

APPENDIX J-2

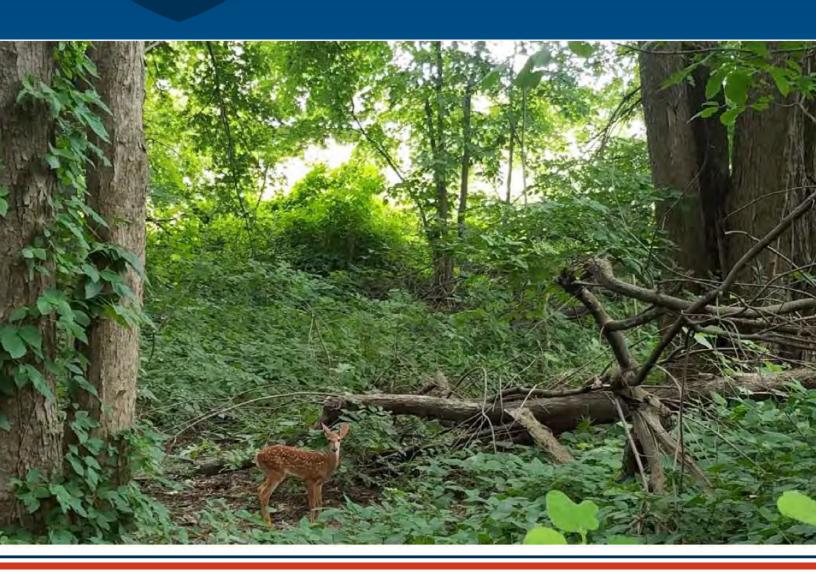
Waters of the U.S. Report (2019)

Clarification Note: This document was completed before the development of Central Alternative 1B Modified (Selected); therefore, the alternative is not included in the document. Applicable information regarding Central Alternative 1B Modified (Selected) is provided in Appendix J-3 Waters of the U.S. Report Addendum and the



WATERS OF THE U.S. TECHNICAL REPORT

I-69 OHIO RIVER CROSSING PROJECT Evansville, IN and Henderson, KY











Waters of the U.S. Technical Report

I-69 Ohio River Crossing Project Evansville, IN and Henderson, KY

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CHAPTER 1 – INTRODUCTION

1.1 INTRODUCTION AND DATES OF WATERS FIELD INVESTIGATION

An initial Waters of the U.S. (WOTUS) Technical Report, which was presented as Appendix J-1 to the published December 12, 2018 I-69 Ohio River Crossing (ORX) Draft Environmental Impact Statement (DEIS), was completed in the spring of 2018. The 2018 WOTUS Report involved surveying the entire I-69 project area including the three build alternatives presented in the I 69 DEIS. Broad corridors for each of the alternatives were studied along with some areas that were ultimately eliminated from consideration in the DEIS. The preferred alternatives identified in the DEIS were Central Alternatives 1A and 1B. Since the primary difference between Central Alternatives 1A and 1B involves tolling differences and since the physical footprint will be the same, Central Alternatives 1A and 1B will hereafter be referred to as the Central Alternative.

This 2019 WOTUS report should be considered a more detailed supplement to the data provided in the 2018 WOTUS for the Central Alternative. The detailed field surveys for this report were conducted on August 1-3, August 16-17, September 20-21, October 1-2, 2018, April 23-24, 2019, and May 16-17, 2019 for the Central Alternative. There was a substantial Ohio River flood event in February 2018, and its effects were apparent throughout the summer. One additional wetland was identified for the Central Alternative during this survey, and a few minor delineated boundary changes were made during the 2018 field surveys.

Since all field surveys for potential WOTUS were completed in 2017, 2018, and 2019 the United States Environmental Protection Agency (USEPA) and the United States Army Corps of Engineers (USACE) have issued a new proposed rule defining the scope of waters federally regulated under the Clean Water Act (CWA). This proposed rule was published in the Federal Register (FR) (Federal Register Vol. 84, No. 31 February 14, 2019). According to the FR summary:

"This proposal is the second step in a comprehensive, two-step process intended to review and revise the definition of "waters of the United States" consistent with the Executive Order signed on February 28, 2017, "Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States' Rule." This proposed rule is intended to increase CWA program predictability and consistency by increasing clarity as to the scope of "waters of the United States" federally regulated under the Act. This proposed definition revision is also intended to clearly implement the overall objective of the CWA to restore and maintain the quality of the nation's waters while respecting State and tribal authority over their own land and water resources."

Considering the proposed rule, there may be implications to jurisdictional authority over some of the WOTUS identified in this report between the USACE and the States, Indiana and Kentucky. Discussions related to jurisdiction in this WOTUS predate the proposed rule, and it is understood that jurisdictional determinations (JD) by the USACE may change.

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PROJECT LOCATION

Evansville South Quadrangle Indiana-Kentucky 7.5-Minute Series

Henderson Quadrangle Kentucky-Indiana 7.5-Minute Series

Sections 3, 4, 10, and 15 of Township 7 South, Range 10 West

Vanderburgh County, Indiana

Henderson County, Kentucky

1.2 PROJECT DESCRIPTION AND PREFERRED ALTERNATIVE

The Federal Highway Administration (FHWA), the Indiana Department of Transportation (INDOT), and the Kentucky Transportation Cabinet (KYTC) issued a revised Notice of Intent (NOI) in the Federal Register on February 13, 2017 for the preparation of an Environmental Impact Statement (EIS) for the I-69 ORX project in the Evansville, IN and Henderson, KY area, which is part of the National I-69 Corridor that extends between Mexico and Canada. An NOI was previously issued for the project on May 10, 2001. Under that NOI, a DEIS was completed in 2004, but the project was subsequently suspended in 2005.

The proposed action includes the development of an interstate highway across the Ohio River that would connect the southern terminus of I-69 in Indiana with the northern terminus of I-69 in Kentucky. Currently, I-69 does not cross the Ohio River, and the only cross-river access between Evansville and Henderson is via US 41, which is classified as a principal arterial and does not meet current interstate design standards.

The project area for the I-69 ORX DEIS extends from I-69 (formerly I-164) in Indiana on the south side of Evansville (i.e., northern terminus) across the Ohio River to I-69 (formerly Edward T. Breathitt Pennyrile Parkway) at the KY 425 interchange southeast of Henderson, KY (i.e., southern terminus). The section of Edward T. Breathitt Pennyrile Parkway between KY 351 and KY 425 that was not re-designated as I-69 was recently re-designated as US 41. The western limit of the project area is parallel to and extends a maximum of about 2,000 feet west of US 41. The eastern limit of the project area extends about 1,500 feet to 3.4 miles east of US 41.

Central Alternatives 1A and 1B have been identified as the Preferred Alternatives. Central Alternative 1A would include tolls on the US 41 and I-69 bridges. Central Alternative 1B would only include tolls on the I-69 bridge. Otherwise Central Alternatives 1A and 1B are the same. Central Alternatives 1A and 1B (Preferred) would include a new bridge approximately 7,600 feet long over the Ohio River and associated floodway, located approximately 1.5 miles east of the existing US 41 bridges. The new Ohio River bridge would include four lanes and would be wide enough to carry six lanes in the future, if needed, by restriping the lanes on the bridge. The approach roadways would be constructed four-lanes wide. The northbound US 41 bridge would be retained for vehicular traffic, and the southbound US 41 bridge would be removed. The northbound US 41 bridge, which has two lanes, would be converted from a one-way bridge to a



two-way bridge for local traffic. Other than transitions to the single two-lane US 41 Ohio River bridge, there would be no changes to US 41 through the commercial strip or north of the river past Ellis Park and the I-69/US 41/Veterans Memorial Parkway interchange.

The Central Alternative begins at existing I-69 in Indiana, approximately 1 mile east of the I-69/US 41/Veterans Memorial Parkway interchange. The Central Alternative would continue south across the Ohio River just west of a gas transmission line. It would remain just west of the gas transmission line near Green River State Forest, then turn southwest where an overpass would be provided to carry the access road for the gas transmission line over the alternative. The Central Alternative would continue south to US 60 where an interchange would be provided. As part of the US 60 interchange, US 60 would be relocated approximately 400 feet south, which would require a new bridge over the CSX Railroad east of the interchange. The Central Alternative would continue southwest and connect with US 41 via an interchange approximately 1 mile south of the US 60 interchange. From the Central Alternative's interchange with US 41 to KY 425, the existing four-lane US 41 would be modernized to meet interstate standards through improvements to ramps and merge areas. The Central Alternative would utilize rural design standards and include a depressed grass median outside of the bridge limits. The total length of the Central Alternative is 11.2 miles, which includes 2.8 miles of existing US 41.



CHAPTER 2 – METHODOLOGY

2.1 DESKTOP REVIEW

An initial *WOTUS Technical Report*, which was presented as Appendix J-1 to the published December 12, 2018 I-69 ORX DEIS, was completed. The 2018 WOTUS Report involved surveying the entire I-69 project area including the three build alternatives presented in the I 69 DEIS. This 2019 WOTUS report should be considered a more detailed supplement to the data provided in the 2018 for the preferred alternative (Central Alternative). The initial WOTUS Technical Report and WOTUS data should be considered when reviewing this report.

Prior to field investigations, a desktop analysis of available information was reviewed, and potential wetland areas were identified using published data, including: National Wetlands Inventory (NWI) maps; LiDAR maps; United States Geological Survey (USGS) 7.5-minute series topographic maps; Natural Resources Conservation Service (NRCS) soil mapping for Vanderburgh County, IN and Henderson County, KY; and previous studies for the project area, specifically the 2004 I-69 Henderson, Kentucky to Evansville, Indiana Draft Environmental Impact Statement (INDOT and KYTC 2004) and the 2005 Preliminary Wetland Delineation Report - I-69 Henderson to Evansville in Vanderburgh and Warrick Counties, Indiana and Henderson County, Kentucky (BLA 2005).

NATIONAL WETLAND INVENTORY (NWI) AND FLOODPLAIN MAPPING

The NWI mapping was used as an initial screen to determine locations of potential water resources within the project area. NWI wetlands are illustrated in the detailed mapping provided in Appendix B. Wetlands on NWI maps are classified in accordance with Cowardin et al. (1979). Non-wetlands are classified as upland on the wetland determination data forms.

LIGHT DETECTION AND RANGING (LIDAR) MAPPING

The Digital Elevation Model (DEM) hill shade map was created by merging the Indiana DEM with the Kentucky DEM. Both DEMs are 5-feet cell size, and they are derived from their state's LiDAR point cloud. Hill shade was then added to more clearly show elevation changes. This data can be used to more clearly determine stream beds and wetland features.

UNITED STATES GEOLOGICAL SURVEY (USGS) MAPPING

During review of USGS 7.5-minute series topo mapping (Appendix B), 9 intermittent (dashed blue line) streams were noted within the study area, and 3 perennial streams (Eagle Creek, Ohio River, and North Fork Canoe Creek, unnamed tributary to North Fork Canoe Creek) were noted within the study area. Seven intermittent streams were reclassified as ephemeral during the field investigation.

NATURAL RESOURCES CONSERVATION SERVICE (NRCS) SOIL MAPPING

According to the Soil Survey Geographic (SSGD) Database, the study area is mostly comprised of non-hydric soil, which represents 39.40% of the study area. The remainder of the study area is partially hydric (4.84%), predominantly hydric (32.18%), and predominantly non-hydric



(23.57%). One mapped soil unit comprises 29.77% of the study area: Dekoven silt loam. All mapped soil units within the study area are summarized in Table 1 (Appendix A). NRCS soil map units are illustrated in the detailed mapping provided in Appendix B.

2.2 WATERSHEDS

The I-69 ORX Project is located within the following hydrologic unit code (HUC) 12-digit watersheds: East Creek-Ohio River (051402020401) and North Fork Canoe Creek-Canoe Creek (051402020402).

2.3 FIELD RECONNAISSANCE

Field surveys were conducted in 2017 during the growing season for the entire I-69 ORX project area and the alternatives presented in the I-69 ORX DEIS, including the preferred alternative (Central Alternative). Beginning in August 2018 and concluding in early October 2018, detailed field surveys were conducted to determine the presence of streams, wetlands, and other water resources within the study area. The 2018-2019 surveys were completed to obtain additional information for the WOTUS features that were identified in 2017. Minor changes in the feature boundaries were made as needed, and additional detailed data was collected, especially for larger wetlands, adjacent uplands, and ephemeral streams.

The I-69 ORX wetlands, streams, and other waters were evaluated in the field and mapped with a handheld Global Positioning System (GPS) unit (Trimble Geo7x). Data were recorded on applicable datasheets, and features were photographed. The GPS data was converted to ArcGIS shapefiles, data was attributed, and entered into the project GIS database.

Wetlands were delineated using guidance set forth in the 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987). Per guidance from USACE, for areas north of the Ohio River and north of Waterworks Road (Indiana), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) was used (USACE 2010). For areas north of the Ohio River but south of Waterworks Road and south of the Ohio River (Kentucky), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0) was used (USACE 2012).

All locations within the study area were reviewed for wetlands. Data points were taken in locations that exhibited one (or more) wetland indicators based on visual observations and for upland locations adjacent to the wetlands. If all indicators were missing, no formal data was collected. The wetland data sheets apply to the representative data points for each wetland area surveyed. Additional general observations of wetland conditions were also made in the comments sections of the data sheets, where applicable, to fully describe the overall condition in the wetland. For example, if additional hydrology indicators, such as water marks on trees or standing water in depressions, were observed in the wetland but not at the data point, these strong hydrology indicators were included in the comment section. Another example would be the presence of an obligate species, such as common buttonbush (*Cephalanthus occidentalis*), that was identified outside of the data point.



For each wetland, a functional value assessment worksheet was used to evaluate the functions and values of each wetland. Wetland size, past disturbance, habitat diversity, and proximity to other WOTUS affects the ability of the wetland to provide these functions and are reflected in their subsequent scores. This assessment was a rapid in-the-field-check of wetland functions and values based on the best professional judgment of the wetland scientists conducting the surveys.

The upstream drainage area for each stream was calculated using StreamStats Version 4.3 (USGS 2019), if available. Streams with a drainage area greater than one square mile were evaluated in the field using the Ohio EPA Qualitative Habitat Evaluation Index (QHEI) (Ohio EPA 2006). Streams with a drainage area less than one square mile were evaluated using the Ohio EPA Headwater Habitat Evaluation Index (HHEI) (Ohio EPA 2012). Streams with standing or flowing water were evaluated using the Habitat Assessment Field Data Sheet – Low Gradient Streams in accordance with the *Rapid Bioassessment Protocol for Use in Streams and Wadeable Rivers* (Barbour, M.T. et al 1999). All streams were photographed and mapped with a GPS unit.



CHAPTER 3 – FINDINGS

3.1 WETLANDS

Field investigation resulted in the identification of thirteen (13), likely jurisdictional, wetlands within the study area, totally 27.09 acres. These features are summarized in Table 2 (Appendix A). Detailed mapping of these features is provided in Appendix B. Project area photographs are presented in Appendix C. The wetland determination data forms and accompanying upland data forms, as well as, wetland functions and values datasheets are presented in Appendix D.

3.1.1 WETLANDS 1-4

The wetlands on the north end of the project area all lie within the historical Ohio River floodplain and drain through Eagle Creek to the Ohio River. With the exception of Wetland 1, which is drained to the north of I-69 and then pumped south into a tributary to Eagle Creek, they all receive direct backwater flooding from the Ohio River, occasional overflow flooding from the Ohio River, and occasional overflow flooding from Eagle Creek, thereby creating connectivity to tributaries to traditional navigable waters (i.e., the Ohio River) via Eagle Creek. All of these wetlands are likely remnants of a much larger Ohio River floodplain bottomland hardwood wetland system. Alteration of drainage, clearing for agriculture, filling for landfills and roadways including existing I-69, and excavation from borrow pits in the floodplain are some of the long-term impacts to this wetland system. The extensive network of agricultural drainage ditches and possible field tiles south of Wetland 4 extending all the way to the Ohio River have altered the hydrology to the extent that the entire area lacks sufficient hydrology for wetlands to exist. These wetlands generally have low to moderate functional values primarily due to their small size, extensive habitat alterations, and ongoing noise and disturbance from I-69.

WETLAND 1

The area associated with Data Point 1 IN (DP-1-IN) was evaluated, because it exhibited hydrophytic vegetation. The herbaceous stratum was dominated by *Leersia oryzoides* (rice cut grass, OBL, 90%). This point met the hydrophytic vegetation criterion, because it passed the rapid test, dominance test, and prevalence test. The soils at this data point appear to have been disturbed during construction of I-69. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. One primary indicator of hydrology (Water-Stained Leaves [B9]) and three secondary indicators of hydrology (Saturation Visible on Aerial Imagery [C9], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-1-IN, this area was identified at Wetland 1.

The area associated with Data Point 1 OUT (DP-1-OUT) was infrequently mowed/maintained. However, this likely controls woody succession. DP-1-OUT was dominated by *Cynodon dactylon* (Bermuda grass, FACU, 90%). This point did not meet the hydrophytic vegetation criterion. No hydric soil or hydrology indicators were observed. Since none of three wetland criteria were met at DP-1-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 1, which was determined based on changes in vegetation and hydrology.



Wetland 1 is a small palustrine emergent wetland (PEM) located between I-69 and the I-69 exit ramp to northbound US 41. This wetland was not identified during the 2017 field surveys. During rain events, Wetland 1 likely receives runoff from I-69. During dry conditions, it appears that this area is mowed as part of the interchange maintenance activities. This area drains to the north through a culvert under the existing exit ramp. Approximately 0.09 acre of Wetland 1 lies within the study area. Wetland 1 has poor to low functional values primarily due to its small size, extensive habitat alteration, and ongoing noise and disturbance from I-69 traffic. Wetland 1 is adjacent to UNT-1 to Eagle Creek, a likely water of the U.S. Based on this connection, Wetland 1 is a likely water of the U.S.

WETLAND 2

The area associated with Data Point 2 IN (DP-2-IN) was evaluated, because it exhibited hydrophytic vegetation. The tree stratum was dominated by *Salix interior* (sandbar willow, FACW, 75%). The sapling/shrub stratum was dominated by *Cephalanthus occidentalis* (common buttonbush, OBL, 30%) and *Acer rubrum* (red maple, FAC, 20%). The herbaceous stratum was dominated by *Laportea canadensis* (Canadian wood-nettle, FACW, 5%) and *Acer rubrum* (5%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Below Dark Surface (A11) and Depleted Matrix (F3) indicators. Five primary indicators of hydrology (High Water Table [A2], Saturation [A3], Sediment Deposits [B2], Drift Deposits [B3], and Water-Stained Leaves [B9]) and three secondary indicators of hydrology (Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-2-IN, this area was identified as Wetland 2.

