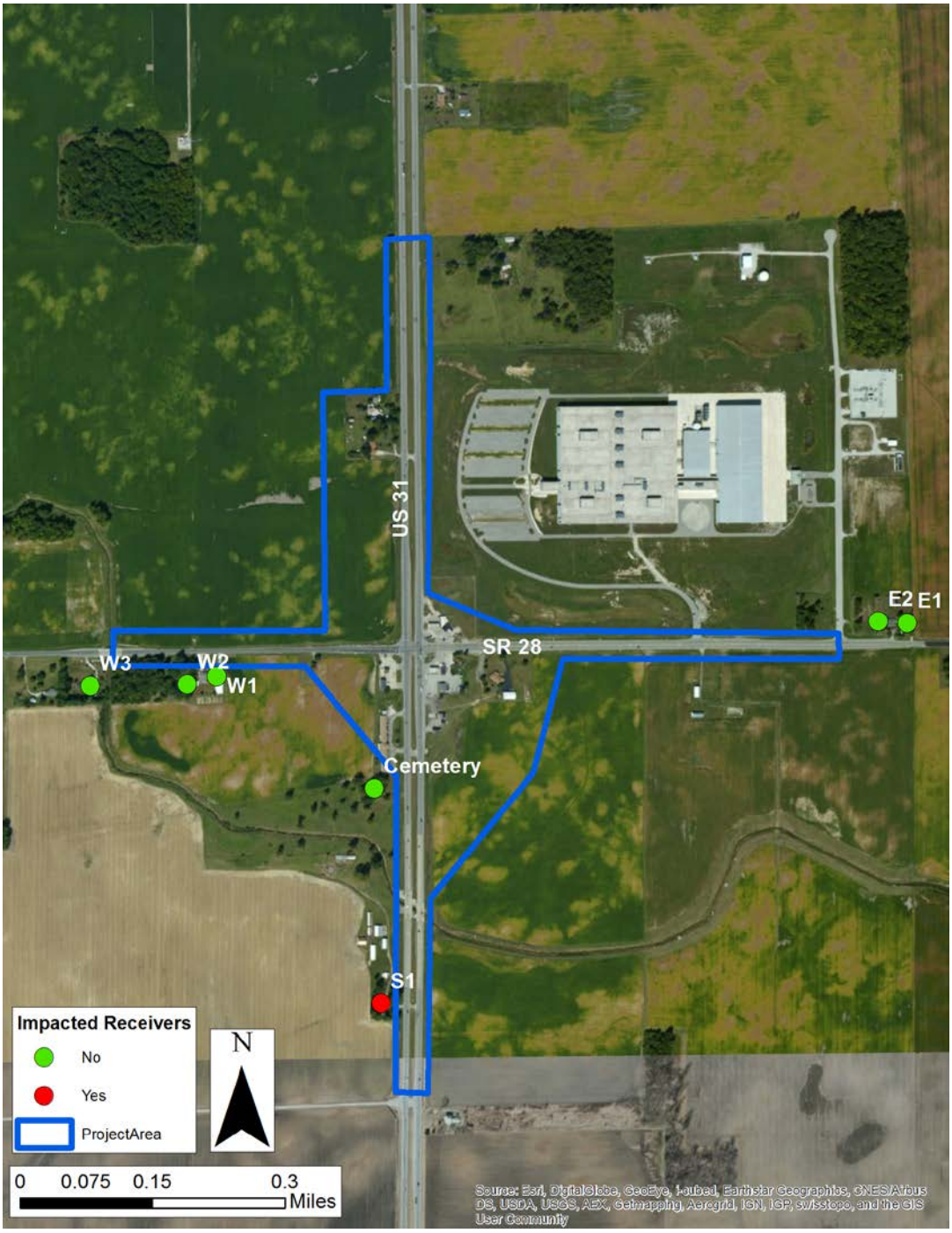
The project will have minimal effects on the noise environment, as the interchange addition will result in minimal traffic increases. The biggest change is that SR 28 will be elevated, projecting sound over a greater area. However, there are no receptors close enough to feel this effect. Meanwhile the earth embankment of SR 28 will block some noise from U.S. 31, but there is nothing near enough to feel that effect either. One receiver, on the south interchange leg, is predicted by TNM2.5 to reach a sound level of 66 dB(A). Figure 3 illustrates the location of receivers modeled in TNM2.5. The TNM2.5 model results may be found in Appendix C.