The Data Point 2 OUT (DP-2-OUT) was located between Wetland 2 and Eagle Creek. This area is likely infrequently maintained. The data point was dominated by *Acer rubrum* (red maple, FAC, 10%) in the tree stratum. The sapling/shrub stratum was dominated by *Acer rubrum* (10%). The herbaceous stratum was dominated by *Toxicodendron radicans* (eastern poison ivy, FAC, 30%), *Sorghum halepense* (Johnson grass, FACU, 20%), and *Schedonorus arundinacea* (tall fescue, FACU, 20%). This point met the hydrophytic vegetation criterion, because it passed the dominance test. No hydric soil or hydrology indicators were observed. Since only one of the three wetland criteria were met at DP-2-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 2, which was determined by the changes in hydrology.

Wetland 2 is a small bottomland hardwood forest swale/ditch located south of I-69 and north of Eagle Creek. Approximately 0.44 acre of Wetland 2 lies within the study area. Wetland 2 has poor to low functional values primarily due to its small size, extensive habitat alteration, and ongoing noise and disturbance from I-69 traffic.

During rain events, Wetland 2 likely receives runoff from I-69 and its embankments, from adjacent uplands (fill material to the south and west), from a culvert on the west end of the wetland that extends under I-69, and from infrequent overflow flooding from Eagle Creek through an ephemeral channel (UNT-8 to Eagle Creek) that connects to Eagle Creek. The wetland drains through a culvert connecting to UNT-7 to Eagle Creek, a perennial stream that is likely a



water of the U.S. Wetland 2 is also adjacent to UNT-8 to Eagle Creek, a likely water of the U.S. Based on this connection, Wetland 2 is a likely water of the U.S.

WETLAND 3

The area associated with Data Point 3-1 IN (DP-3-1-IN was dominated by *Acer rubrum* (red maple, FAC, 85%) in the tree stratum. The herbaceous stratum was dominated by *Fraxinus pennsylvanica* (green ash, FACW, 5%), *Campsis radicans* (trumpet-creeper, FACU, 2%), and *Laportea canadensis* (Canadian wood-nettle, FACW, 2%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Below Dark Surface (A11) and Depleted Matrix (F3) indicators. Four primary indicators of hydrology (High Water Table [A2], Saturation [A3], Drift Deposits [B3], and Water-Stained Leaves [B9]) and one secondary indicator of hydrology (FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-3-1-IN, this area was identified as Wetland 3.

Data Point 3-1 OUT (DP-3-1-OUT) was dominated by *Acer saccharinum* (silver maple, FACW, 30%) in the tree stratum. This data point was dominated by *Toxicodendron radicans* (eastern poison ivy, FAC, 60%) and *Convolvulus arvensis* (field bindweed, NI, 30%) in the herbaceous stratum. DP-3-1-OUT met the hydric vegetation criterion, because it passed the dominance test and the prevalence test. No hydric soil indicators were observed. One secondary indicator of hydrology (FAC-Neutral Test [D5]) was observed. Since only one of the three wetland criteria were met at DP-3-1-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 3, which was determined based on changes in hydrology.

Data Point 3-2 IN (DP-3-2-IN) was dominated by *Acer negundo* (boxelder, FAC, 70%) in the tree stratum. No vegetation was observed within the herbaceous stratum. This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix [F3] indicator. Two primary indicators of hydrology (Drift Deposits [B3] and Water-Stained Leaves [B9]) and two secondary indicators of hydrology (Surface Soil Cracks [B6] and Crayfish Burrows [C8]) were observed. Since all three wetland criteria were met at DP-3-2-IN, this area was identified at Wetland 3.

Data Point 3-2 OUT (DP-3-2-OUT) was dominated by *Populus deltoides* (eastern cottonwood, FAC, 70%) in the tree stratum. The sapling/shrub stratum was dominated by *Robinia pseudoacacia* (black locust, FACU, 40%) and *Maclura pomifera* (osage-orange, FACU, 30%). The herbaceous stratum was dominated by *Toxicodendron radicans* (eastern poison ivy, FAC, 5%). This point did not meet the hydrophytic vegetation criterion. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix [F3] indicator. No hydrology indicators were observed. Since only one of the three wetland criteria were met at DP-3-2-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 3, which was determined based on changes in vegetation and hydrology.

Data Point 3-3 IN (DP-3-3-IN) was dominated by *Acer rubrum* (red maple, FAC, 70%) and *Salix nigra* (black willow, OBL, 30%) in the tree stratum. The sapling/shrub stratum was dominated by



Fraxinus pennsylvanica (green ash, FACW, 5%) and *Ulmus americana* (American elm, FACW, 5%). The herbaceous stratum was dominated by *Campsis radicans* (trumpet-creeper, FACU, 10%), *Toxicodendron radicans* (eastern poison ivy, FAC, 5%), *Fraxinus pennsylvanica* (5%), and *Laportea canadensis* (Canadian wood-nettle, FACW, 5%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix [F3] indicator. Two primary indicators of hydrology (Drift Deposits [B3] and Water-Stained Leaves [B9]) and two secondary indicators of hydrology (Surface Soil Cracks [B6] and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-3-3-IN, this area was identified at Wetland 3.

Data Point 3-3 OUT (DP-3-3-OUT) was dominated by *Acer rubrum* (red maple, FAC, 90%) in the tree stratum. The herbaceous stratum was dominated by *Laportea canadensis* (Canadian woodnettle, FACW, 40%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. No hydric soil indicators were observed. One secondary indicator of hydrology (FAC-Neutral Test [D5]) was observed. Since only one of the three wetland criteria were met at DP-3-3-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 3, which was determined based on the changes in hydrology.

Data Point 3-4 IN (DP-3-4-IN) was dominated by *Fraxinus pennsylvanica* (green ash, FACW, 80%) in the tree stratum. The herbaceous stratum was dominated by *Toxicodendron radicans* (eastern poison ivy, FAC, 20%). This point met the hydrophytic vegetation criterion,, because it passed the dominance test and the prevalence test. The soil profile met the hydric soil criterion,, because it exhibited the Depleted Matrix [F3] indicator. Three primary indicators of hydrology (High Water Table [A2], Sediment Deposits [B2], Drift Deposits [B3]) and two secondary indicators of hydrology (Drainage Patterns [B10] and Crayfish Burrows [C8]) were observed. Since all three wetland criteria were met at DP-3-4-IN, this area was identified at Wetland 3.

Data Point 3-4 OUT (DP-3-4-OUT) was dominated by *Maclura pomifera* (Osage-orange, FACU, 70%) and *Populus deltoides* (cottonwood, FAC, 30%) in the tree stratum. The sapling/shrub stratum was dominated by *Acer negundo* (boxelder, FAC, 15%). The herbaceous stratum was dominated by *Acer negundo* (boxelder, FAC, 4%). This point met the hydrophytic vegetation criterion. The soil profile did not meet the hydric soil criterion. No hydrology indicators were observed. Since only one of the three wetland criteria were met at DP-3-2-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 3, which was determined based on changes in vegetation and hydrology.

Wetland 3 is a linear bottomland hardwood forest located parallel to and south of I-69 and north of Eagle Creek. Approximately 8.43 acres of Wetland 3 lie within the study area, and it extends offsite. Wetland 3 has low to moderate functional values primarily due to extensive habitat alteration and ongoing noise/disturbance from I-69 traffic. It does have moderate to high functional values for sediment removal and erosion control/stabilization.

Wetland 3 is located in the Eagle Creek and Ohio River floodplains. During stormwater events, the wetland likely receives runoff from I-69, overflow flooding from Eagle Creek, and infrequent



backwater flooding from the Ohio River. Wetland 3 is adjacent to Eagle Creek, a perennial stream that is likely water of the U.S. Based on this connection, Wetland 3 is a likely water of the U.S.

WETLAND 4A

Data Point 4A-1 IN (DP-4A-1-IN) was located near a borrow pit (OW-1) west of a raised levee. The vegetation was dominated by *Acer rubrum* (red maple, FAC, 80%) and *Fraxinus pennsylvanica* (green ash, FACW, 30%). The sapling/shrub stratum was dominated by *Acer rubrum* (15%). The herbaceous stratum was dominated by *Acer rubrum* (FAC, 5%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix [F3] indicator. Five primary indicators of hydrology (Water Marks [B1], Sediment Deposits [B2], Drift Deposits [B3], Algal Mat or Crust [B4], and Water-Stained Leaves [B9]) and three secondary indicators of hydrology (Surface Soil Cracks [B6], Crayfish Burrows [C8], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-4A-1-IN, this area was identified at Wetland 4A.

Data Point 4A-1 OUT (DP-4A-1-OUT) was located on a ridge between a fringe wetland of a borrow pit (OW-1) and a bottomland hardwood forest. The elevated ridge was likely the result of spoil material being placed from the adjacent borrow pit. The dominant vegetation in the tree stratum was *Acer saccharinum* (silver maple, FACW, 60%) and *Ulmus americana* (American elm, FACW, 30%). The herbaceous stratum was dominated by *Laportea canadensis* (Canadian woodnettle, FACW, 5%). This point met the hydrophytic vegetation criterion, because it passed the rapid test, dominance test, and prevalence test. No hydric soil indicators were observed. One secondary indicator of hydrology (FAC-Neutral Test [D5]) was observed. Since only one of the three wetland criteria were met at DP-4A-1-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 4A, which was determined based on the changes in hydrology.

Wetland 4A is a bottomland hardwood wetland. Borrow pits and spoil from stream/ditch maintenance likely affect this wetland's hydrology. Approximately 2.07 acres of Wetland 4A are within the study area. Wetland 4A extends offsite. This wetland has low to moderate functional values primarily due to its small size and extensive habitat alteration.

Wetland 4A is parallel to Eagle Creek. The area primarily receives overflow flooding from Eagle Creek and backwater flooding the Ohio River. Because of its connectivity to these two waters of the U.S., Wetland 4A is a likely water of the U.S.

WETLAND 4B

The area associated with Data Point 4B-2 IN (DP-4B-2-IN) was evaluated, because it exhibited hydrophytic vegetation. The herbaceous stratum was dominated by *Scirpus atrovirens* (dark-green bulrush, OBL, 60%). This point met the hydrophytic vegetation criterion, because it passed the rapid test, dominance test, and prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. Five primary indicators of hydrology (Water Marks [B1], Sediment Deposits [B2], Drift Deposits [B3], Algal Mat or Crust [B4], and Water-Stained Leaves [B9]) and three secondary indicators of hydrology (Surface Soil Cracks [B6], Crayfish Burrows [C8], and FAC-Neutral Test [D5]) were observed. Since all three wetland



criteria were met at DP-4-2-IN, this area was identified as Wetland 4B. Some purple loosestrife (*Lythrum salicaria*) (OBL) was noted just south of this data point

Data Point 4B-2 OUT (DP-4B-2-OUT) was located at the top of the bank of a borrow pit (OW-1) near the edge of a corn field. This data point was dominated by *Quercus palustris* (pin oak, FACW, 30%) and *Ulmus americana* (American elm, FACW, 15%) in the tree stratum. The sapling/shrub stratum was dominated by *Ulmus americana* (45%). The herbaceous stratum was dominated by *Ambrosia trifida* (giant ragweed, FAC, 40%) and *Secale cereale* (rye, NI, 30%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence index. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. One secondary indicator of hydrology (FAC-Neutral Test [D5]) was observed. Since only two of the three wetland criteria were met at DP-4B-2-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 4B, which was determined based on changes in hydrology.

Data Point 4B-3 OUT (DP-4B-3-OUT) was located at the top of the bank of a borrow pit (OW-1) between. OW-1 and Eagle Creek. This data point was dominated by *Acer saccharinum* (silver maple, FACW, 60%) and *Acer negundo* (boxelder, FAC, 20%) in the tree stratum. The herbaceous stratum was dominated by *Toxicodendron radicans* (eastern poison ivy, FAC, 40%) and *Campsis radicans* (trumpet creeper, FACU, 30%). This point met the hydrophytic vegetation criterion,, because it passed the dominance test and the prevalence index. The soil profile did not meet the hydric soil criterion. One primary indicator of hydrology (Sediment Deposits [B2]) was observed. The sediment deposits were from recent Ohio River flooding. Since only two of the three wetland criteria were met at DP-4B-3-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 4B, which was determined based on changes in hydrology and soils.

Wetland 4B is an emergent fringe wetland located on the southern border of a borrow pit (OW-1). Approximately 0.32 acre of Wetland 4B lies within the study area. This wetland extends offsite around the borrow pit. Wetland 4B has low functional values primarily due to its small size and extensive habitat alteration from the borrow pit excavation. Wetland 4B is adjacent to Eagle Creek, a perennial stream that is likely water of the U.S. Based on this connection, Wetland 4B is a likely water of the U.S.

3.1.2 WETLANDS 5-6

The wetlands south of the Ohio River within the Ohio River floodplain have not been cleared, leveled, and altered hydrologically as drastically as the wetlands north of the river. A large remnant wetland complex remains that is predominantly bottomland forest but also includes emergent wetlands that can be farmed during dry years. The wetland boundaries are variable, and I-69 would cross three portions of this wetland system. The entire area receives direct backwater and overflow flooding from the Ohio River, thereby creating connectivity to traditional navigable waters (i.e., the Ohio River). These wetlands also receive stormwater flow from the upland watershed to the south. All of these wetlands are likely remnants of a much larger Ohio River floodplain bottomland hardwood and scrub shrub wetland system. Although not impacted by the I-69 project, portions of this wetland to the east include bald cypress



(*Taxodium distichum*) and common buttonbush (*Cephalanthus occidentalis*) swamps. Unlike the wetlands north of the Ohio River, the primary impact to historical wetlands in this area was for agricultural clearing with only minor improvements to the drainage, i.e., the extensive network of agricultural drainage ditches is absent. Rather, the agricultural drainage is primarily through natural sloughs and swales in the undulating floodplain. Wetland 5 is an example of the drainage through a farmed area. The higher terraces are farmed, and the low-lying areas that are too wet to farm drain the area. During dry years, some of the low-lying emergent wetlands are farmed, however these areas were not farmed in 2017 and 2018. These areas are maintained, either mowed or disked, to prevent woody succession. This wetland has moderate to high functional values primarily due to the size, the lack of disturbance, and the quality of the habitats present.

WETLAND 5

Wetland 5 is part of a much larger predominantly bottomland hardwood forest located in the Ohio River floodplain that is bisected by and parallel to a pipeline right-of-way, south of Green River #2 Road. Due to this connectivity to a water of the U.S, Wetland 5 is likely a water of the U.S. The PFO components are part of a linear forest swale that generally runs perpendicular (eastwest) through the study area, and it extends east and west of the study area. The land directly north of the wetland is farmed. This wetland system has PFO and PEM components and is hydrologically connected to Wetland 6 outside of the study area. The various components of this wetland system are discussed below. Overall, Wetland 5 has moderate functional values primarily due to extensive habitat alteration from adjacent agricultural activities. The wetland does have high functional values for wildlife, especially waterfowl and shorebirds, when seasonally flooded.

WETLAND 5A

Data Point 5A-1 IN (DP-5A-1-IN) was dominated by *Fraxinus pennsylvanica* (green ash, FACW, 40%) in the herbaceous stratum. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. Five secondary indicators of hydrology (Surface Soil Cracks [B6], Drainage Patterns [B10], Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-5A-1-IN, this area was identified as Wetland 5A.

Data Point 5A-2 IN (DP-5A-2-IN) was dominated by *Carex scoparia* (broom sedge, FACW, 40%) and *Polygonum hydropiperoides* (swamp smartweed, OBL, 30%) in the herbaceous stratum. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. Three primary hydrology indicators (Saturation [A3], Water Marks [B1], and Sediment Deposits [B2]) and two secondary indicators of hydrology (Drainage Patterns [B10] and Crayfish Burrows [C8]) were observed. Since all three wetland criteria were met at DP-5A-2-IN, this area was identified as an herbaceous component of Wetland 5A.

Data Point 5A-1 OUT (DP-5A-1-OUT) was adjacent to an agricultural field and a utility right-of-way. The area was recently tilled so natural vegetation was virtually absent with only a few individual plants remaining. This data point was dominated by *Sorghum halepense* (Johnson grass, FACU, 2%), *Amaranthus retroflexus* (red-root, FACU, 2%), and *Chamaecrista fasciculata* (partridge



pea, FACU, 2%) in the herbaceous stratum. This point did not meet hydrophytic vegetation criterion. No hydric soil indicators were observed. Two secondary indicators of hydrology (Surface Soil Cracks [B6] and Geomorphic Position [D2]) were observed. Since only one of the three wetland criteria were met at DP-5A-1-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 5A, which was determined based on changes in vegetation.

Wetland 5A represents a small portion of PEM habitat within Wetland 5 primarily within the pipeline ROW. The wetland extends both east and west outside of the study area. This area appears to remain saturated for long durations during the growing season. It receives infrequent overflow flooding from the Ohio River. Approximately 0.93 acre of Wetland 5A lies within the study area. Wetland 5A has moderate functional values primarily due to its small size, extensive habitat alteration from adjacent agricultural activities. The wetland does have high functional values for wildlife, especially waterfowl, when seasonally flooded.

Wetland 5A is in the Ohio River floodplain and adjacent to the Ohio River, a water of the U.S. Based on this connection, Wetland 5A is a likely water of the U.S.

WETLAND 5B

The area associated with Data Point 5B-1-IN (DP-5B-1-IN) was evaluated, because of terrain position and it exhibited hydrophytic vegetation. The tree stratum was dominated by *Acer rubrum* (red maple, FAC, 75%). The sapling/shrub stratum was dominated by *Cephalanthus occidentalis* (common buttonbush, OBL, 40%). The herbaceous stratum was dominated by *Impatiens capensis* (spotted touch-me-not, FACW, 15%) and *Fraxinus pennsylvanica* (green ash, FACW, 10%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Below Dark Surface (A11) and Depleted Matrix (F3) indicators. One primary indicator of hydrology (Water-Stained Leaves [B9]) and four secondary indicators of hydrology (Surface Soil Cracks [B6], Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-5B-1-IN, this area was identified as bottomland forest Wetland 5B.

Data Point 5B-1 OUT (DP-5B-1-OUT) was on a high, moderately well-drained, terrace. This location was dominated by *Acer rubrum* (red maple, FAC, 80%) in the tree stratum. The sapling/shrub stratum was dominated by *Ulmus americana* (American elm, FACW, 30%). The herbaceous stratum was dominated by *Toxicodendron radicans* (eastern poison ivy, FAC, 80%). The vine stratum was dominated by *Smilax glauca* (cat greenbrier, FACU, 5%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. No hydric soil indicators were observed. One secondary indicator of hydrology (Geomorphic Position [D2]) was observed. Since only one of the three wetland criteria was met at DP-5B-1-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 5B, which was determined based on changes in hydrology.

Wetland 5B represents a PFO portion of Wetland 5. It lies within a low forested swale which likely contains water during stormwater events and during Ohio River floods. The PFO



components are part of a linear forest swale that generally runs perpendicular (east-west) through the study area, and it extends east and west outside of the study area. Approximately 0.62 acre of Wetland 5B lies within the study area. Wetland 5B has moderate functional values primarily due to its small size, extensive habitat alteration from adjacent agricultural activities. The wetland does have high functional values for wildlife, especially waterfowl and shorebirds, when seasonally flooded.

Wetland 5B is in the Ohio River floodplain and is adjacent to the Ohio River, a water of the U.S. Based on this connection, Wetland 5B is a likely water of the U.S.

WETLAND 5C

Wetland 5C represents the edge of another PFO portion of Wetland 5 that was east of the pipeline ROW. Data Point 5C-1 IN (DP-5C-1-IN) was very similar to data point (DP-5A-1-IN). The overstory vegetation in this area was dominated by *Acer rubrum* (red maple, FAC, 60%), *Quercus palustris* (pin oak, FACW, 40%) and *Celtis laevigata* (sugarberry, FACW, 25%) in the tree stratum. *Fraxinus pennsylvanica* (green ash, FACW, 60%) dominated the shrub stratum. The herbaceous stratum was dominated by *Fraxinus pennsylvanica* (green ash, FACW, 20%) and *Parthenocissus quinquefolia* (Virginia creeper, FACU, 5%). The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. Three primary hydrology indicators (High Water Table [A2], Saturation [A3], and Water Marks [B1]) and two secondary indicators of hydrology (Drainage Patterns [B10] and Crayfish Burrows [C8]) were observed. Since all three wetland criteria were met at DP-5C-1-IN, this area was identified as a forested component of Wetland 5C. Approximately 0.07 acre of Wetland 5C lies within the study area. Wetland 5C has moderate functional values primarily due to its small size, extensive habitat alteration from adjacent agricultural activities. The wetland does have high functional values for wildlife, especially waterfowl, when seasonally flooded.

Wetland 5C is in the Ohio River floodplain, drains directly to the Ohio River, and is adjacent to the Ohio River, a water of the U.S. Based on this connection, Wetland 5C is a likely water of the U.S.

WETLAND 5D

The area associated with Data Point 5D-1 IN (DP-5D-1-IN) was evaluated, because it exhibited hydrophytic vegetation. The herbaceous stratum was dominated by *Eleocharis obtusa* (blunt spike rush, OBL, 80%) and *Echinochloa muricata* (rough barnyard grass, FACW, 30%). This point met the hydrophytic vegetation criterion, because it passed the rapid test, dominance test, and the prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. One primary indicator of hydrology (Algal Mat or Crust [B4]) and three secondary indicators of hydrology (Crayfish Burrows [C8], Geomorphic Position [D2], FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-5D-1-IN, this area was identified at Wetland 5D.

Data Point 5D-1 OUT (DP-5D-1-OUT) was located on a higher stream terrace that appeared to be moderately well drained. The area is likely infrequently flooded by the Ohio River. This location was dominated by *Zea mays* (corn, NI, 80%) in the herbaceous stratum. This point did not meet



the hydrophytic vegetation criterion. No hydric soil indicators were observed. One secondary indicator of hydrology (Geomorphic Position [D2]) was observed. Since none of three wetland criteria were met at DP-5D-1-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 5D, which was determined based on changes in vegetation and hydrology.

Data Point 5D-2 IN (DP-5D-2-IN) was evaluated, because it exhibited hydrophytic vegetation. The herbaceous stratum was dominated by *Echinochloa muricata* (rough barnyard grass, FACW, 80%). This point met the hydrophytic vegetation criterion, because it passed the rapid test, dominance test, and the prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. One primary indicator of hydrology (Algal Mat or Crust [B4]) and five secondary indicators of hydrology (Surface Soil Cracks [B6], Drainage Patterns [B10], Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-5D-2-IN, this area was identified as Wetland 5D.

Data Point 5D-2 OUT (DP-5D-2-OUT) was positioned on a moderately well-drained ridge between two swales that are part of Wetland 5. This location had virtually no vegetation with only *Brassica rapa* (field mustard, NI, 1%) present in the herbaceous stratum. This point did not meet the hydrophytic vegetation criterion. No hydric soil indicators were observed. One secondary indicators of hydrology (Surface Soil Cracks [B6]) was observed. Since none of the three wetland criteria were met at DP-5D-2-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 5D, which was determined based on changes in elevation and hydrology.

Data Point 5D-3 OUT (DP-5D-3-OUT) was positioned on a moderately well-drained terrace. This location was dominated by *Zea mays* (corn, NI, 100%) in the herbaceous stratum. This point did not meet the hydrophytic vegetation criterion. No hydric soil indicators were observed. Two secondary indicators of hydrology (Surface Soil Cracks [B6] and Geomorphic Position [D2]) were observed. Since just one of the three wetland criteria were met at DP-5D-3-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 5D, which was determined based on changes in hydrology.

Wetland 5D represents a PEM portion of Wetland 5 where two emergent swales of the same wetland cross. These swales generally run perpendicular (northeast-southwest) through the study area, and extend east and west outside of the study area. This swale remained wet following the 2018 Ohio River flood. Near the wetland boundaries, portions of this wetland are farmed suggesting that portions of the wetland may be farmed during dry years. Approximately 1.40 acres of Wetland 5D lies within the study area. Wetland 5D has moderate functional values primarily due to extensive habitat alteration from adjacent agricultural activities. The wetland does have high functional values for wildlife, especially waterfowl and shorebirds, when seasonally flooded.

Wetland 5D is adjacent to the Ohio River, a water of the U.S. Based on this connection, Wetland 5D is a likely water of the U.S.



WETLAND 6

The area associated with Data Point 6-1 IN (DP-6-1-IN) was evaluated, because it exhibited hydrophytic vegetation. The tree stratum was dominated by *Ulmus americana* (American elm, FACW, 35%) and *Acer rubrum* (red maple, FAC, 30%). The herbaceous stratum was dominated by *Laportea canadensis* (Canadian wood-nettle, FAC, 5%), *Carex grayi* (Gray's sedge, FACW, 2%), and *Toxicodendron radicans* (eastern poison ivy, FAC, 2%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. Two primary indicators of hydrology (Water Marks [B1] and Sediment Deposits [B2]) and five secondary indicators of hydrology (Surface Soil Cracks [B6], Drainage Patterns [B10], Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-6-1-IN, this area was identified as Wetland 6.

Data Point 6-1 OUT (DP-6-1-OUT) was adjacent to an agricultural field and a utility right-of-way. The area was on a higher stream terrace that appears to be moderately well drained. The tree stratum was dominated by *Acer rubrum* (red maple, FAC, 40%) and *Ulmus americana* (American elm, FACW, 30%). The herbaceous stratum was dominated by *Chasmanthium latifolium* (Indian wood-oats, FACU, 50%) and *Campsis radicans* (trumpet-creeper, FAC, 20%). This point met the hydrophytic vegetation criterion, because it passed the dominance test. No hydric soil indicators were observed. One secondary indicator of hydrology (Surface Soil Cracks [B6]) was observed. Since only one of the three wetland criteria was met at DP-6-1-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 6, which was determined based on changes in hydrology.

Data Point 6-2 IN (DP-6-2-IN) was evaluated, because it exhibited hydrophytic vegetation. The tree stratum was dominated by *Ulmus americana* (American elm, FACW, 55%) and *Quercus texana* (nuttall oak, OBL, 40%). The herbaceous stratum was dominated by *Saururus cernuus* (lizard'stail, OBL, 60%). This point met the hydrophytic vegetation criterion, because it passed the rapid test, dominance test, and prevalence test. The soil profile met the hydric soil criterion, because it exhibited Depleted Below Dark Surface (A11) and Depleted Matrix (F3) indicators. Five secondary indicators of hydrology (Surface Soil Cracks [B6], Drainage Patterns [B10], Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three of the wetland criteria were met at DP-6-2-IN, this area was identified as Wetland 6. This was an interior data point and does not have a corresponding upland data point.

Data Point 6-3 IN (DP-6-3-IN) was evaluated, because it exhibited hydrophytic vegetation. The tree stratum was dominated by *Ulmus americana* (American elm, FACW, 50%) and *Acer rubrum* (red maple, FAC, 40%). The herbaceous stratum was dominated by *Lindera benzoin* (spicebush, FAC, 15%) and *Laportea canadensis* (Canadian wood-nettle, FAC, 5%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. The soil profile met the hydric soil criterion, because it exhibited Depleted Below Dark Surface (A11) and Depleted Matrix (F3) indicators. Four secondary indicators of hydrology (Drainage Patterns [B10], Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-6-3-IN, this area was identified at



Wetland 6. This was an interior wetland data point and does not have a corresponding upland data point.

Data Point 6-4 IN (DP-6-4-IN) was evaluated, because it exhibited hydrophytic vegetation. The tree stratum was dominated by *Acer rubrum* (red maple, FAC, 70%). The herbaceous stratum was dominated by *Onoclea sensibilis* (sensitive fern, FACW, 10%), *Ulmus americana* (American elm, FACW, 5%), *Toxicodendron radicans* (eastern poison ivy, FAC, 5%), and *Impatiens capensis* (spotted touch-me-not, FACW, 5%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and the prevalence test. Aerial photography from 1992 show this area was cleared and in agriculture. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. One primary indicator of hydrology (Oxidized Rhizospheres on Living Roots [C3]) and four secondary indicators of hydrology (Drainage Patterns [B10], Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-4-1-IN, this area was identified at Wetland 6.

Data Point 6-4 OUT (DP-6-4-OUT) was upslope from Wetland 6 and appears to be moderately well drained. At this location, the soils likely do not remain saturated for long durations. This data point was dominated by *Acer saccharum* (silver maple, FACU, 80%) and *Salix nigra* (black willow, OBL, 30%) in the tree stratum. The herbaceous stratum was dominated by *Urtica dioica* (stinging nettle, FACU, 20%). The woody vine stratum was dominated by *Smilax glauca* (cat greenbrier, FACU, 5%). No hydrophytic vegetation indicators were met. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. One secondary hydrology indicator (Geomorphic Position [D2] was observed. Since only one of the three wetland criteria were met at DP-6-4-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 6, which was determined based on changes in vegetation and hydrology.

Wetland 6 is a large bottomland hardwood forest that is parallel to a pipeline right-of-way. The land directly north of the wetland is farmed. This large PFO wetland extends both east and west outside of the study area. Approximately 12.14 acres of Wetland 6 lies within the study area. This wetland has the highest functional values in the project area primarily due to its size, the lack of disturbance, and the quality of the habitat present.

Wetland 6 is located in the Ohio River floodplain. Because of this connectivity, Wetland 6 is likely a water of the U.S.

WETLAND 7

Data Point 7 IN (DP-7-IN) was evaluated, because it exhibited hydrophytic vegetation. The herbaceous stratum was dominated by *Leersia oryzoides* (rice cut grass, OBL, 90%). The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. Five secondary indicators of hydrology (Surface Soil Cracks [B6], Drainage Patterns [B10], Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-7-IN, this area was identified as Wetland 7.



Data Point 7 OUT (DP-7-OUT) was taken on a hillslope above an old farm pond. The soils at this data point appear to be well drained. This location was dominated by *Acer rubrum* (red maple, FAC, 98%) in the tree stratum. The herbaceous stratum was primarily bare, but dominated by *Toxicodendron radicans* (eastern poison ivy, FAC, 5%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and prevalence test. No hydric soil indicators were observed. One secondary hydrology indicator (Geomorphic Position [D2] was observed. Since only one of the three wetland criteria were met at DP-7-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 7, which was determined based on changes in hydrology.

Wetland 7 is a small emergent wetland that appears to be an old farm pond that had the levee washed out in two locations. The old levee was eroded to the extent that the area does not pond water over 6 to 12 inches at any time. Ephemeral streams UNT-9 and UNT-12 to the Ohio River enter the upstream end of the wetland and braid through the wetland. Ephemeral stream UNT-1 to the Ohio River begins below the old pond dam. UNT-1 to the Ohio River is a tributary to a traditional navigable water (i.e., the Ohio River). Because of this connectivity, Wetland 7 is a likely water of the U.S.

The bottom of the old pond is primarily an herbaceous wetland (PEM) surrounded by trees rooted in the uplands. Approximately 0.33 acre of Wetland 7 lies within the study area. Wetland 7 generally has low to moderate functional values primarily due to its small size and the quality of the habitats present.

Wetland 7 is located in the Ohio River floodplain. Because of this connectivity, this Wetland 7 is likely a water of the U.S.

WETLAND 8

The area associated with Data Point 8 IN (DP-8-IN) was evaluated, because it exhibited hydrophytic vegetation. The herbaceous stratum was dominated by *Ammannia coccinea* (valley redstem, OBL, 60%) and *Leersia oryzoides* (rice cut grass, OBL, 25%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. One primary indicator of hydrology (Oxidized Rhizospheres on Living Roots [C3]) and five secondary indicators of hydrology (Surface Soil Cracks [B6], Drainage Patterns [B10], Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-8-IN, this area was identified as Wetland 8.

Data Point 8 OUT (DP-8-OUT) lies within an agricultural field and appeared to be well drained. This location was dominated by *Glycine max* (soybeans, NI, 90%) in the herbaceous stratum. This point did not meet hydrophytic vegetation criterion. No hydric soil or hydrology indicators were observed. Since none of the three wetland criteria were met at DP-8-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 8, which was determined based on changes in vegetation and hydrology.



Wetland 8 is a narrow emergent wetland located in a valley within a large agricultural field. The PEM wetland likely receives runoff from the adjacent field. Approximately 0.18 acre of Wetland 8 lies within the study area. The wetland is bordered by sawtooth blackberry (*Rubus argutus*, FACU). Wetland 8 generally has poor to low functional values primarily due to its small size and the ongoing disturbance from agricultural practices.

Wetland 8 flows into UNT-1 to North Fork Canoe Creek, a likely water of the U.S. Because of this connectivity, Wetland 8 is likely a water of the U.S.

3.1.3 WETLANDS 9-13

Several small roadside ditch wetlands were identified in the existing US 41 right-of-way in Kentucky. They all have connectivity to North Fork Canoe Creek by ephemeral stream channels, thereby creating connectivity to tributaries to traditional navigable waters (i.e., the Ohio River) via North Fork Canoe Creek. All of these wetlands are generally low-quality and are part of the overall drainage system for the roadway. Historically, the drainage throughout the US 41 area has been noticeably altered, however there is no remaining evidence that these roadside ditch wetlands were part of a larger wetland system. The small size of these roadside wetlands and the continual disturbance from US 41 limits many wetland functions including erosion control and stabilization, wildlife habitat, floodwater alteration/retention, and sediment, nutrient, and toxicant removal. The functional values were all considered poor or absent.

WETLAND 9

The area associated with Data Point 9 IN (DP-9-IN) was evaluated, because it exhibited hydrophytic vegetation. This location was dominated by *Catalpa speciosa* (northern catalpa, FAC, 10%) and *Fraxinus pennsylvanica* (green ash, FACW, 10%). The sapling/shrub stratum was dominated by *Rhus glabra* (smooth sumac, NI, 10%). The herbaceous stratum was dominated by *Echinochloa crus-galli* (large barnyard grass, FAC, 45%) and *Persicaria pensylvanica* (pinkweed, FACW, 15%). This point met the hydrophytic vegetation criterion, because it passed the dominance test and prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Redox Dark Surface (F6) indicator. Three primary indicators of hydrology (Sediment Deposits [B2], Drift Deposits [B3], and Water-Stained Leaves [B9]) and three secondary indicators of hydrology (Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-9-IN, this area was identified as Wetland 9.

Data Point 9 OUT (DP-9-OUT) lies west of US 41 within maintained ROW. This location was dominated by *Cynodon dactylon* (Bermuda grass, FACU, 85%) in the herbaceous stratum. This point did not meet the hydrophytic vegetation criterion. No hydric soil or hydrology indicators were observed. Since none of the three wetland criteria were met at DP-9-OUT, this point was determined to be upland. This data point helped establish the boundary for Wetland 9, which was determined based on changes in vegetation and hydrology.

Wetland 9 is a small roadside ditch emergent wetland located near a culvert east of US 41 and south of Zion Road. Approximately 0.01 acre of Wetland 9 lies within the study area. Wetland 9



is adjacent to UNT-32 to North Fork Canoe Creek, a likely water of the U.S. Because of this connectivity, Wetland 9 is likely a water of the U.S.

WETLAND 10

The area associated with Data Point 10 IN (DP-10-IN) was evaluated, because it exhibited hydrophytic vegetation. This location was dominated by *Echinochloa crus-galli* (large barnyard grass, FAC, 80%) in the herbaceous stratum. This point met the hydrophytic vegetation criterion, because it passed the dominance test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Below Dark Surface (A11) and Depleted Matrix (F3) indicators. Two primary indicators of hydrology (Sediment Deposits [B2] and Oxidized Rhizospheres on Living Roots [C3]) and three secondary indicators of hydrology (Drainage Patterns [B10], Crayfish Burrows [C8], and Geomorphic Position [D2]) were observed. Since all three wetland criteria were met at DP-10-IN, this area was identified as Wetland 10.

Data Point 10 OUT (DP-10-OUT) lies east of US 41 within maintained ROW. This location was dominated by *Cynodon dactylon* (Bermuda grass, FACU, 90%) in the herbaceous stratum. This point did not meet the hydrophytic vegetation criterion. No hydric soil or hydrology indicators were observed. Since none of the three wetland criteria were met at DP-10-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 10, which was determined based on changes in vegetation and hydrology.

Wetland 10 is a small roadside ditch emergent wetland east of US 41 and south of Zion Road. Approximately 0.02 acre of Wetland 10 lies within the study area. Wetland 10 is adjacent to UNT-32 to North Fork Canoe Creek, a likely water of the U.S. Because of this connectivity, Wetland 10 is likely a water of the U.S.

WETLAND 11

The area associated with Data Point 11 IN (DP-11-IN) was evaluated, because it exhibited hydrophytic vegetation. This location was dominated by *Typha angustifolia* (narrow-leaf cattail, OBL, 60%) in the herbaceous stratum. This point met the hydrophytic vegetation criterion, because it passed the rapid test, dominance test, and prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Depleted Matrix (F3) indicator. Three secondary indicators of hydrology (Drainage Patterns [B10], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-11-IN, this area was identified as Wetland 11.

Data Point 11 OUT (DP-11-OUT) lies east of US 41 in maintained ROW. This location was dominated by *Cynodon dactylon* (Bermuda grass, FACU, 95%) in the herbaceous stratum. This point did not meet the hydrophytic vegetation criteria. No hydric soil or hydrology indicators were observed. Since none of the three wetland criteria were met at DP-11-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 11, which was determined based on changes in vegetation and hydrology.

Wetland 11 is a small roadside ditch emergent wetland east of US 41 and south of Zion Road. Approximately 0.01 acre of Wetland 11 lies within the study area. Wetland 11 is adjacent to UNT-



32 to North Fork Canoe Creek, a likely water of the U.S. Because of this connectivity, Wetland 11 is likely a water of the U.S.