Conclusions

Under the **Build Alternative**, noise mitigation is not required. Noise walls were not tested, because the only receiver predicted by TNM2.5 to be impacted has a driveway accessing U.S. 31, making a noise wall not feasible. The house is on the south leg of the interchange, on the west side, and the driveway, which will remain as the access point to the home, is directly in front of the house.

Based on the studies thus far accomplished, the State of Indiana has not identified any locations where noise abatement is likely. A reevaluation of the noise analysis will occur during final design. If during final design it has been determined that conditions have changed such that noise abatement is feasible and reasonable, abatement measures might be provided. The final decision on the installation of any abatement measure(s) will be made upon the completion of the project's final design and the public involvement processes.

Figure3
Receivers Modeled in TNM 2.5



Source: ESRI and Corradino LLC

6. Construction Noise

It is difficult to predict levels of construction noise at a particular receptor or group of receptors. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. Daily construction normally occurs during daylight hours when people tolerate occasional loud noises. The duration for individual receptors should be short; therefore, there are no anticipated disruptions of normal activities. However, the project plans and specifications include provisions requiring the contractor to make every reasonable effort to minimize construction noise through abatement measure such as work-hour controls and maintenance of muffler systems.

7. Coordination with Local Officials

Consistent with 23 CFR 772.17, this report is being provided to Tipton County. The TNM2.5 indicates that the approximate distance from the outside edge of the near travel lane of U.S. 31 to a noise contour of 66 dB(A) is 150 feet.

This means that dwelling units and sensitive public uses such as parks, schools, and the like should not be approved for development within that buffer zone from U.S. 31.

APPENDIX A

NOISE MEASUREMENT DATA SHEETS AND CALIBRATION CERTIFICATES

NOISE DATA SHEET

Job Number: 4238						AM/PM	Site: North
Project: US31						Date: 7-31-14	
Instrumentation	Quest 2900 Sound Level Meter					Day of Week	M T W T F
	Quest QC-20 Acoustic Calibrator @ 94 dB(A)				Calibration Confirmed		Yes/No
Location	420' off of US 31 at north end of Chrysler parking lot					Temp.	69 F
Receptor Represents	Single family home					Heavy Overcast/Light Overcast/ Sunny/ Clear Night/ Overcast Night	
Major Noise Source	US 31					Humidity	94 %
Secondary Source	Chrysler					Pavement	Dry/Wet
Land Use Category	A-57dB(A) Serene Park	B&C-67dB(A) Residential/Active Park/ Hosp/Church/Section 4(f)	E-72dB(A) Motels/Rest./ Offices/Devel.	F-NA Agric./Manuf./ Mainten./Retail	G-NA Undevel. lands not yet permitted	Wind	Upwind -1 to –5
							Calm –1 to +1
							Downwind +1 to +5

	# Lanes	Lane Width	Median Width	Posted Speed	*Observed Speed
Major Road	4	12	45	60	60
Secondary Road					

Test 1 – 15 min.	From	8:46 am	To	9:01 am
Decibel Reading	55.6	L_{Aeq}	63.3	L_{max}
Traffic Volumes	Major Road		Secondary Road	
	NB/EB	SB/WB	NB/EB	SB/WB
Cars	155	135		
Medium Trucks (3-axle)	11	3		
Heavy Trucks	15	14		
Buses	0	1		
Motorcycles	0	0		

NOISE DATA SHEET

						AM/PM	Site: South
Job Number: 4238						Date: 7-31-14	
Project: US31						Day of Week	M T W T F
Instrumentation	Quest 2900 Sound Level Meter						
	Quest QC-20 Acoustic Calibrator @ 94 dB(A)				Calibration Confirmed		Yes/No
Location	Approximately 50' off of U.S. 31 in side yard					Temp.	75 F
Receptor Represents	Single family home					Heavy Overcast/Light Overcast/ Sunny/ Clear Night/ Overcast Night	
Major Noise Source	US 31					Humidity	88 %
Secondary Source	Bugs					Pavement	Dry/Wet
Land Use Category	A-57dB(A) Serene Park	B&C-67dB(A) Residential/Active Park/ Hosp/Church/Section 4(f)	E-72dB(A) Motels/Rest./ Offices/Devel.	F-NA Agric./Manuf./ Mainten./Retail	G-NA Undevel. lands not yet permitted	Wind	Upwind -1 to –5
							Calm –1 to +1
							Downwind +1 to +5