WETLAND 12

Data Point 12 IN (DP-12-IN) was dominated by *Phalaris arundinacea* (reed canary grass, FACW, 80%) in the herbaceous stratum. This point met the hydrophytic vegetation criterion, because it passed the rapid test, dominance test, and prevalence test. The soil profile met the hydric soil criterion, because it exhibited the Thick Dark Surface (A12) indicator. Two primary indicators of hydrology (Sediment Deposits [B2] and Water-Stained Leaves [B9]) and two secondary indicators of hydrology (Crayfish Burrows [C8] and Geomorphic Position [D2]) were observed. Since all three wetland criteria were met at DP-12-IN, this area was identified as Wetland 12.

Data Point 12 OUT (DP-12-OUT) lies east of US 41 within maintained ROW. This location was dominated by *Cynodon dactylon* (Bermuda grass, FACU, 85%) in the herbaceous stratum. This point did not meet the hydrophytic vegetation criterion. No hydric soil or hydrology indicators were observed. Since none of the three wetland criteria were met at DP-12-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 12, which was determined based on changes in vegetation and hydrology.

Wetland 12 is a small roadside ditch emergent wetland east of US 41 and south of Zion Road, and north of the northbound US 41 entrance ramp overpass. Approximately 0.01 acre of Wetland 12 lies within the study area. Wetland 12 is adjacent to UNT-34 to North Fork Canoe Creek, a likely water of the U.S. Because of this connectivity, Wetland 12 is likely a water of the U.S.

WETLAND 13

The area associated with Data Point 13 IN (DP-13-IN) was evaluated, because it exhibited hydrophytic vegetation. This location was dominated by *Fraxinus pennsylvanica* (green ash, FACW, 5%), *Salix interior* (sandbar willow, FACW, 5%), and *Acer saccharinum* (silver maple, FACW, 5%) in the sapling/shrub stratum. The herbaceous stratum was dominated by *Typha angustifolia* (narrow-leaf cattail, OBL, 80%). This point met the hydrophytic vegetation criterion, because it passed the rapid test, dominance test, and prevalence test. The soil profile met the hydric soil criterion, because it exhibited Depleted Below Dark Surface (A11) and Depleted Matrix (F3) indicators. Four primary indicators of hydrology (High Water Table [A2], Saturation [A3], Sediment Deposits [B2], and Water-Stained Leaves [B9]) and three secondary indicators of hydrology (Crayfish Burrows [C8], Geomorphic Position [D2], and FAC-Neutral Test [D5]) were observed. Since all three wetland criteria were met at DP-13-IN, this area was identified as Wetland 13.

Data Point 13 OUT (DP-13-OUT) lies west of US 41. This location was dominated by *Cynodon dactylon* (Bermuda grass, FACU, 80%) in the herbaceous stratum. This point did not meet the hydrophytic vegetation criterion. No hydric soil or hydrology indicators were observed. Since none of the three wetland criteria were met at DP-13-OUT, this point was determined to be upland. This data point helped establish the boundary of Wetland 13, which was determined based on changes in vegetation and hydrology.



Wetland 13 is an emergent roadside ditch wetland in the US 41 ROW just east of the intersection of Washington Street and KY 2084. Approximately 0.02 acre of Wetland 13 lies within the study area. Wetland 13 is adjacent to UNT-34 to North Fork Canoe Creek, a likely water of the U.S. Because of this connectivity, Wetland 13 is likely a water of the U.S.

3.1.4 Additional Data Points

Areas that were suspected to be wetlands, such as mapped NWI wetlands, aerial photograph signatures that suggest the potential for wetlands, or field observations were also surveyed. The areas below lacked one or more of the requisite parameters (hydrophytic vegetation, hydric soils, and hydrology) to be considered a wetland, and they were documented to explain why the areas would not be considered wetlands or would not be regulated.

UPL-01

The area associated with this Data Point Upland 1 (UPL-01) was located in an agricultural field. This Ohio River floodplain swale was sampled, because aerial photography and the 2019 Ohio River flooding showed visual evidence of a possible wetland. This area had no living vegetation, however corn stubble from 2018 was present in the herbaceous stratum. This did not meet the hydrophytic vegetation criterion. The extensive 2019 Ohio River flooding kept this area wet for a long duration in 2019; however, evidence present indicates that this area likely does not retain water for long durations during the growing season; the area is usually farmed (e.g. the area was farmed in 2018), and the area is infrequently flooded by the Ohio River. No hydric soil indicators were observed. Two secondary indicators of hydrology (Surface Soil Cracks [B6] and Crayfish Burrows [C8]) were observed. Since only one of the three wetland criteria were met at UPL-01, this area was determined to be upland.

UPL-02

The area associated with this Data Point Upland 2 (UPL-02) was located in an agricultural field. This area was sampled, because the 2018 Ohio River flooding showed visual evidence of a possible wetland. This area was dominated by *Echinochloa crus-galli* (large barnyard grass, FACW, 30%) and *Amaranthus spinosus* (red-root, FACU, 10%) in the herbaceous stratum. This point met the hydrophytic vegetation criterion, because it passed the prevalence test. At the time of the survey, the adjacent fields were farmed with soybeans (*Glycine max*, NI) and corn (*Zea mays*, NI). It appears that the Ohio River flood kept this area wet for a long duration in 2018; however, this area likely does not retain water for long durations during the growing season and is usually farmed (e.g. the area was farmed in 2017). There was soybean stubble from the 2017 growing season throughout the swale. No hydric soil indicators were observed. One secondary indicator of hydrology (Surface Soil Cracks [B6]) was observed. Since only one of the three wetland criteria were met at UPL-02, this area was determined to be upland.

UPL-03

The area associated with this Data Point Upland 3 (UPL-03) was located in an agricultural field. This Ohio River floodplain swale was sampled, because aerial photography and the 2019 Ohio River flooding showed visual evidence of a possible wetland. This area had no living vegetation, however corn and soybean stubble from 2018 was present in the herbaceous stratum. This did



not meet the hydrophytic vegetation criterion. The extensive 2019 Ohio River flooding kept this area wet for a long duration in 2019; however, evidence present indicates that this area likely does not retain water for long durations during the growing season; the area is usually farmed (e.g. the area was farmed in 2018); and the area is infrequently flooded by the Ohio River. No hydric soil indicators were observed. Two secondary indicators of hydrology (Surface Soil Cracks [B6] and Crayfish Burrows [C8]) were observed. Since only one of the three wetland criteria were met at UPL-03, this area was determined to be upland.

UPL-04

The area associated with Data Point Upland 4 (UPL-04) was in a swale in the middle on an agricultural field. This area was dominated by *Glycine max* (soybean, NI, 95%) in the herbaceous stratum. The area does not appear to remain saturated for long durations during the growing season. The 2018 Ohio River flooding covered this entire area, but in most years this swale is likely moderately well drained. In 2017, this swale near Shawnee Drive was farmed with corn. No hydric soil indicators were observed. One secondary indicator of hydrology (Geomorphic Position [D2]) was observed. Since none of the three wetland criteria were met at UPL-04, this area was determined to be upland.

UPL-05

The area associated with Data Point Upland 5 (UPL-05) was in the US 41 road ditch/swale. This area was dominated by *Ludwigia alternifolia* (seedbox, FACW, 30%) and *Schedonorus arundinacea* (tall fescue, FACU, 20%) in the herbaceous stratum. The downstream end of this swale appears to have been filled with sediment from upstream agricultural areas, and there is an eroded channel that makes a connection to UNT-36 to North Fork Canoe Creek. No hydric soil indicators were observed. Two primary hydrology indicators of hydrology Surface Water (A1) and Saturation (A3) were observed. One secondary indicator of hydrology (Crayfish Burrows [C8]) was observed. Since only two of the three wetland criteria were met at UPL-05, this area was determined to be upland.

3.2 STREAMS

Field investigation resulted in the identification of 68, likely jurisdictional, streams within the study area, totally 34,286 linear feet. These features are summarized in the Stream Summary Table (Appendix A). Detailed mapping of these features is provided in Appendix B.

None of the documented streams were listed as a Federal Wild and Scenic River, a State Natural, Scenic and Recreational River (IWSRCC 2018), or on the Indiana Register's listing on Outstanding Rivers and Streams. No Kentucky state-designated Wild Rivers are located in the project area. The Ohio River from River Mile (RM) 784.7 to 786.6 is an Outstanding State Resource Water (OSRW) due to the presence of the federally threatened rabbitsfoot mussel (*Quadrula cylindrica cylindrica*). This stretch of OSRW river would include approximately 438 acres of Ohio River habitat at normal pool evaluation.



3.2.1 EAGLE CREEK AND TRIBUTARIES TO EAGLE CREEK

UNT-1 TO EAGLE CREEK

UNT-1 to Eagle Creek is a concrete-lined channel in the infrequently maintained I-69/US 41 interchange. It exhibited a 6-foot wide by <1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-1 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). This channel substrate is artificial (concrete). No riffles or pools were observed. Based on field observations, UNT-1 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 27. Approximately 208 linear feet of UNT-1 to Eagle Creek lies within the study area. UNT-1 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-2 TO EAGLE CREEK

UNT-2 to Eagle Creek is a deeply incised, eroded channel located in the infrequently maintained I-69/US 41 interchange. The upstream end of this channel is near a culvert that has riprap protection. UNT-2 to Eagle Creek exhibited a 9-foot wide by 6-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-2 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (<u>USGS 2019</u>). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-2 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 27. Approximately 167 linear feet of UNT-2 to Eagle Creek lies within the study area. UNT-2 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-3 TO EAGLE CREEK

UNT-3 to Eagle Creek is an erosional feature that has stabilized over time. The area is infrequently maintained through mowing or use of herbicides. UNT-3 to Eagle Creek exhibited a 2-foot wide by <1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-3 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-3 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 11. Approximately 560 linear feet of UNT-3 to Eagle Creek lies within the study area. UNT-3 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).



UNT-4 TO EAGLE CREEK

UNT-4 to Eagle Creek through the study area is entirely encapsulated in a culvert. Water is pumped through this culvert to an unnamed tributary to Eagle Creek, south of the study area. Since UNT-4 to Eagle Creek was not visible within the study area, a data sheet was not prepared. UNT-4 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.06 square mile (USGS 2019). The substrate is artificial. Based on field observations, this stream is likely ephemeral. Approximately 226 linear feet of UNT-4 to Eagle Creek lies within the study area, entirely encapsulated in a culvert. UNT-4 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-5 TO EAGLE CREEK

UNT-5 to Eagle Creek is an ephemeral channel north of I-69. This channel drains to a pump station. UNT-5 to Eagle Creek exhibited a 5-foot wide by 3-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-5 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-5 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 26. Approximately 10 linear feet of UNT-5 to Eagle Creek lies within the study area. UNT-5 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-6 TO EAGLE CREEK

UNT-6 to Eagle Creek is a dry ephemeral channel north of I-69. It exhibited a 3-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-6 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-6 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 21. Approximately 318 linear feet of UNT-6 to Eagle Creek lies within the study area. UNT-6 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-7 TO EAGLE CREEK

UNT-7 to Eagle Creek is a dry ephemeral channel north of and parallel to I-69. It exhibited a 3-foot wide by 1-foot deep OHWM. Although this was mapped as an intermittent stream on the USGS topographic map, based on field observations, this stream is likely ephemeral. UNT-7 to Eagle Creek is shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (<u>USGS 2019</u>). The substrate was dominated by silt and clay. No riffles



or pools were observed. Based on field observations, UNT-7 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 21. Approximately 514 linear feet of UNT-7 to Eagle Creek lies within the study area. UNT-7 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-8 TO EAGLE CREEK

UNT-8 to Eagle Creek is a deeply incised channel that receives fairly frequent backwater flooding from Eagle Creek. It exhibited a 12-foot wide by 3-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-8 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-8 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 22. Approximately 56 linear feet of UNT-8 to Eagle Creek lies within the study area. UNT-8 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-9 TO EAGLE CREEK

UNT-9 to Eagle Creek drains into Eagle Creek. The channel likely receives runoff from I-69. The tributary braids into Wetland 3 with no defined channels. UNT-9 to Eagle Creek exhibited a 3-foot wide by <1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-9 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.25 square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-9 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 22. Approximately 146 linear feet of UNT-9 to Eagle Creek lies within the study area. UNT-9 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-10 TO EAGLE CREEK

UNT-10 to Eagle Creek drains into Eagle Creek. The channel likely receives runoff from I-69. The tributary braids into Wetland 3 with no defined channels. UNT-10 to Eagle Creek exhibited a 3-foot wide by <1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-10 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-10 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 22. Approximately 144 linear feet of UNT-10 to Eagle Creek lies within the study area. UNT-10 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).



EAGLE CREEK

Eagle Creek is a channelized, but stable, legal drain (EVCAPC 2018). When the Ohio River rises, backwater reverses the flow to Eagle Creek. The left descending bank was sprayed with herbicides to kill woody vegetation, and it appears that channel maintenance only occurs from the south side of Eagle Creek in the project area. A levee located north of I-69 may impact hydrology during high water events. Eagle Creek exhibited a 30-foot wide by 10-foot deep OHWM. Eagle Creek is shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 6.12 square miles (USGS 2019). The substrate was dominated by silt. No riffles were observed. Pools were observed. Based on field observations, Eagle Creek was classified as a poor-quality stream. This was supported by its QHEI score of 37. Approximately 1,042 linear feet of Eagle Creek lies within the study area. Eagle Creek is a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-11 TO EAGLE CREEK

UNT-11 to Eagle Creek is a channel that drains from an agricultural field into a borrow pit (OW-1). It exhibited a 2-foot wide by <1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-11 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-11 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 12. Approximately 80 linear feet of UNT-11 to Eagle Creek lies within the study area. UNT-11 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-12 TO EAGLE CREEK

UNT-12 to Eagle Creek is an agricultural stream/ditch that flows into Eagle Creek to the northwest. The area is routinely mowed and sprayed with herbicides. The stream/ditch is maintained. UNT-12 to Eagle Creek exhibited a 12-foot wide by 4-foot deep OHWM. Although this was mapped as an intermittent stream on the USGS topographic map, based on field observations, this stream is likely ephemeral. UNT-12 to Eagle Creek is shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.04 square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-12 to Eagle Creek was classified as a poorquality stream. This was supported by its HHEI score of 30. Approximately 1,147 linear feet of UNT-12 to Eagle Creek lies within the study area. Although this is a well-maintained agricultural stream/ditch, UNT-12 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).



UNT-13 TO EAGLE CREEK

UNT13 to Eagle Creek is an agricultural stream/ditch that flows into a larger agricultural stream/ditch, which flows into Eagle Creek. The area is routinely mowed and sprayed with herbicides. The stream/ditch is maintained. UNT-13 to Eagle Creek exhibited a 12-foot wide by 4-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-13 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-13 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 25. Approximately 537 linear feet of UNT-13 to Eagle Creek lies within the study area. UNT-13 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-14 TO EAGLE CREEK

UNT-14 to Eagle Creek is an agricultural stream/ditch that flows into a larger agricultural stream/ditch, which flows into Eagle Creek. The area is routinely mowed and sprayed with herbicides. The stream/ditch is maintained. UNT-14 to Eagle Creek exhibited a 3-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-14 to Eagle Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-14 to Eagle Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 20. Approximately 834 linear feet of UNT-14 to Eagle Creek lies within the study area. UNT-14 to Eagle Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to Eagle Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

3.2.2 OHIO RIVER AND TRIBUTARIES TO THE OHIO RIVER

OHIO RIVER

The Ohio River is 981 miles long and flows through six states: Pennsylvania, Ohio, West Virginia, Kentucky, Indiana, and Illinois. These states collaborate with the Ohio River Valley Water Sanitation Commission (ORSANCO), an interstate water pollution control agency, to monitor and assess the river (ORSANCO 2016). The river basin stretches across a 205,000-square-mile area within which over 25 million people reside (ORANSCO 2019). The river has an average depth of 24 feet and an average width of 0.5 mile (ORSANCO 2016).

The Ohio River is designated as an Outstanding State Resource Water (OSRW) by the Kentucky Division of Water (KDOW) between RM 784.7 to 786.6. Within the study area, the Ohio River exhibited a 2,029-foot wide by >30-foot deep OHWM. The Ohio River is shown as perennial on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with the Ohio River was not available in StreamStats; however, the drainage of the Ohio River is 205,000 square miles (ORANSCO 2019). The substrate was dominated by silt and sand. No riffles or pools



were observed. Based on field observations, the Ohio River was classified as a fair-quality stream. This was supported by its QHEI score of 58. Approximately 200 linear feet of Ohio River lies within the study area. Ohio River is a WOTUS, because it is a traditionally navigable waterway.

UNT-1 TO OHIO RIVER

UNT-1 to Ohio River is a dry channel that has been channelized and armored with riprap. It exhibited a 11-foot wide by 3-foot deep OHWM. Although this stream was mapped as intermittent on the USGS topographic map, based on field observations, this stream is likely ephemeral. UNT-1 to Ohio River is shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate within this channel is artificial and gravel. No riffles or pools were observed. Based on field observations, UNT-1 to Ohio River was classified as a poor-quality stream. This was supported by its HHEI score of 40. Approximately 1,716 linear feet of UNT-1 to Ohio River lies within the study area. UNT1 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-2 TO OHIO RIVER

UNT-2 to Ohio River is a dry shallow channel that is proximal to a utility right-of-way. The channel extends west to a recently logged area. UNT-2 to Ohio River exhibited a 3-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-2 to Ohio River is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by clay and gravel. No riffles or pools were observed. Based on field observations, UNT-2 to Ohio River was classified as a very poor-quality stream. This was supported by its HHEI score of 19. Approximately 451 linear feet of UNT-2 to Ohio River lies within the study area. UNT-2 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-3 TO OHIO RIVER

UNT-3 to Ohio River is a typically dry channel in an upland forest. Recent logging activity has likely contributed to the presence of silt and muck in the channel. UNT-3 to Ohio River exhibited a 3-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-3 to Ohio River is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and gravel. No riffles or pools were observed. Based on field observations, UNT-3 to Ohio River was classified as a very poor-quality stream. This was supported by its HHEI score of 27. Approximately 474 linear feet of UNT-3 to Ohio River lies within the study area. UNT-3 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).



UNT-4 TO OHIO RIVER

UNT-4 to Ohio River is a dry channel that cuts across a utility right-of-way. It exhibited a 3-foot wide by 3-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-4 to Ohio River is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and cobble. No riffles were observed. Pools were observed. Based on field observations, UNT-4 to Ohio River was classified as a poor-quality stream. This was supported by its HHEI score of 38. Approximately 14 linear feet of UNT-4 to Ohio River lies within the study area. UNT-4 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-5 TO OHIO RIVER

UNT-5 to Ohio River is deeply incised, typically dry, channel within an upland forest. It exhibited a 3-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-5 to Ohio River is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by gravel and clay. No riffles were observed. Pools were observed. Based on field observations, UNT-5 to Ohio River was classified as a poor-quality stream. This was supported by its HHEI score of 33. Approximately 432 linear feet of UNT-5 to Ohio River lies within the study area. UNT-5 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-6 TO OHIO RIVER

UNT-6 to Ohio River is a deeply incised channel located west of a utility right-of-way. It exhibited a 3-foot wide by 3-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-6 to Ohio River is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and cobble. No riffles were observed. Pools were observed. Based on field observations, UNT-6 to Ohio River was classified as a fair-quality stream. This was supported by its HHEI score of 50. Approximately 42 linear feet of UNT-6 to Ohio River lies within the study area. UNT-6 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-7 TO OHIO RIVER

UNT-7 to Ohio River is a deeply incised channel in a wooded draw. It exhibited a 3-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-7 to Ohio River is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by cobble and gravel. No riffles were observed. Pools were observed. Based on field observations, UNT-7 to Ohio River was



classified as a fair-quality stream. This was supported by its HHEI score of 46. Approximately 419 linear feet of UNT-7 to Ohio River lies within the study area. UNT-7 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-8 TO OHIO RIVER

UNT-8 to Ohio River is a dry eroded channel through a pipeline right-of-way. It exhibited a 3-foot wide by 3-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-8 to Ohio River is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by bedrock and cobble. No riffles were observed. Pools were observed. Based on field observations, UNT-8 to Ohio River was classified as a poor-quality stream. This was supported by its HHEI score of 30. Approximately 60 linear feet of UNT-8 to Ohio River lies within the study area. UNT-8 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-9 TO OHIO RIVER

UNT-9 to Ohio River is a narrow, incised channel in a wooded draw. It exhibited a 2-foot wide by <1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-9 to Ohio River is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by clay and silt. No riffles or pools were observed. Based on field observations, UNT-9 to Ohio River was classified as a very poor-quality stream. This was supported by its HHEI score of 11. Approximately 434 linear feet of UNT-9 to Ohio River lies within the study area. UNT-9 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-10 TO OHIO RIVER

UNT-10 to Ohio River is a narrow, incised channel in a wooded draw. It exhibited a 2-foot wide by <1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-10 to Ohio River is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by clay and leaf packs/woody debris. No riffles or pools were observed. Based on field observations, UNT-10 to Ohio River was classified as a very poor-quality stream. This was supported by its HHEI score of 12. Approximately 155 linear feet of UNT-10 to Ohio River lies within the study area. UNT-10 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-11 TO OHIO RIVER

UNT-11 to Ohio River is a dry eroded channel within a forest. It exhibited a 5-foot wide by 2-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-11 to Ohio River



is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-11 to Ohio River was classified as a very poor-quality stream. This was supported by its HHEI score of 26. Approximately 878 linear feet of UNT-11 to Ohio River lies within the study area. UNT-11 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-12 TO OHIO RIVER

UNT-12 to Ohio River is a dry eroded channel in a wooded draw that is surrounded by agricultural fields. It exhibited a 3-foot wide by 2-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-12 to Ohio River is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by clay and silt. No riffles or pools were observed. Based on field observations, UNT-12 to Ohio River was classified as a poor-quality stream. This was supported by its HHEI score of 16. Approximately 113 linear feet of UNT-12 to Ohio River lies within the study area. UNT-12 to Ohio River is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

3.2.3 NORTH FORK CANOE CREEK AND TRIBUTARIES TO NORTH FORK CANOE CREEK

UNT-1 TO NORTH FORK CANOE CREEK

UNT-1 to North Fork Canoe Creek is a dry, eroded, incised channel just south of Wetland 8. The area surrounding the channel is used for agriculture. UNT-1 to North Fork Canoe Creek exhibited a 3-foot wide by 2-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-1 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-1 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 25. Approximately 494 linear feet of UNT-1 to North Fork Canoe Creek lies within the study area. UNT-1 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to North Fork Canoe Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-2 TO NORTH FORK CANOE CREEK

UNT-2 to North Fork Canoe Creek is a dry, deeply incised, eroded channel in a valley. The area surrounding the channel is used for agriculture. UNT-2 to North Fork Canoe Creek exhibited an 8-foot wide by 6-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-2 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.03 square mile (USGS 2019). The substrate was dominated by clay and silt. No riffles or pools were observed. Based on field



observations, UNT-2 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 25. Approximately 306 linear feet of UNT-2 to North Fork Canoe Creek lies within the study area. UNT-2 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to North Fork Canoe Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-3 TO NORTH FORK CANOE CREEK

UNT-3 to North Fork Canoe Creek is a dry channel in a broad wooded draw, and the channel braids in some areas. The channel is more defined along the reach northwest and southeast of the data point. There are mowed fields/wildlife food plots on both sides of this channel. UNT-3 to North Fork Canoe Creek exhibited a <1-foot wide by <1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-3 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.04 square mile (USGS 2019). The substrate was dominated by silt and leaf packs/woody debris. No riffles or pools were observed. Based on field observations, UNT-3 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 14. Approximately 328 linear feet of UNT-3 to North Fork Canoe Creek lies within the study area. UNT-3 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to North Fork Canoe Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-4 TO NORTH FORK CANOE CREEK

UNT-4 to North Fork Canoe Creek is a dry channel within a utility right-of-way. It exhibited a 4-foot wide by 2-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-4 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.03 square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-4 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 41. Approximately 321 linear feet of UNT-4 to North Fork Canoe Creek lies within the study area. UNT-4 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to North Fork Canoe Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).

UNT-5 TO NORTH FORK CANOE CREEK

UNT-5 to North Fork Canoe Creek is a dry channel within a utility right-of-way. It exhibited a 6-foot wide by 3-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-5 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.06 square mile (USGS 2019). The substrate was dominated by silt and cobble. No riffles or pools were observed. Based on field observations, UNT-5 to North Fork Canoe Creek was classified as a fair-quality stream. This was supported by its HHEI score of 43. Approximately 302 linear feet of UNT-5 to North Fork Canoe Creek lies within the study area. UNT-5 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to North Fork Canoe Creek, which is a tributary to the Ohio River (a traditionally navigable waterway).



UNT-6 TO NORTH FORK CANOE CREEK

UNT-6 to North Fork Canoe Creek is a dry channel with incised banks surrounded by agriculture. It exhibited a 14-foot wide by 8-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-6 to North Fork Canoe Creek is shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.67 square mile (USGS 2019). The substrate was dominated by silt and gravel. No riffles or pools were observed. Based on field observations, UNT-6 to North Fork Canoe Creek was classified as a fair-quality stream. This was supported by its HHEI score of 45. Approximately 880 linear feet of UNT-6 to North Fork Canoe Creek lies within the study area. UNT-6 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway). UNT-6 to North Fork Canoe Creek is also crossed upstream near the western end of the relocated US 60, but it is not within the construction limits and would not be impacted.

UNT-7 TO NORTH FORK CANOE CREEK

UNT-7 to North Fork Canoe Creek dry channel directly south of US 60. The channel is surrounded by agriculture. UNT-7 to North Fork Canoe Creek exhibited a 12-foot wide by 8-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-7 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.04 square mile (USGS 2019). The substrate was dominated by silt and gravel. No riffles or pools were observed. Based on field observations, UNT-7 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 35. Approximately 183 linear feet of UNT-7 to North Fork Canoe Creek lies within the study area. UNT-7 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-8 TO NORTH FORK CANOE CREEK

UNT-8 to North Fork Canoe Creek is a dry channel directly south of US 60. The channel is surrounded by agriculture. UNT-8 to North Fork Canoe Creek exhibited a 5-foot wide by 1.5-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-8 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is <0.01 square miles (USGS 2019). The substrate was dominated by silt and gravel. No riffles or pools were observed. Based on field observations, UNT-8 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 30. Approximately 160 linear feet of UNT-8 to North Fork Canoe Creek lies within the study area. Note that the eroded channel transitions into a broad drainage swale or grassed waterway that does not exhibit a bed and bank or OHWM and eventually extends 1,176 feet to UNT-9 to North Fork Canoe Creek. Although UNT-8 to North Fork Canoe Creek may be considered a WOTUS because of the presence of an OHWM at the data point and its connectivity to the Ohio River (a traditionally navigable waterway), this eroded channel may be considered isolated.



UNT-9 TO NORTH FORK CANOE CREEK

UNT-9 to North Fork Canoe Creek is a moist channel surrounded by agriculture. It exhibited a 20-foot wide by 10-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-9 to North Fork Canoe Creek is shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.87 square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-9 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 41. Approximately 1,802 linear feet of UNT-9 to North Fork Canoe Creek lies within the study area. UNT-9 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-10 TO NORTH FORK CANOE CREEK

UNT-10 to North Fork Canoe Creek is an erosional feature in an agricultural field. It exhibited a 3-foot wide by 1-foot deep OHWM. Although this stream is mapped as intermittent on the USGS topographic mapping, based on field observations, this stream is likely ephemeral. UNT-10 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.11 square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-10 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its QHEI score of 34.5. Approximately 82 linear feet of UNT-10 to North Fork Canoe Creek lies within the study area. UNT-10 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-11 TO NORTH FORK CANOE CREEK

UNT-11 to North Fork Canoe Creek is a well-maintained dry railroad stream/ditch. It exhibited a 11-foot wide by 4-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-11 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-11 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 31. Approximately 737 linear feet of UNT-11 to North Fork Canoe Creek lies within the study area. UNT-11 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-12 TO NORTH FORK CANOE CREEK

UNT-12 to North Fork Canoe Creek is a dry channel near US 60. It exhibited a 11-foot wide by 10-foot deep OHWM. Although this stream is mapped as intermittent on the USGS topographic mapping, based on field observations, this stream is likely ephemeral. UNT-12 to North Fork Canoe Creek is shown on USGS 7.5-minute series topographic mapping. The upstream drainage



area associated with this stream is 0.64 square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-12 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 37. Approximately 289 linear feet of UNT-12 to North Fork Canoe Creek lies within the study area. UNT-12 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-13 TO NORTH FORK CANOE CREEK

UNT-13 to North Fork Canoe Creek is a moist channel with isolated pools near US 60. The channel is surrounded by agriculture. It exhibited a 9-foot wide by 10-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-13 to North Fork Canoe Creek is shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 1.77 square miles (USGS 2019), and the QHEI assessment sheet was used at this data point. The substrate was dominated by silt and sand. No riffles were observed. Pools were observed. Based on field observations, UNT-13 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its QHEI score of 34.5. Approximately 360 linear feet of UNT-13 to North Fork Canoe Creek lies within the study area. UNT-13 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-14 TO NORTH FORK CANOE CREEK

UNT-14 to North Fork Canoe Creek is a roadside stream/ditch with a dry channel directly south of US 60. It exhibited a 4-foot wide by 1.5-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-14 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-14 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 27. Approximately 36 linear feet of UNT-14 to North Fork Canoe Creek lies within the study area. UNT-14 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-15 TO NORTH FORK CANOE CREEK

UNT-15 to North Fork Canoe Creek is an erosional feature in an agricultural field. It exhibited a 3-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-15 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-15 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 26. Approximately 59 linear feet of UNT-15 to North Fork Canoe Creek lies within the study area. UNT-15 to North Fork Canoe Creek is likely a WOTUS because



of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-16 TO NORTH FORK CANOE CREEK

UNT-16 to North Fork Canoe Creek is an erosional feature in an agricultural field. It exhibited a 4-foot wide by 1.5-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-16 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-16 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 26. Approximately 267 linear feet of UNT-16 to North Fork Canoe Creek lies within the study area. UNT-16 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-17 TO NORTH FORK CANOE CREEK

UNT-17 to North Fork Canoe Creek is a channel with steep banks surrounded by agriculture. It exhibited a 13-foot wide by 7-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-17 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.50 square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-17 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 36. Approximately 780 linear feet of UNT-17 to North Fork Canoe Creek lies within the study area. UNT-17 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-18 TO NORTH FORK CANOE CREEK

UNT-18 to North Fork Canoe Creek this is a dry channel surrounded by agriculture. It exhibited a 4-foot wide by 4-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-18 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-18 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 21. Approximately 241 linear feet of UNT-18 to North Fork Canoe Creek lies within the study area. UNT-18 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-19 TO NORTH FORK CANOE CREEK

UNT-19 to North Fork Canoe Creek is a dry channel with steep banks surrounded by agriculture. It exhibited a 9-foot wide by 6-foot deep OHWM. Based on field observations, this stream is likely



ephemeral. UNT-19 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by clay and silt. No riffles or pools were observed. Based on field observations, UNT-19 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 26. Approximately 234 linear feet of UNT-19 to North Fork Canoe Creek lies within the study area. UNT-19 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-20 TO NORTH FORK CANOE CREEK

UNT-20 to North Fork Canoe Creek is a dry channel surrounded by agriculture. It exhibited a 14-foot wide by 8-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-20 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by gravel and silt. No riffles or pools were observed. Based on field observations, UNT-20 to North Fork Canoe Creek was classified as a fair-quality stream. This was supported by its HHEI score of 45. Approximately 490 linear feet of UNT-20 to North Fork Canoe Creek lies within the study area. UNT-20 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-21 TO NORTH FORK CANOE CREEK

UNT-21 to North Fork Canoe Creek is a dry vegetated channel near Kimsey Lane. It exhibited a 9-foot wide by 6-foot deep OHWM. Based on field observations, this stream is likely intermittent in nature. UNT-21 to North Fork Canoe Creek is shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 0.73 square mile (USGS 2019). The substrate was dominated by silt and gravel. No riffles or pools were observed. Based on field observations, UNT-21 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 35. Approximately 1,840 linear feet of UNT-21 to North Fork Canoe Creek lies within the study area. UNT-21 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-22 TO NORTH FORK CANOE CREEK

UNT-22 is an erosional feature in an agricultural field north of Kimsey Lane. It exhibited a 3-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-22 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-22 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 26. Approximately 234 linear feet of UNT-22 to North Fork Canoe Creek lies within the



study area. UNT-22 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-23 TO NORTH FORK CANOE CREEK

UNT-23 to North Fork Canoe Creek is a dry vegetated channel parallel to Kimsey Lane. It exhibited a 9-foot wide by 6-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-23 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 1.54 square mile (USGS 2019), and the QHEI assessment form was used for this data point. The substrate was dominated by silt and hardpan. No riffles were observed. Pools were observed. Based on field observations, UNT-23 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its QHEI score of 32. Approximately 16 linear feet of UNT-23 to North Fork Canoe Creek lies within the study area. UNT-23 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-24 TO NORTH FORK CANOE CREEK

UNT-24 to North Fork Canoe Creek is an agricultural stream/ditch south of Kimsey Lane. It exhibited a 3-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-24 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-24 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 11. Approximately 81 linear feet of UNT-24 to North Fork Canoe Creek lies within the study area. UNT-24 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-25 TO NORTH FORK CANOE CREEK

UNT-25 to North Fork Canoe Creek is a well-maintained roadside channel west of US 41. It exhibited a 1.5-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-25 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and clay. No riffles or pools were observed. Based on field observations, UNT-25 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 11. Approximately 1,673 linear feet of UNT-25 to North Fork Canoe Creek lies within the study area. UNT-25 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).



UNT-26 TO NORTH FORK CANOE CREEK

UNT-26 to North Fork Canoe Creek is a well-maintained roadside channel east of US 41. It exhibited a 1.5-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-26 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-26 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 32. Approximately 1,753 linear feet of UNT-26 to North Fork Canoe Creek lies within the study area. UNT-26 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

NORTH FORK CANOE CREEK

North Fork Canoe Creek is perennial tributary of the Ohio River. Within the study area, North Fork Canoe Creek exhibited a 35-foot wide by 12-foot deep OHWM. North Fork Canoe Creek is shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 13.3 square miles (USGS 2019). The substrate was dominated by silt and cobble. No riffles were observed. Pools were observed. Based on field observations North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its QHEI score of 38. Approximately 1,596 linear feet of North Fork Canoe Creek lies within the study area. North Fork Canoe Creek is a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-27 TO NORTH FORK CANOE CREEK

UNT-27 to North Fork Canoe Creek is an agricultural stream/ditch. It exhibited a 15-foot wide by 6-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-27 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-27 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 41. Approximately 601 linear feet of UNT-27 to North Fork Canoe Creek lies within the study area. UNT-27 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-28 TO NORTH FORK CANOE CREEK

UNT-28 to North Fork Canoe Creek is dry agricultural stream/ditch that runs parallel to US 41. It exhibited a 3-foot wide by 2-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-28 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and gravel. No riffles or pools were observed. Based on field



observations, UNT-28 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 30. Approximately 1,697 linear feet of UNT-28 to North Fork Canoe Creek lies within the study area. UNT-28 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-29 TO NORTH FORK CANOE CREEK

UNT-29 to North Fork Canoe Creek is dry agricultural stream/ditch that runs parallel to US 41. It exhibited a 4-foot wide by 2-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-29 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and gravel. No riffles or pools were observed. Based on field observations, UNT-29 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 30. Approximately 1,619 linear feet of UNT-29 to North Fork Canoe Creek lies within the study area. UNT-29 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-30 TO NORTH FORK CANOE CREEK

UNT-30 to North Fork Canoe Creek is a dry, well-maintained roadside channel north of Van Wyk Road. It exhibited a 4-foot wide by 2-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-30 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and gravel. No riffles or pools were observed. Based on field observations, UNT-30 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 30. Approximately 458 linear feet of UNT-30 to North Fork Canoe Creek lies within the study area. UNT-30 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-31 TO NORTH FORK CANOE CREEK

UNT-31 to North Fork Canoe Creek is a dry, well-maintained roadside channel south of Van Wyk Road. It exhibited a 4-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-31 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and gravel. No riffles or pools were observed. Based on field observations, UNT-31 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 30. Approximately 405 linear feet of UNT-31 to North Fork Canoe Creek lies within the study area. UNT-31 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).