	# Lanes	Lane Width	Median Width	Posted Speed	*Observed Speed
Major Road	4	12	45	60	60
Secondary Road					

Test 1 – 5 min.	From	9:39 am	To	9:54 am
Decibel Reading	73.9	L_{Aeq}	89.8	L_{max}

Traffic Volumes	Major Road		Secondary Road	
	NB/EB	SB/WB	NB/EB	SB/WB
Cars	126	155		
Medium Trucks (3-axle)	9	10		
Heavy Trucks	16	16		
Buses	0	0		
Motorcycles	2	0		

NOISE DATA SHEET

						AM/PM	Site: East
Job Number: 4238						Date: 7-31-14	
Project: US31						Day of Week	M T W T F
Instrumentation	Quest 2900 Sound Level Meter						
	Quest QC-20 Acoustic Calibrator @ 94 dB(A)				Calibration Confirmed		Yes/No
Location	about 120 feet off of SR28 next to Chrysler service drive					Temp.	67 F
Receptor Represents	Single family homes					Heavy Overcast/Light Overcast/ Sunny/ Clear Night/ Overcast Night	
Major Noise Source	SR 28					Humidity	100 %
Secondary Source	Chrysler					Pavement	Dry/Wet
Land Use Category	A-57dB(A) Serene Park	B&C-67dB(A) Residential/Active Park/ Hosp/Church/Section 4(f)	E-72dB(A) Motels/Rest./ Offices/Devel.	F-NA Agric./Manuf./ Mainten./Retail	G-NA Undevel. lands not yet permitted	Wind	Upwind -1 to –5
							Calm –1 to +1
							Downwind +1 to +5

	# Lanes	Lane Width	Median Width	Posted Speed	*Observed Speed
Major Road	2	11		45	45
Secondary Road					

Test 1 – 5 min.	From	8:19 am	To	8:34 am
Decibel Reading	60.3	L_{Aeq}	75.8	L_{max}
Traffic Volumes	Major Road		Secondary Road	
	NB/EB	SB/WB	NB/EB	SB/WB
Cars	32	33		
Medium Trucks (3-axle)	7	4		
Heavy Trucks	7	8		
Buses	0	0		
Motorcycles	0	0		

						AM/PM	Site: West
Job Number: 4238						Date: 7-31-14	
Project: US31						Day of Week	M T W T F
Instrumentation	Quest 2900 Sound Level Meter						
	Quest QC-20 Acoustic Calibrator @ 94 dB(A)				Calibration Confirmed		Yes/No
Location	about 30 feet off of SR28 across from homes					Temp.	63 F
Receptor Represents	Single family homes					Heavy Overcast/Light Overcast/ Sunny/ Clear Night/ Overcast Night	
Major Noise Source	SR 28					Humidity	94 %
Secondary Source	bugs					Pavement	Dry/Wet
Land Use Category	A-57dB(A) Serene Park	B&C-67dB(A) Residential/Active Park/ Hosp/Church/Section 4(f)	E-72dB(A) Motels/Rest./ Offices/Devel.	F-NA Agric./Manuf./ Mainten./Retail	G-NA Undevel. lands not yet permitted	Wind	Upwind -1 to –5
							Calm –1 to +1
							Downwind +1 to +5

	# Lanes	Lane Width	Median Width	Posted Speed	*Observed Speed
Major Road	2	11		45	45
Secondary Road					

Test 1 – 5 min.	From	9:15 am	To	9:30 am
Decibel Reading	68.2	L_{Aeq}	86.0	L_{max}
Traffic Volumes	Major Road		Secondary Road	
	NB/EB	SB/WB	NB/EB	SB/WB
Cars	22	17		
Medium Trucks (3-axle)	2	2		
Heavy Trucks	11	6		
Buses	0	0		
Motorcycles	0	0		

3M Oconomowoc
Personal Safety Division

3M Detection Solutions
1060 Corporate Center Drive
Oconomowoc, WI 53066-4828
www.3M.com/detection
262 567 9157 800 245 0779
262 567 4047 Fax

An ISO 9001 Registered Company

ASSET # 0040183

Certificate of Calibration

Certificate No: 5111198CD8080042

Submitted By: ARGUS-HAZCO
434 ALEXANDERSVILLE RD
MIAMISBURG, OH 45342-3658

Serial Number:	CD8080042	Date Received:	2/10/2014
Customer ID:	0040183	Date Issued:	2/18/2014
Model:	2900 SLM	Valid Until:	2/18/2015