UNT-32 TO NORTH FORK CANOE CREEK

UNT-32 to North Fork Canoe Creek is located within a dry, well-maintained roadside channel that parallels US 41. It exhibited a 1.5-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-32 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by silt and sand. No riffles or pools were observed. Based on field observations, UNT-32 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 16. Approximately 378 linear feet of UNT-32 to North Fork Canoe Creek lies within the study area. UNT-32 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-33 TO NORTH FORK CANOE CREEK

UNT-33 to North Fork Canoe Creek is dry, well-maintained roadside channel that parallels US 41. It exhibited a 1.5-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-33 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by sand and silt. No riffles or pools were observed. Based on field observations, UNT-33 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 16. Approximately 208 linear feet of UNT-33 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-34 TO NORTH FORK CANOE CREEK

UNT-34 to North Fork Canoe Creek is dry, well-maintained roadside channel between the ramps to US 41. It exhibited a 2-foot wide by 2-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-34 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by sand and silt. No riffles or pools were observed. Based on field observations, UNT-34 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 16. Approximately 286 linear feet of UNT-34 to North Fork Canoe Creek lies within the study area. UNT-34 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-35 TO NORTH FORK CANOE CREEK

UNT-35 to North Fork Canoe Creek is dry, well-maintained roadside channel near US 41. It exhibited a 1.5-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-35 to North Fork Canoe Creek is not shown on USGS 7.5-minute series



topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by sand and silt. No riffles or pools were observed. Based on field observations, UNT-35 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 16. Approximately 181 linear feet of UNT-35 to North Fork Canoe Creek lies within the study area. UNT-35 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-36 TO NORTH FORK CANOE CREEK

UNT-36 to North Fork Canoe Creek is a tributary that flows under the Edward T. Breathitt Pennyrile Parkway via a culvert. Based on field observations, this stream is likely perennial. Within the study area, North Fork Canoe Creek exhibited a 15-foot wide by 6-foot deep OHWM. UNT-36 to North Fork Canoe Creek is shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream is 2.43 square mile (USGS 2019). Approximately 259 linear feet of UNT-36 to North Fork Canoe Creek lies within the study area. UNT-36 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-37 TO NORTH FORK CANOE CREEK

UNT-37 to North Fork Canoe Creek is a well-maintained roadside channel near US 41 that has an eroded channel and a mowed road ditch swale. It exhibited a 2-foot wide by 0.5-foot deep OHWM. Based on field observations, this stream is likely ephemeral. This area was also investigated as a wetland, but it lacked hydric soils. UNT-37 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by sand and silt. No riffles were observed. Based on field observations, UNT-37 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 21. Approximately 0 linear feet of UNT-37 to North Fork Canoe Creek lies within the study area. UNT-37 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-38 TO NORTH FORK CANOE CREEK

UNT-38 to North Fork Canoe Creek is generally dry, well-maintained roadside channel parallel to US 41. It exhibited a 1.5-foot wide by 2-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-38 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by sand and silt. No riffles were observed. Based on field observations, UNT-38 to North Fork Canoe Creek was classified as a poor-quality stream. This was supported by its HHEI score of 21. Approximately 333 linear feet of UNT-38 to North Fork Canoe Creek is likely a WOTUS



because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

UNT-39 TO NORTH FORK CANOE CREEK

UNT-39 to North Fork Canoe Creek is dry, well-maintained roadside channel near US 41 that parallels US 41 then turns west out of the project area. It exhibited a 1.5-foot wide by 1-foot deep OHWM. Based on field observations, this stream is likely ephemeral. UNT-39 to North Fork Canoe Creek is not shown on USGS 7.5-minute series topographic mapping. The upstream drainage area associated with this stream was not available in StreamStats and is therefore assumed to be less than one square mile (USGS 2019). The substrate was dominated by sand and silt. No riffles were observed. Based on field observations, UNT-39 to North Fork Canoe Creek was classified as a very poor-quality stream. This was supported by its HHEI score of 21. Approximately 940 linear feet of UNT-39 to North Fork Canoe Creek lies within the study area. UNT-39 to North Fork Canoe Creek is likely a WOTUS because of the presence of an OHWM and its connectivity to the Ohio River (a traditionally navigable waterway).

3.2.4 OTHER WATERS

Other waters present in the I-69 ORX study area include one man-made borrow pit, which is illustrated on the maps provided in Appendix B. Approximately 13.4 acres of open water habitat (OW-1) lies within the study area. This area receives backwater flooding from the Ohio River and headwater flooding from Eagle Creek.



CHAPTER 4 – CONCLUSION

Based on the field review, the study area has features that are likely WOTUS. Sixty-eight (68) streams, totaling 34,286 linear feet, were identified within the study area. Thirteen (13) wetlands, totaling 27.09 acres were also identified within the study area. One open water feature, totaling 13.4 acres, was identified within the study area.

Efforts to avoid, minimize, and mitigate impacts to WOTUS will continue through the design phase of the project. If impacts are unavoidable, mitigation may be required. The INDOT Environmental Services Division and KYTC should be contacted immediately if impacts will occur. The final determination of jurisdictional waters is ultimately made by the USACE. This report reflects the analysis and best judgment of the wetland scientists based on the guidelines set forth by the USACE.



CHAPTER 5 – ACKNOWLEDGEMENT

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

Printed Name	Luke F. Eggering, PWS
Signature	
Title	Project Scientist/Professional Wetland Scientist
Consultant Firm	Parsons
INDOT District	INDOT Vincennes District
KYTC District	KYTC District 2



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CHAPTER 7 – ACRONYMS

The list of acronyms is shown in the table below.

Full Acronym Reference Acronym

DEIS Draft Environmental Impact Statement

DEM Digital Elevation Model

Environmental Impact Statement EIS EPA **Environmental Protection Agency**

Evansville-Vanderburgh County Area Plan Commission **EVCAPC**

FHWA Federal Highway Administration

FR Federal Register

GIS geographic information system **GPS** global positioning system

HHEI Headwater Habitat Evaluation Index

HUC hydrologic unit code

Indiana Department of Transportation **INDOT**

Interagency Wild and Scenic Rivers Coordinating Council **IWSRCC**

Kentucky Division of Water **KDOW KYTC** Kentucky Transportation Cabinet

left descending bank LDB NOI notice of intent

Natural Resources Conservation Service **NRCS**

National Wetlands Inventory NWI

ORANSCO Ohio River Valley Water Sanitation Commission

OSRW Outstanding State Resource Water

ORX Ohio River Crossing PEM palustrine emergent PFO palustrine forested PSS palustrine scrub-shrub right descending bank **RDB**

RM River Mile **ROW** right-of-way

QHEI Qualitative Habitat Evaluation Index SSGD Soil Survey Geographic Database

UNT unnamed tributary **United States** US

USACE Department of the Army, United States Army Corps of Engineers

United States Geological Survey USGS **WOTUS** Waters of the United States



APPENDIX A

Tables



Table 1. Mapped Soil Units within the I-69 Ohio River Crossing Project Study Area

SOIL UNIT ABBREVIATION	SOIL UNIT	HYDRIC SOIL RATING	ACREAGE WITHIN STUDY AREA	%
As	Ashton silt loam	Not Hydric (0%)	3.66	0.64
Bd	Birds silt loam	Predominantly Hydric (66-99%)	1.95	0.34
Bk	Breaks and alluvial land (wheeling)	Predominantly Non-Hydric (1-32%)	0.92	0.16
Br	Borrow pits	Not Hydric (0%)	32.42	5.65
De	Dekoven silt loam	Predominantly Hydric (66-99%)	170.84	29.77
Dw	Dekoven and Wakeland silt loams	Partially Hydric (33-65%)	27.81	4.84
Gn	Ginat silt loam	Predominantly Hydric (66-99%)	1.28	0.22
Не	Henshaw silt loam, 0 to 2 percent slopes, rarely flooded	Predominantly Non-Hydric (1-32%)	38.11	6.64
Hana	Huntington fine sandy loam, 0 to 4 percent slopes (grigsby)	Predominantly Non-Hydric (1-32%)	2.82	0.49
Hsia	Huntington silt loam, 0 to 4 percent slopes, occasionally flooded	Predominantly Non-Hydric (1-32%)	8.20	1.43
Ht	Huntington silty clay loam	Not Hydric (0%)	50.72	8.84
LmF	Litz-Muskingum silt loams, 30 to 50 percent slopes	Not Hydric (0%)	8.35	1.45
Ln	Lindside silty clay loam	Predominantly Non-Hydric (1-32%)	3.25	0.57
Ма	Made land	Predominantly Non-Hydric (1-32%)	2.93	0.51
Mn	Melvin silty clay loam	Predominantly Hydric (66-99%)	9.61	1.67
Nw	Newark silty clay loam	Predominantly Non-Hydric (1-32%)	11.69	2.04
Ра	Patton silt loam, 0 to 2 percent slopes, rarely flooded	Predominantly Hydric (66-99%)	1.02	0.18
Rh	Rahm silty clay loam	Not Hydric (0%)	0.23	0.04
ScA	Sciotoville fine sandy loam, 0 to 2 percent slopes	Not Hydric (0%)	0.46	0.08
uAlfB	Alford silt loam, 2 to 6 percent slopes	Not Hydric (0%)	0.22	0.04
uAlfB2	Alford silt loam, 2 to 6 percent slopes, eroded	Not Hydric (0%)	1.71	0.30
uAlfC2	Alford silt loam, 6 to 12 percent slopes, eroded	Not Hydric (0%)	9.87	1.72
uAlfC3	Alford silt loam, 6 to 12 percent slopes, severely eroded	Not Hydric (0%)	2.28	0.40
uAlfD2	Alford silt loam, 12 to 20 percent slopes, eroded	Not Hydric (0%)	0.13	0.02
uAlfD3	Alford silt loam, 12 to 20 percent slopes, severely eroded	Not Hydric (0%)	10.13	1.77





SOIL UNIT ABBREVIATION	SOIL UNIT	HYDRIC SOIL RATING	ACREAGE WITHIN STUDY AREA	%
uAlfE	Alford silt loam, 20 to 30 percent slopes	Not Hydric (0%)	12.48	2.17
uAlfF	Alford silt loam, 30 to 60 percent slopes	Not Hydric (0%)	1.60	0.28
uBelA	Belknap silt loam, 0 to 2 percent slopes, occasionally flooded	Predominantly Non-Hydric (1-32%)	9.74	1.70
hay	Haymond silt loam, 0 to 2 percent slopes, occasionally flooded	Predominantly Non-Hydric (1-32%)	11.01	1.92
hobs	Hosmer silt loam, 2 to 6 percent slopes	Not Hydric (0%)	2.89	0.50
uHosB2	Hosmer silt loam, 2 to 6 percent slopes, eroded	Not Hydric (0%)	14.99	2.61
uHosC2	Hosmer silt loam, 6 to 12 percent slopes, eroded	Not Hydric (0%)	6.01	1.05
uHosC3	Hosmer silt loam, 6 to 12 percent slopes, severely eroded	Not Hydric (0%)	14.12	2.46
uHosD3	Hosmer silt loam, 12 to 20 percent slopes, severely eroded	Not Hydric (0%)	1.06	0.18
uUnA	Uniontown silt loam, 0 to 2 percent slopes, rarely flooded	Not Hydric (0%)	0.43	0.07
иUnB	Uniontown silt loam, 2 to 6 percent slopes, rarely flooded	Not Hydric (0%)	10.08	1.76
uWakA	Wakeland silt loam, 0 to 2 percent slopes, occasionally flooded	Predominantly Non-Hydric (1-32%)	43.37	7.56
W	Water	Not Hydric (0%)	23.92	4.17
Wb	Weinbach silt loam	Predominantly Non-Hydric (1-32%)	3.25	0.57
WhA	Wheeling loam, 0 to 2 percent slopes	Not Hydric (0%)	2.19	0.38
WhB2	Wheeling loam, 2 to 6 percent slopes, eroded	Not Hydric (0%)	3.51	0.61
Wo	Woodmere silty clay loam	Not Hydric (0%)	12.63	2.20
TOTAL			573.91	100.00

Source: NRCS 2019



Table 2: I-69 Ohio River Crossing Project Wetland Summary Table

FEATURE NAME	PHOTOGRAPH NUMBER(S)	LATITUDE	LONGITUDE	COWARDIN CLASSIFICATION1	WETLAND AREA (ACRES) WITHIN STUDY AREA	QUALITY	LIKELY WATER OF U.S. (Y/N)
Wetland 1	1, 5, 6, 7, 8	37.93872	-87.53858	Palustrine Emergent	0.09	Poor	Υ
Wetland 2	24, 25, 26, 27, 28, 29	37.93596	-87.52557	Palustrine Forested	0.44	Poor	Υ
Wetland 3	32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 51, 52, 53, 54, 55, 56	37.93583	-87.52266	Palustrine Forested	8.43	Moderate	Y
Wetland 4A	61, 62, 63, 64	37.93405	-87.52532	Palustrine Forested	2.07	Madarata	Y
Wetland 4B	67, 68, 69, 70, 71	37.93359	-87.52471	Palustrine Emergent	0.32	Moderate	Υ
INDIANA TOTALS					11.35		
Wetland 5A	97, 98, 99, 100, 101, 102, 106, 109	37.89997	-87.52027	Palustrine Emergent	0.93		Υ
Wetland 5B	104, 105, 107, 108, 110	37.89918	-87.52014	Palustrine Forested	0.62		Y
Wetland 5C	103	37.89983	-87.51983	Palustrine Forested	0.07	Moderate	Υ
Wetland 5D	111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125	37.89798	-87.51971	Palustrine Emergent	1.40		Y
Wetland 6	126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141	37.89519	-87.51862	Palustrine Forested	12.14	High	Y
Wetland 7	158, 159, 160, 161, 162, 163	37.88546	-87.51521	Palustrine Emergent	0.33	Moderate	Υ
Wetland 8	172, 173, 174, 175, 176, 177	37.88162	-87.51594	Palustrine Emergent	0.18	Poor	Υ
Wetland 9	262, 263, 264, 265,	37.82992	-87.56735	Palustrine Emergent	0.01	Poor	Y
Wetland 10	266, 267, 268, 269	37.82807	-87.56665	Palustrine Emergent	0.02	Poor	Y
Wetland 11	271, 272, 273	37.82723	-87.56650	Palustrine Emergent	0.01	Poor	Υ
Wetland 12	276, 277, 279, 280	37.82597	-87.56587	Palustrine Emergent	0.01	Poor	Y
Wetland 13	284, 285, 286, 287	37.82465	-87.56789	Palustrine Emergent	0.02	Poor	Y
KENTUCKY TOTALS					15.74		
TOTALS					27.09		

^{1.} Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979)



Table 3: I-69 Ohio River Crossing Project Stream Summary Table

FEATURE NAME	PHOTO NUMBER (S)	LATITUDE, LONGITUDE	OHWM WIDTH (FEET)	OHWM DEPTH (FEET)	LENGTH WITHIN STUDY AREA (FEET)	PREDOMINANT SUBSTRATE (S) ¹	USGS BLUE- LINE (Y/N)	RIFFLES /POOLS (Y/N)	QHEI/ HHEI SCORE ²	QUALITATIVE QUALITY RATING ³	LIKELY WATER OF U.S. (Y/N)	UPSTREAM DRAINAGE AREA ⁴ (SQUARE MILES)	STREAM TYPE
UNT-1 to Eagle Creek	2, 3, 4	37.93854, -87.53897	6	<1	208	Artificial	N	N/N	27	Very poor	Υ	NA	Ephemeral
UNT-2 to Eagle Creek	9, 10, 11	37.93811, -87.53802	9	6	167	Silt/Clay	N	N/N	27	Very poor	Υ	NA	Ephemeral
UNT-3 to Eagle Creek	12,13, 14	37.93771, -87.53727	2	<1	560	Silt/Clay	N	N/N	11	Very poor	Υ	NA	Ephemeral
UNT-4 to Eagle Creek	-	37.93881, -87.53714	N/A ⁴	N/A ⁴	226	Artificial	N	N/A ⁴	N/A ⁵	N/A ⁴	Υ	0.06	Ephemeral
UNT-5 to Eagle Creek	15, 16, 17	37.93642, -87.53343	5	3	10	Silt/Clay	N	N/N	26	Very poor	Υ	NA	Ephemeral
UNT-6 to Eagle Creek	18, 19	37.93664, -87.52701	3	1	318	Silt/Clay	N	N/N	21	Very poor	Υ	NA	Ephemeral
UNT-7 to Eagle Creek	20, 21	37.93657, -87.52691	3	1	514	Silt/Clay	Υ	N/N	21	Very poor	Υ	NA	Ephemeral
UNT-8 to Eagle Creek	22, 23	37.93525, -87.52670	12	3	56	Silt/Clay	N	N/N	22	Very poor	Υ	NA	Ephemeral
UNT-9 to Eagle Creek	30	37.93609, -87.52514	3	<1	146	Silt/Clay	N	N/N	22	Very poor	Υ	0.25	Ephemeral
UNT-10 to Eagle Creek	31, 33	37.93675, -87.52317	3	<1	144	Silt/Clay	N	N/N	22	Very poor	Υ	NA	Ephemeral
Eagle Creek	45, 46, 46, 48, 49, 50	37.93533, -87.52389	30	10	1,042	Silt	Υ	N/Y	37*	Poor	Υ	6.12	Perennial
UNT-11 to Eagle Creek	72, 73,	37.93345, -87.52263	2	<1	80	Silt/Clay	N	N/N	12	Very poor	Υ	NA	Ephemeral





FEATURE NAME	PHOTO NUMBER (S)	LATITUDE, LONGITUDE	OHWM WIDTH (FEET)	OHWM DEPTH (FEET)	LENGTH WITHIN STUDY AREA (FEET)	PREDOMINANT SUBSTRATE (S) ¹	USGS BLUE- LINE (Y/N)	RIFFLES /POOLS (Y/N)	QHEI/ HHEI SCORE ²	QUALITATIVE QUALITY RATING ³	LIKELY WATER OF U.S. (Y/N)	UPSTREAM DRAINAGE AREA ⁴ (SQUARE MILES)	STREAM TYPE
UNT-12 to Eagle Creek	77	37.93215, -87.52483	12	4	1,147	Silt/Clay	Υ	N/N	30	Poor	Υ	0.04	Ephemeral
UNT-13 to Eagle Creek	75, 76	37.93187, -87.52530	12	4	537	Silt/Clay	N	N/N	25	Very poor	Υ	NA	Ephemeral
UNT-14 to Eagle Creek	81, 82	37.93053, -87.52486	3	1	834	Silt/Clay	N	N/N	20	Very poor	Υ	NA	Ephemeral
	INDIA	NA TOTALS			5,989								
Ohio River	95, 96	37.90136, -87.51918	2,029	>30	200	Silt/Sand	Υ	N/N	58*	Fair	Υ	205,0006	Perennial
UNT-1 to Ohio River	142, 154, 155	37.88948, -87.51613	11	3	1,716	Artificial/Grav el	Y	N/N	40	Poor	Υ	NA	Ephemeral
UNT-2 to Ohio River	143, 144	37.88931, -87.51670	3	1	451	Clay/Gravel	N	N/N	19	Very poor	Υ	NA	Ephemeral
UNT-3 to Ohio River	145, 146	37.88891, -87.51687	3	1	474	Silt/Gravel	N	N/N	27	Very poor	Υ	NA	Ephemeral
UNT-4 to Ohio River	147, 148	37.88900, -87.51586	3	3	14	Silt/Cobble	N	N/Y	38	Poor	Υ	NA	Ephemeral
UNT-5 to Ohio River	149, 150	37.88769, -87.5158	3	1	432	Gravel/Clay	N	N/Y	33	Poor	Υ	NA	Ephemeral
UNT-6 to Ohio River	-	37.88709, -87.51534	3	3	42	Silt/Cobble	N	N/Y	50	Fair	Υ	NA	Ephemeral
UNT-7 to Ohio River	151, 152	37.88631, -87.51586	3	1	419	Cobble/Grave	N	N/Y	46	Fair	Υ	NA	Ephemeral
UNT-8 to Ohio River	153, 156, 157	37.88630, -87.51508	3	3	60	Bedrock/Cobb le	N	N/Y	30	Poor	Υ	NA	Ephemeral