Test Conditions:

Temperature:	18°C to 29°C
Humidity:	20% to 80%
Barometric Pressure:	890 mbar to 1050 mbar

Model Conditions:

As Found:	IN TOLERANCE
As Left:	IN TOLERANCE

SubAssemblies:

Description:	Serial Number:
MICROPHONE QE 7052 1/2 IN. ELECTRET	38443
TYPE 2 PREAMP	N/A

Calibrated per Procedure: 56V996

Reference Standard(s):

I.D. Number	Device	Last Calibration	Date Calibration Due
EF000105	QUEST-CAL	12/12/2013	12/12/2014
ET0000452	FLUKE 45 MULTIMETER	2/18/2013	2/18/2015
ET0000556	B&K ENSEMBLE	5/10/2013	5/10/2014

Measurement Uncertainty:

+/- 2.2% ACOUSTIC (0.19DB)+/- 1.4% VAC +/- 0.1% VDC
Estimated at 95% Confidence Level (k=2)

Calibrated By: Bethany Johnson 2/18/2014
BETHANY JOHNSON Service Technician

This report certifies that all calibration equipment used in the test is traceable to NIST, and applies only to the unit identified under equipment above. This report must not be reproduced except in its entirety without the written approval of 3M Detection Solutions.

098-393 Rev. B

3M Oconomowoc
Personal Safety Division

3M Detection Solutions
1060 Corporate Center Drive
Oconomowoc, WI 53066-4828
www.3M.com/detection
262 567 9157 800 245 0779
262 567 4047 Fax

An ISO 9001 Registered Company

0004407

Certificate of Calibration

Certificate No: 5504672QOK010010

Submitted By: ARGUS-HAZCO
434 ALEXANDERSVILLE RD
MIAMISBURG, OH 45342-3658

Serial Number: QOK010010
Customer ID:
Model: QC-20 CALIBRATOR
Test Conditions:
Temperature: 18°C to 29°C
Humidity: 20% to 80%
Barometric Pressure: 890 mbar to 1050 mbar

Date Received: 3/19/2014
Date Issued: 4/1/2014
Valid Until: 4/1/2015
Model Conditions:
As Found: OUT OF TOLERANCE
As Left: IN TOLERANCE

SubAssemblies:
Description: Serial Number:

Calibrated per Procedure: 56V982

Reference Standard(s):

I.D. Number	Device	Last Calibration	Date Calibration Due
ET0000556	B&K ENSEMBLE	5/10/2013	5/10/2014
T00230	FLUKE 45 MULTIMETER	2/14/2014	2/14/2016

Measurement Uncertainty:

+/- 1.1% ACOUSTIC (0.1DB) +/- 1.4% VAC +/- 0.012% HZ
Estimated at 95% Confidence Level (k=2)

Calibrated By: Robert Burns 4/1/2014
ROBERT BURNS Service Technician

This report certifies that all calibration equipment used in the test is traceable to NIST, and applies only to the unit identified under equipment above. This report must not be reproduced except in its entirety without the written approval of 3M Detection Solutions.

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ASSET # ELM1073

Certificate of Calibration

Certificate No: 5111198HW0060028

Submitted By: ARGUS-HAZCO
434 ALEXANDERSVILLE RD
MIAMISBURG, OH 45342-3658

Serial Number: HW0060028
Customer ID: ELM1073
Model: OB-100 FILTER

Test Conditions:
Temperature: 18°C to 29°C
Humidity: 20% to 80%
Barometric Pressure: 890 mbar to 1050 mbar

SubAssemblies:
Description:

Date Received: 2/10/2014
Date Issued: 2/18/2014
Valid Until: 2/18/2015

Model Conditions:
As Found: IN TOLERANCE
As Left: IN TOLERANCE

Serial Number:

Calibrated per Procedure: 59V735

Reference Standard(s):

I.D. Number	Device	Last Calibration	Date Calibration Due
ET0000556	B&K ENSEMBLE	5/10/2013	5/10/2014

Measurement Uncertainty:
+/- 2.2% ACOUSTIC (0.19DB)
Estimated at 95% Confidence Level (k=2)

Calibrated By: _____ 2/18/2014
BETHANY JOHNSON **Service Technician**

This report certifies that all calibration equipment used in the test is traceable to NIST, and applies only to the unit identified under equipment above. This report must not be reproduced except in its entirety without the written approval of 3M Detection Solutions.