FEATURE NAME	PHOTO NUMBER (S)	LATITUDE, LONGITUDE	OHWM WIDTH (FEET)	OHWM DEPTH (FEET)	LENGTH WITHIN STUDY AREA (FEET)	PREDOMINANT SUBSTRATE (S) ¹	USGS BLUE- LINE (Y/N)	RIFFLES /POOLS (Y/N)	QHEI/ HHEI SCORE ²	QUALITATIVE QUALITY RATING ³	LIKELY WATER OF U.S. (Y/N)	UPSTREAM DRAINAGE AREA ⁴ (SQUARE MILES)	STREAM TYPE
UNT-9 to Ohio River	166, 167	37.88462, -87.51585	2	<1	434	Clay/Silt	N	N/N	11	Very poor	Υ	NA	Ephemeral
UNT-10 to Ohio River	164, 165	37.88478, -87.51592	2	<1	155	Clay/Leaf Pack/Woody Debris	N	N/N	12	Very poor	Υ	NA	Ephemeral
UNT-11 to Ohio River	170, 171	37.88347, -87.51491	5	2	878	Clay/Silt	N	N/N	26	Very poor	Υ	NA	Ephemeral
UNT-12 to Ohio River	168, 169	37.88447, -87.51457	3	2	113	Clay/Silt	N	N/N	16	Very poor	Υ	NA	Ephemeral
UNT-1 to North Fork Canoe Creek	178, 179	37.88112, -87.51607	3	2	494	Clay/Silt	N	N/N	25	Very poor	Υ	NA	Ephemeral
UNT-2 to North Fork Canoe Creek	180, 181, 182	37.87914, -87.51703	8	6	306	Clay/Silt	N	N/N	25	Very poor	Υ	0.03	Ephemeral
UNT-3 to North Fork Canoe Creek	183, 184	37.87794, -87.51793	<1	<1	328	Silt/Leaf Pack/Woody Debris	N	N/N	14	Very poor	Υ	0.04	Ephemeral
UNT-4 to North Fork Canoe Creek	190, 191	37.87351, -87.52187	4	2	321	Silt/Sand	N	N/N	41	Poor	Υ	0.03	Ephemeral
UNT-5 to North Fork Canoe Creek	192, 193	37.87109, -87.52359	6	3	302	Silt/Cobble	N	N/N	43	Fair	Υ	0.06	Ephemeral
UNT-6 to North Fork Canoe Creek	194	37.85822, -87.53216	14	8	880	Silt/Gravel	Υ	N/N	45	Fair	Υ	0.67	Ephemeral
UNT-7 to North Fork Canoe Creek	195, 196	37.86429, -87.53661	12	8	183	Silt/Gravel	N	N/N	35	Poor	Υ	0.04	Ephemeral





FEATURE NAME	PHOTO NUMBER (S)	LATITUDE, LONGITUDE	OHWM WIDTH (FEET)	OHWM DEPTH (FEET)	LENGTH WITHIN STUDY AREA (FEET)	PREDOMINANT SUBSTRATE (S) ¹	USGS BLUE- LINE (Y/N)	RIFFLES /POOLS (Y/N)	QHEI/ HHEI SCORE ²	QUALITATIVE QUALITY RATING ³	LIKELY WATER OF U.S. (Y/N)	UPSTREAM DRAINAGE AREA ⁴ (SQUARE MILES)	STREAM TYPE
UNT-8 to North Fork Canoe Creek	197, 198	37.86399, -87.53151	5	1.5	160	Silt/Gravel	N	N/N	30	Poor	Y	<1	Ephemeral
UNT-9 to North Fork Canoe Creek	199, 200	37.86229, -87.52767	20	10	1,802	Silt/Sand	Υ	N/N	41	Poor	Υ	0.87	Ephemeral
UNT-10 to North Fork Canoe Creek	-	37.86149, -87.52348	3	1	82	Silt/Sand	N	N/N	34.5	Poor	Υ	0.11	Ephemeral
UNT-11 to North Fork Canoe Creek	201, 202	37.86199, -87.52138	11	4	737	Silt/Clay	N	N/N	31	Poor	Υ	NA	Ephemeral
UNT-12 to North Fork Canoe Creek	203, 204, 212	37.86127, -87.51739	11	10	289	Silt/Sand	Υ	N/N	37	Poor	Υ	0.64	Ephemeral
UNT-13 to North Fork Canoe Creek	205, 206	37.86156, -87.51632	9	10	360	Silt/Sand	Υ	N/Y	34.5*	Poor	Υ	1.77	Ephemeral
UNT-14 to North Fork Canoe Creek	207, 208	37.86135, -87.51653	4	1.5	36	Silt/Sand	N	N/N	27	Very poor	Υ	NA	Ephemeral
UNT-15 to North Fork Canoe Creek	1	37.85914, -87.52828	3	1	59	Silt/Sand	N	N/N	26	Very poor	Υ	NA	Ephemeral
UNT-16 to North Fork Canoe Creek	209, 210, 212	37.85811, -87.53069	4	1.5	267	Silt/Sand	N	N/N	26	Very poor	Υ	NA	Ephemeral
UNT-17 to North Fork Canoe Creek	220, 221	37.85428, -87.54710	13	7	780	Silt/Clay	N	N/N	36	Poor	Υ	0.50	Ephemeral





FEATURE NAME	PHOTO NUMBER (S)	LATITUDE, LONGITUDE	OHWM WIDTH (FEET)	OHWM DEPTH (FEET)	LENGTH WITHIN STUDY AREA (FEET)	PREDOMINANT SUBSTRATE (S) ¹	USGS BLUE- LINE (Y/N)	RIFFLES /POOLS (Y/N)	QHEI/ HHEI SCORE ²	QUALITATIVE QUALITY RATING ³	LIKELY WATER OF U.S. (Y/N)	UPSTREAM DRAINAGE AREA ⁴ (SQUARE MILES)	STREAM TYPE
UNT-18 to North Fork Canoe Creek	222, 223	37.8546, -87.54706	4	4	241	Silt/Clay	N	N/N	21	Very poor	Υ	NA	Ephemeral
UNT-19 to North Fork Canoe Creek	224, 225	37.85418, -87.54681	9	6	234	Silt/Clay	N	N/N	26	Very poor	Υ	NA	Ephemeral
UNT-20 to North Fork Canoe Creek	227	37.85358, -87.55093	14	8	490	Silt/Gravel	N	N/N	45	Fair	Y	NA	Ephemeral
UNT-21 to North Fork Canoe Creek	235, 236, 237	37.84837, -87.56449	9	6	1,840	Silt/Gravel	Υ	N/N	35	Poor	Y	0.73	Intermitten t
UNT-22 to North Fork Canoe Creek	238, 239	37.84708, -87.56247	3	1	234	Silt/Sand	N	N/N	26	Very poor	Y	NA	Ephemeral
UNT-23 to North Fork Canoe Creek	1	37.84653, -87.56203	9	6	16	Silt/Hardpan	N	N/Y	32*	Poor	Y	1.54	Ephemeral
UNT-24 to North Fork Canoe Creek	242, 243	37.84950, -87.567811	3	1	81	Silt/Clay	N	N/N	11	Very poor	Y	AN	Ephemeral
UNT-25 to North Fork Canoe Creek	244, 245	37.84594, -87.56666	1.5	1	1,673	Silt/Clay	N	N/N	11	Very poor	Υ	NA	Ephemeral
UNT-26 to North Fork Canoe Creek	246, 247	37.84578, -87.56601	1.5	1	1,753	Silt/Sand	N	N/N	32	Poor	Υ	NA	Ephemeral
North Fork Canoe Creek	250, 251, 252, 253	37.84439, -87.56658	35	12	1,596	Silt/Cobble	Y	N/Y	38*	Poor	Υ	13.30	Perennial





FEATURE NAME	PHOTO NUMBER (S)	LATITUDE, LONGITUDE	OHWM WIDTH (FEET)	OHWM DEPTH (FEET)	LENGTH WITHIN STUDY AREA (FEET)	PREDOMINANT SUBSTRATE (S) ¹	USGS BLUE- LINE (Y/N)	RIFFLES /POOLS (Y/N)	QHEI/ HHEI SCORE ²	QUALITATIVE QUALITY RATING ³	LIKELY WATER OF U.S. (Y/N)	UPSTREAM DRAINAGE AREA ⁴ (SQUARE MILES)	STREAM TYPE
UNT-27 to North Fork Canoe Creek	248, 249	37.84535, -87.567003	15	6	601	Silt/Sand	N	N/N	41	Poor	Y	NA	Ephemeral
UNT-28 to North Fork Canoe Creek	260, 261	37.84233, -87.56585	3	2	1,697	Silt/Gravel	N	N/N	30	Poor	Υ	NA	Ephemeral
UNT-29 to North Fork Canoe Creek	254, 255, 256	37.84309, -87.56512	4	2	1,619	Silt/Gravel	N	N/N	30	Poor	Υ	NA	Ephemeral
UNT-30 to North Fork Canoe Creek	257, 258	37.84270, -87.56488	4	2	458	Silt/Gravel	N	N/N	30	Poor	Υ	NA	Ephemeral
UNT-31 to North Fork Canoe Creek	259	37.84267, -87.56476	4	1	405	Silt/Gravel	N	N/N	30	Poor	Υ	NA	Ephemeral
UNT-32 to North Fork Canoe Creek	275	37.82629, -87.56612	1.5	1	378	Sand/Silt	N	N/N	16	Very poor	Υ	NA	Ephemeral
UNT-33 to North Fork Canoe Creek	276, 278	37.82579, -87.56576	1.5	1	208	Sand/Silt	N	N/N	16	Very poor	Υ	NA	Ephemeral
UNT-34 to North Fork Canoe Creek	283, 285, 286, 288	37.82556, -87.56645	2	2	286	Sand/Silt	N	N/N	16	Very poor	Υ	NA	Ephemeral
UNT-35 to North Fork Canoe Creek	-	37.82194, -87.56839	1.5	1	181	Sand/Silt	N	N/N	16	Very poor	Υ	NA	Ephemeral
UNT-36 to North Fork Canoe Creek	296, 297, 299	37.81462, -87.56305	15	6	259	Sand/Gravel	Υ	N/Y	34.5*	Poor	Y	2.43	Perennial



I-69 Ohio River Crossing Project Waters of the U.S. Technical Report

FEATURE NAME	PHOTO NUMBER (S)	LATITUDE, LONGITUDE	OHWM WIDTH (FEET)	OHWM DEPTH (FEET)	LENGTH WITHIN STUDY AREA (FEET)	PREDOMINANT SUBSTRATE (S) ¹	USGS BLUE- LINE (Y/N)	RIFFLES /POOLS (Y/N)	QHEI/ HHEI SCORE ²	QUALITATIVE QUALITY RATING ³	LIKELY WATER OF U.S. (Y/N)	UPSTREAM DRAINAGE AREA ⁴ (SQUARE MILES)	STREAM TYPE
UNT-37 to North Fork Canoe Creek	293, 295, 297	37.81475, -87.56277	2	0.5	0	Sand/Silt	N	N/N	21	Very poor	Y	NA	Ephemeral
UNT-38 to North Fork Canoe Creek	298, 300	37.81400, -87.56299	1.5	2.0	333	Sand/Silt	N		21	Very poor	Υ	NA	Ephemeral
UNT-39 to North Fork Canoe Creek	301, 302, 304	37.80921, -87.56422	1.5	1.0	940	Sand/Silt	N	N/Y	21	Very poor	Υ	NA	Ephemeral
KENTUCKY TOTALS					28,297								
TOTALS					34,286								

Notes:

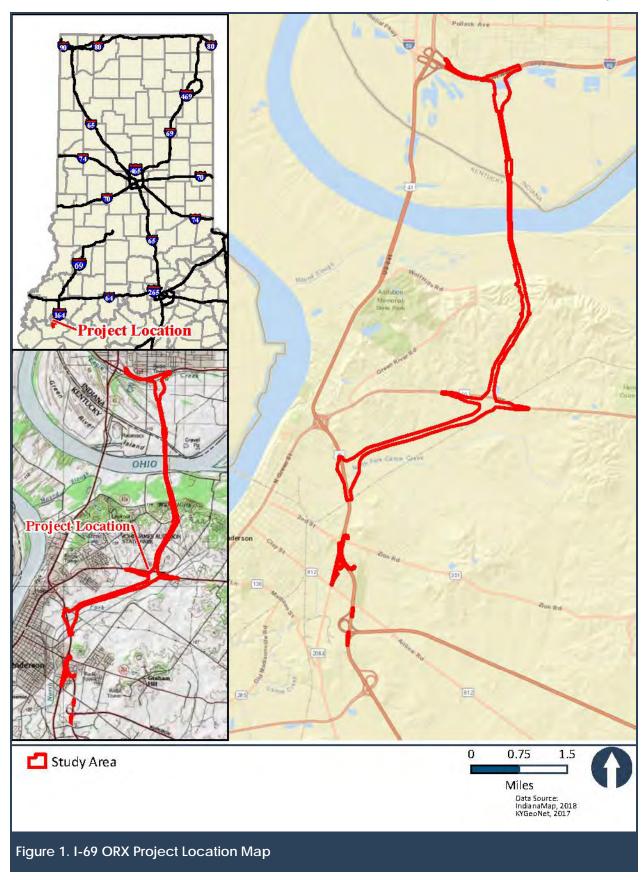
- 1. Only the predominant substrate(s), as indicated on the HHEI/QHEI, is/are listed.
- 2. Values listed are HHEI, except where noted by (*), which are QHEI values.
- 3. The qualitative quality rating is based on ranges presented in the Ohio EPA Qualitative Habitat Evaluation Index (QHEI) (Ohio EPA 2006).
- 4. The upstream drainage area for each stream was calculated using StreamStats Version 4.3 (USGS 2019).
- 5. UNT-4 to Eagle Creek through the study area is entirely encapsulated in a culvert. Since UNT-4 to Eagle Creek was not visible within the study area, this data is not available.
- 6. StreamStats data is not available for the Ohio River within the Study Area. Drainage data was obtained from the Ohio River Valley Water Sanitation Commission (ORANSCO 2019).