098-393 Rev. B

APPENDIX B

DWELLING UNIT EQUIVALENT CALCULATIONS

	Users per day	People in Average Household	Percent within 500’	DUEs
Cemetery	2	2.59	100	1

DUE = ((Users per day)/(People per household)*(percentage)

APPENDIX C

TNM2.5 SOUND LEVEL RESULTS 2031

2014 Existing
2031 No Build
2031 Build
2031 66dB(A) Line

The Corradino Group
John Bucher

18 November 2014
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: US31 Noise
RUN: US31 2014 Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
W1	1	1	0.0	60.2	66	60.2	15	----	60.2	0.0	5	-5.0
W2	2	1	0.0	58.8	66	58.8	15	----	58.8	0.0	5	-5.0
W3	3	1	0.0	59.1	66	59.1	15	----	59.1	0.0	5	-5.0
S1	4	1	0.0	64.7	66	64.7	15	----	64.7	0.0	5	-5.0
E1	5	1	0.0	60.1	66	60.1	15	----	60.1	0.0	5	-5.0
E2	6	1	0.0	60.8	66	60.8	15	----	60.8	0.0	5	-5.0
East Test	9	1	0.0	61.2	66	61.2	15	----	61.2	0.0	5	-5.0
South Test	10	1	0.0	68.8	66	68.8	15	Snd Lvl	68.8	0.0	5	-5.0
Cemetery	11	1	0.0	62.3	66	62.3	15	----	62.3	0.0	5	-5.0
West Test	12	1	0.0	71.0	66	71.0	15	Snd Lvl	71.0	0.0	5	-5.0
North Test	13	1	0.0	56.8	66	56.8	15	----	56.8	0.0	5	-5.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	11	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

The Corradino Group
John Bucher

18 November 2014
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: US31 Noise
RUN: US31 2031 No Build
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
W1	1	1	60.2	60.4	66	0.2	15	----	60.4	0.0	5	-5.0
W2	2	1	58.8	59.0	66	0.2	15	----	59.0	0.0	5	-5.0
W3	3	1	59.1	59.3	66	0.2	15	----	59.3	0.0	5	-5.0
S1	4	1	64.7	64.9	66	0.2	15	----	64.9	0.0	5	-5.0
E1	5	1	60.4	60.2	66	-0.2	15	----	60.2	0.0	5	-5.0
E2	6	1	60.8	60.9	66	0.1	15	----	60.9	0.0	5	-5.0
Cemetery	11	1	62.3	62.5	66	0.2	15	----	62.5	0.0	5	-5.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	7	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

The Corradino Group
John Bucher

18 November 2014
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: US31 Noise
RUN: US31 2031 Build
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
W1	1	1	60.2	59.3	66	-0.9	15	----	59.3	0.0	5	-5.0
W2	2	1	58.8	58.3	66	-0.5	15	----	58.3	0.0	5	-5.0
W3	3	1	59.1	58.7	66	-0.4	15	----	58.7	0.0	5	-5.0
S1	4	1	64.7	66.1	66	1.4	15	Snd Lvl	66.1	0.0	5	-5.0
E1	5	1	60.4	58.2	66	-2.2	15	----	58.2	0.0	5	-5.0
E2	6	1	60.8	59.7	66	-1.1	15	----	59.7	0.0	5	-5.0
Cemetery	9	1	62.3	65.6	66	3.3	15	----	65.6	0.0	5	-5.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	7	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

The Corradino Group
John Bucher

18 November 2014
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: US31 Noise
RUN: US31 2031 66dBA Line
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
10	11	1	0.0	78.5	66	78.5	10	Snd Lvl	78.5	0.0	5	-5.0
20	12	1	0.0	76.9	66	76.9	10	Snd Lvl	76.9	0.0	5	-5.0
30	13	1	0.0	75.7	66	75.7	10	Snd Lvl	75.7	0.0	5	-5.0
40	14	1	0.0	74.6	66	74.6	10	Snd Lvl	74.6	0.0	5	-5.0
50	15	1	0.0	73.3	66	73.3	10	Snd Lvl	73.3	0.0	5	-5.0
60	16	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	5	-5.0
70	17	1	0.0	71.0	66	71.0	10	Snd Lvl	71.0	0.0	5	-5.0
80	18	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	5	-5.0
90	19	1	0.0	69.1	66	69.1	10	Snd Lvl	69.1	0.0	5	-5.0
100	20	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	5	-5.0
110	21	1	0.0	67.7	66	67.7	10	Snd Lvl	67.7	0.0	5	-5.0
120	22	1	0.0	67.2	66	67.2	10	Snd Lvl	67.2	0.0	5	-5.0
130	23	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	5	-5.0
140	24	1	0.0	66.0	66	66.0	10	Snd Lvl	66.0	0.0	5	-5.0
150	25	1	0.0	65.6	66	65.6	10	----	65.6	0.0	5	-5.0
160	26	1	0.0	64.9	66	64.9	10	----	64.9	0.0	5	-5.0
170	27	1	0.0	64.8	66	64.8	10	----	64.8	0.0	5	-5.0
180	28	1	0.0	63.9	66	63.9	10	----	63.9	0.0	5	-5.0
190	29	1	0.0	63.6	66	63.6	10	----	63.6	0.0	5	-5.0
200	30	1	0.0	63.1	66	63.1	10	----	63.1	0.0	5	-5.0
210	31	1	0.0	62.5	66	62.5	10	----	62.5	0.0	5	-5.0
220	32	1	0.0	62.3	66	62.3	10	----	62.3	0.0	5	-5.0
230	33	1	0.0	62.0	66	62.0	10	----	62.0	0.0	5	-5.0

240	34	1	0.0	61.5	66	61.5	10	----	61.5	0.0	5	-5.0
250	35	1	0.0	61.1	66	61.1	10	----	61.1	0.0	5	-5.0
10	36	1	0.0	78.5	66	78.5	10	Snd Lvl	78.5	0.0	5	-5.0
20	37	1	0.0	76.9	66	76.9	10	Snd Lvl	76.9	0.0	5	-5.0
30	38	1	0.0	75.7	66	75.7	10	Snd Lvl	75.7	0.0	5	-5.0
40	39	1	0.0	74.6	66	74.6	10	Snd Lvl	74.6	0.0	5	-5.0
50	40	1	0.0	73.3	66	73.3	10	Snd Lvl	73.3	0.0	5	-5.0
60	41	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	5	-5.0
70	42	1	0.0	71.0	66	71.0	10	Snd Lvl	71.0	0.0	5	-5.0
80	43	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	5	-5.0
90	44	1	0.0	69.1	66	69.1	10	Snd Lvl	69.1	0.0	5	-5.0
100	45	1	0.0	68.5	66	68.5	10	Snd Lvl	68.5	0.0	5	-5.0
110	46	1	0.0	67.6	66	67.6	10	Snd Lvl	67.6	0.0	5	-5.0
120	47	1	0.0	67.1	66	67.1	10	Snd Lvl	67.1	0.0	5	-5.0
130	48	1	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	5	-5.0
140	49	1	0.0	65.8	66	65.8	10	----	65.8	0.0	5	-5.0
150	50	1	0.0	65.4	66	65.4	10	----	65.4	0.0	5	-5.0
160	51	1	0.0	64.6	66	64.6	10	----	64.6	0.0	5	-5.0
170	52	1	0.0	64.5	66	64.5	10	----	64.5	0.0	5	-5.0
180	53	1	0.0	63.7	66	63.7	10	----	63.7	0.0	5	-5.0
190	54	1	0.0	63.4	66	63.4	10	----	63.4	0.0	5	-5.0
200	55	1	0.0	62.7	66	62.7	10	----	62.7	0.0	5	-5.0
210	56	1	0.0	62.4	66	62.4	10	----	62.4	0.0	5	-5.0
220	57	1	0.0	62.1	66	62.1	10	----	62.1	0.0	5	-5.0
230	58	1	0.0	61.6	66	61.6	10	----	61.6	0.0	5	-5.0
240	59	1	0.0	61.2	66	61.2	10	----	61.2	0.0	5	-5.0
250	60	1	0.0	61.0	66	61.0	10	----	61.0	0.0	5	-5.0
10	62	1	0.0	78.6	66	78.6	10	Snd Lvl	78.6	0.0	5	-5.0
20	63	1	0.0	77.0	66	77.0	10	Snd Lvl	77.0	0.0	5	-5.0
30	64	1	0.0	75.8	66	75.8	10	Snd Lvl	75.8	0.0	5	-5.0
40	65	1	0.0	74.6	66	74.6	10	Snd Lvl	74.6	0.0	5	-5.0
50	66	1	0.0	73.3	66	73.3	10	Snd Lvl	73.3	0.0	5	-5.0
60	67	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	5	-5.0
70	68	1	0.0	70.7	66	70.7	10	Snd Lvl	70.7	0.0	5	-5.0
80	69	1	0.0	69.7	66	69.7	10	Snd Lvl	69.7	0.0	5	-5.0
90	70	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	5	-5.0
100	71	1	0.0	68.1	66	68.1	10	Snd Lvl	68.1	0.0	5	-5.0
110	72	1	0.0	67.4	66	67.4	10	Snd Lvl	67.4	0.0	5	-5.0
120	73	1	0.0	66.7	66	66.7	10	Snd Lvl	66.7	0.0	5	-5.0
130	74	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	5	-5.0
140	75	1	0.0	65.6	66	65.6	10	----	65.6	0.0	5	-5.0

150	76	1	0.0	65.1	66	65.1	10	----	65.1	0.0	5	-5.0
160	77	1	0.0	64.6	66	64.6	10	----	64.6	0.0	5	-5.0
170	78	1	0.0	64.2	66	64.2	10	----	64.2	0.0	5	-5.0
180	79	1	0.0	63.8	66	63.8	10	----	63.8	0.0	5	-5.0
190	80	1	0.0	63.3	66	63.3	10	----	63.3	0.0	5	-5.0
200	81	1	0.0	62.9	66	62.9	10	----	62.9	0.0	5	-5.0
210	82	1	0.0	62.6	66	62.6	10	----	62.6	0.0	5	-5.0
220	83	1	0.0	62.2	66	62.2	10	----	62.2	0.0	5	-5.0
230	84	1	0.0	61.8	66	61.8	10	----	61.8	0.0	5	-5.0
240	85	1	0.0	61.6	66	61.6	10	----	61.6	0.0	5	-5.0
250	86	1	0.0	61.2	66	61.2	10	----	61.2	0.0	5	-5.0
10	87	1	0.0	78.6	66	78.6	10	Snd Lvl	78.6	0.0	5	-5.0
20	88	1	0.0	77.1	66	77.1	10	Snd Lvl	77.1	0.0	5	-5.0
30	89	1	0.0	75.8	66	75.8	10	Snd Lvl	75.8	0.0	5	-5.0
40	90	1	0.0	74.6	66	74.6	10	Snd Lvl	74.6	0.0	5	-5.0
50	91	1	0.0	73.3	66	73.3	10	Snd Lvl	73.3	0.0	5	-5.0
60	92	1	0.0	72.0	66	72.0	10	Snd Lvl	72.0	0.0	5	-5.0
70	93	1	0.0	70.9	66	70.9	10	Snd Lvl	70.9	0.0	5	-5.0
80	94	1	0.0	69.9	66	69.9	10	Snd Lvl	69.9	0.0	5	-5.0
90	95	1	0.0	69.0	66	69.0	10	Snd Lvl	69.0	0.0	5	-5.0
100	96	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	5	-5.0
110	97	1	0.0	67.6	66	67.6	10	Snd Lvl	67.6	0.0	5	-5.0
120	98	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	5	-5.0
130	99	1	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	5	-5.0
140	100	1	0.0	65.9	66	65.9	10	----	65.9	0.0	5	-5.0
150	101	1	0.0	65.3	66	65.3	10	----	65.3	0.0	5	-5.0
160	102	1	0.0	64.9	66	64.9	10	----	64.9	0.0	5	-5.0
170	103	1	0.0	64.4	66	64.4	10	----	64.4	0.0	5	-5.0
180	104	1	0.0	64.0	66	64.0	10	----	64.0	0.0	5	-5.0
190	105	1	0.0	63.6	66	63.6	10	----	63.6	0.0	5	-5.0
200	106	1	0.0	63.2	66	63.2	10	----	63.2	0.0	5	-5.0
210	107	1	0.0	62.8	66	62.8	10	----	62.8	0.0	5	-5.0
220	108	1	0.0	62.4	66	62.4	10	----	62.4	0.0	5	-5.0
230	109	1	0.0	62.1	66	62.1	10	----	62.1	0.0	5	-5.0
240	110	1	0.0	61.7	66	61.7	10	----	61.7	0.0	5	-5.0
250	111	1	0.0	61.4	66	61.4	10	----	61.4	0.0	5	-5.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	100	0.0	0.0	0.0

All Impacted	53	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0