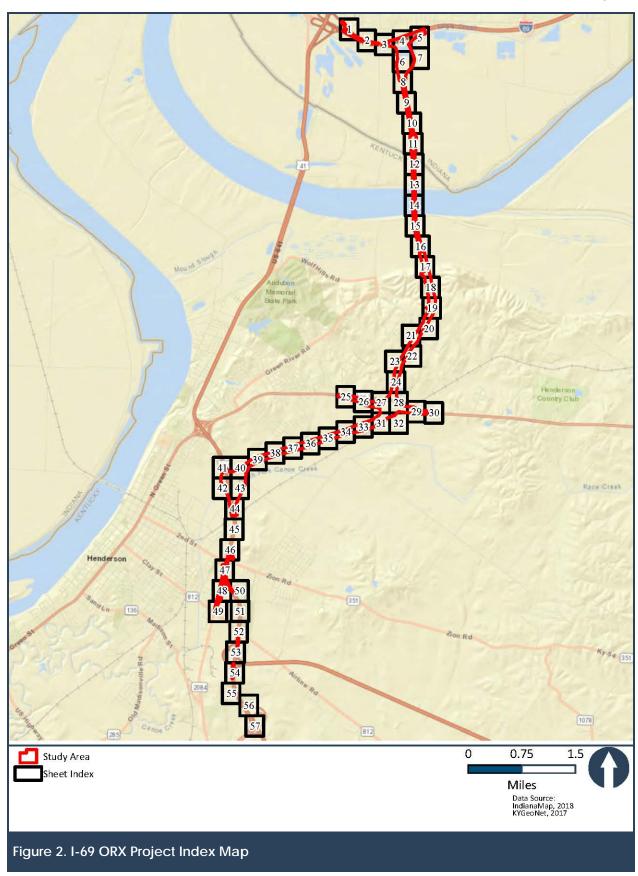
APPENDIX B

Mapping

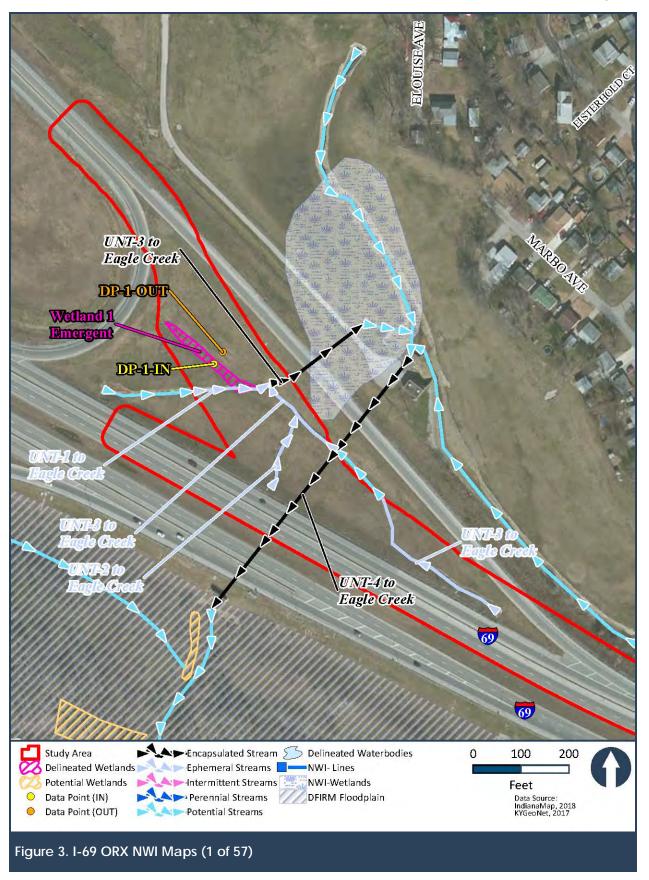




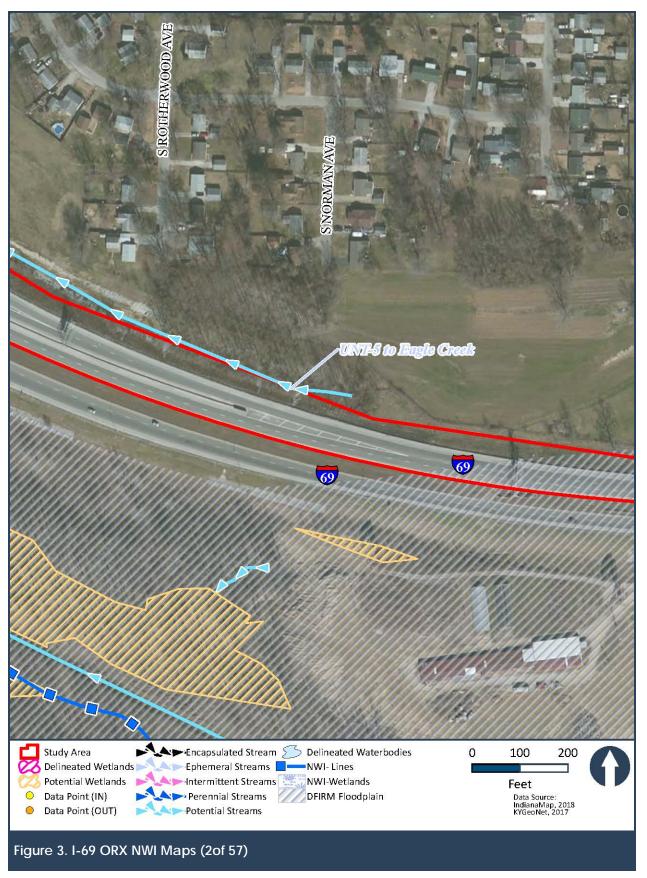




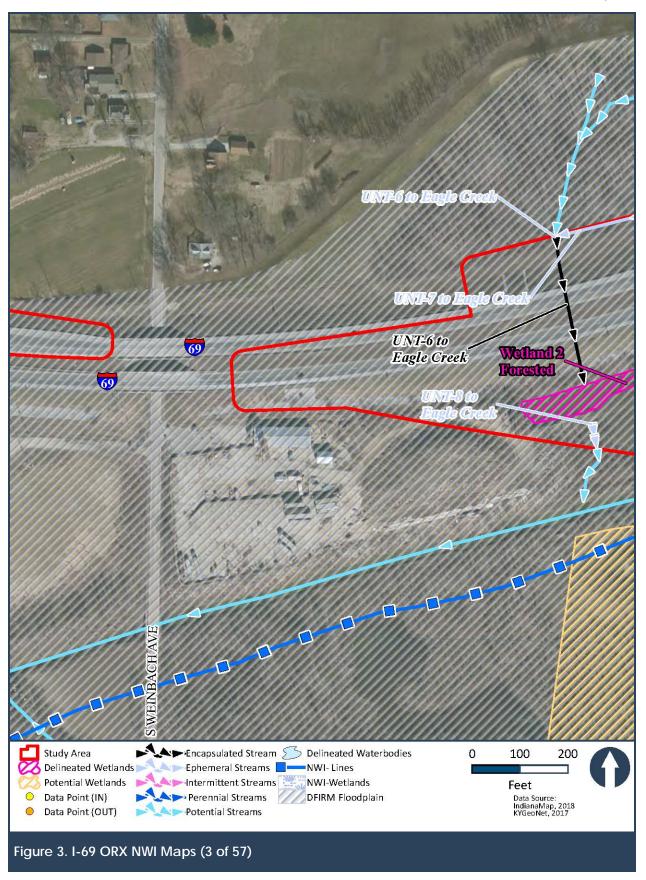




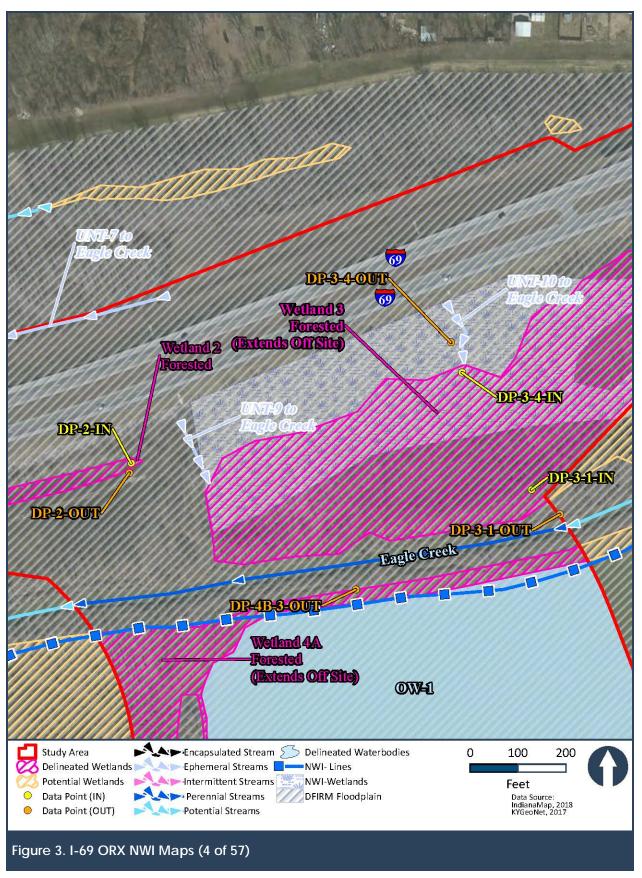




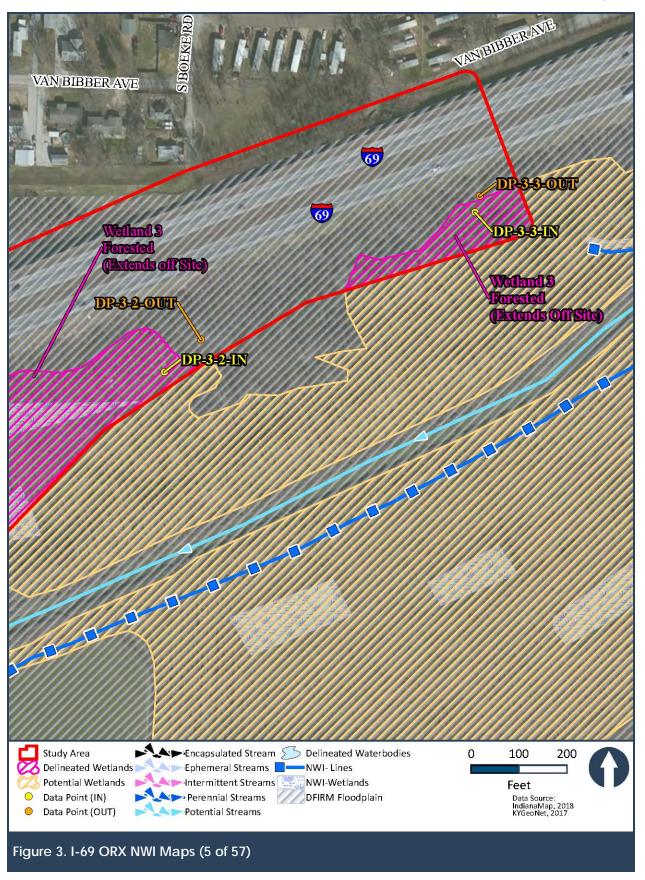




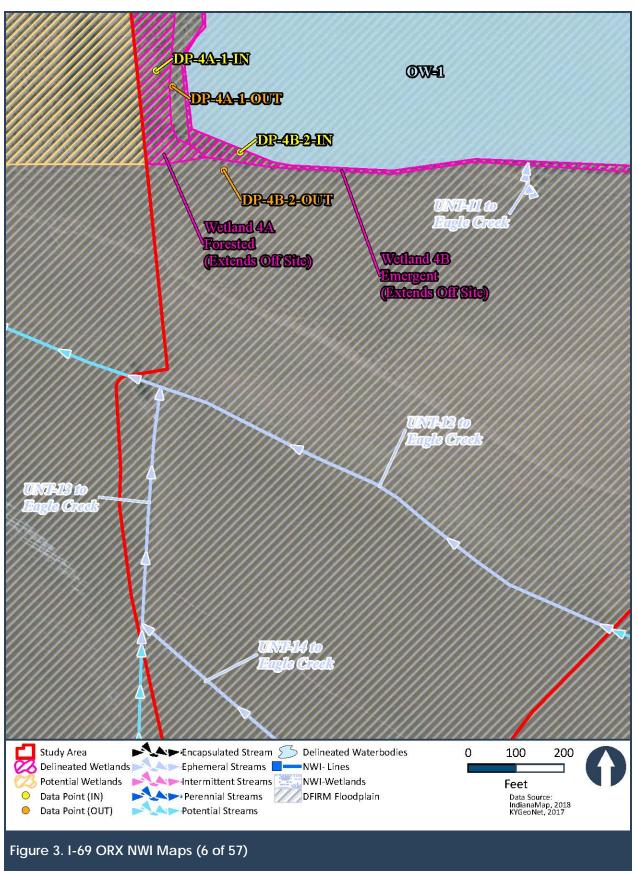




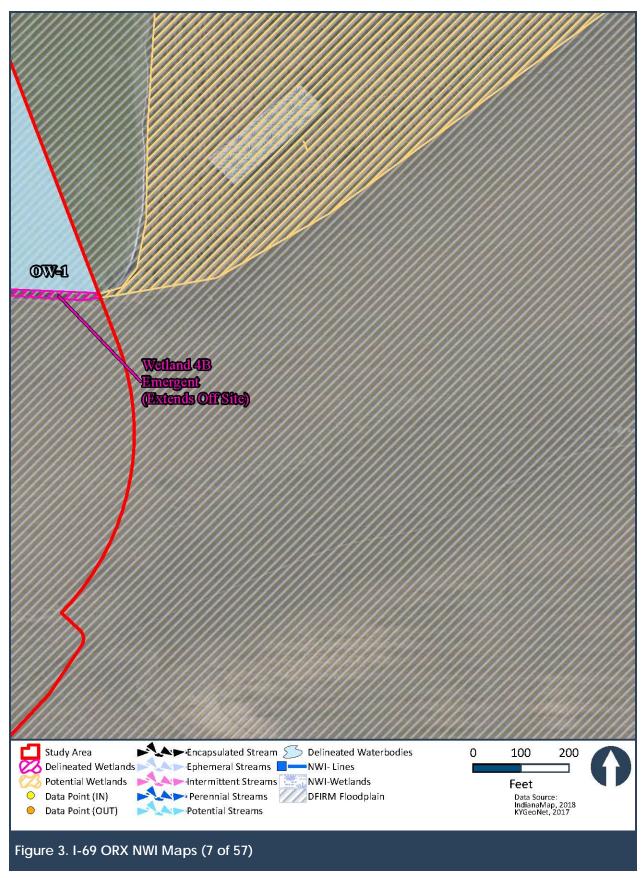




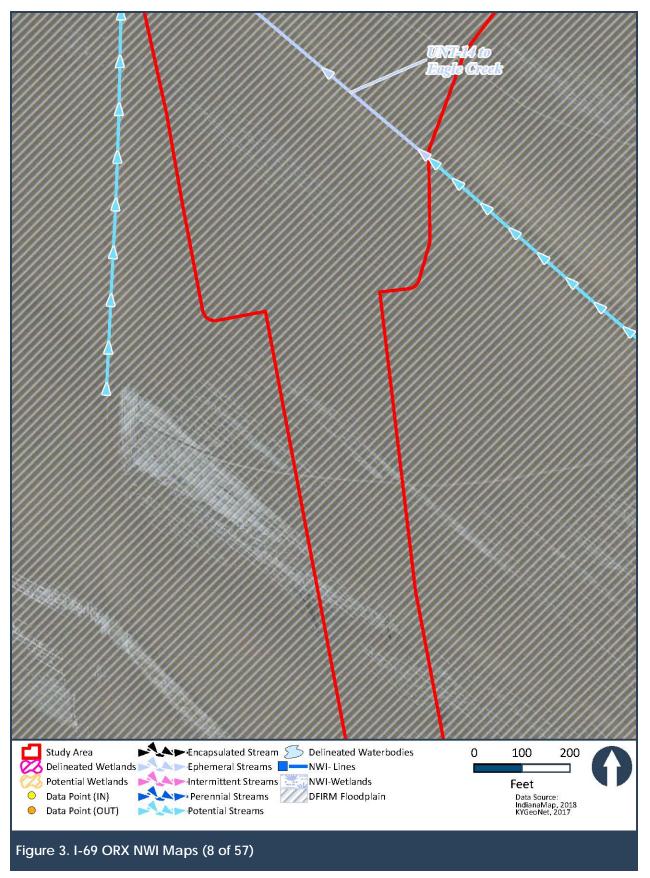












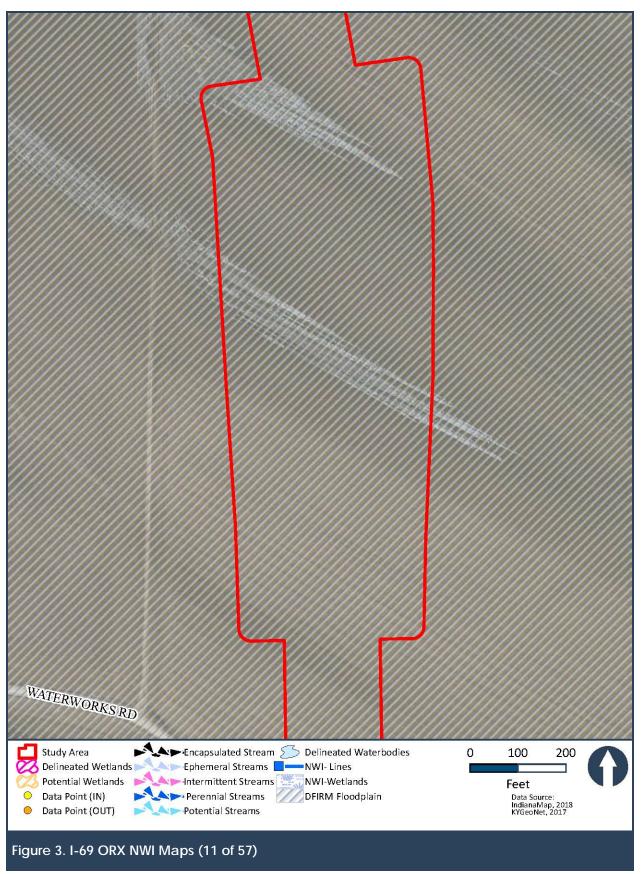




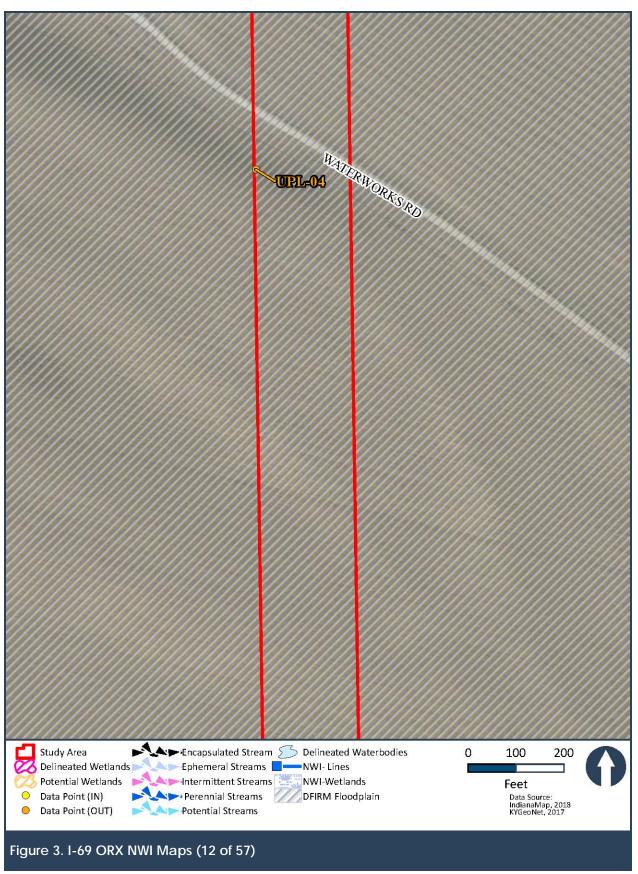




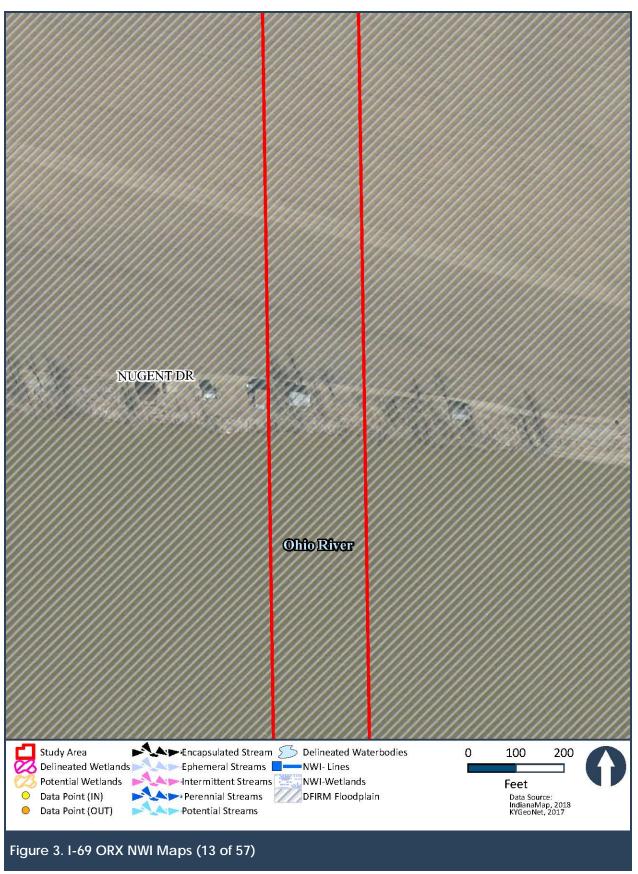




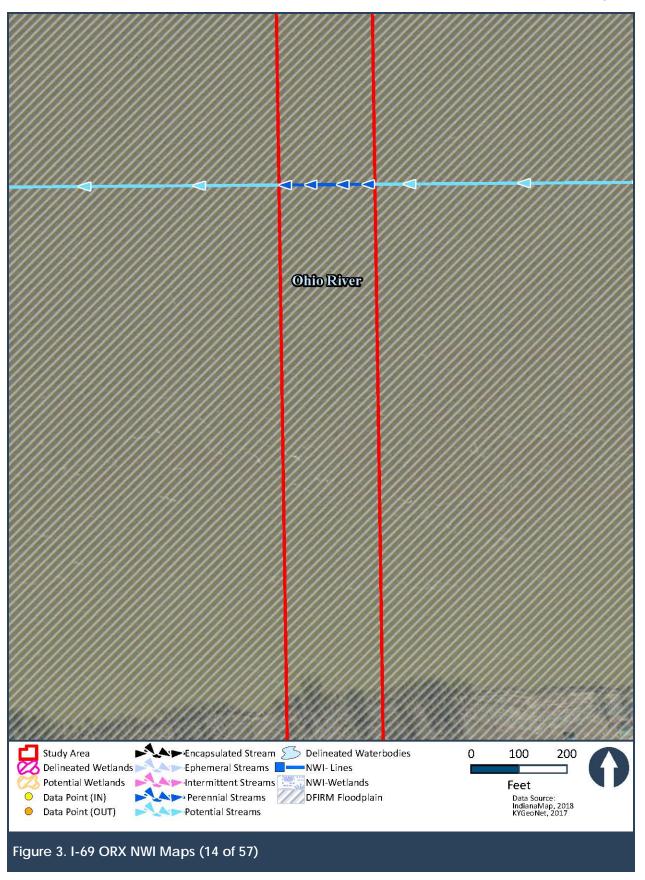




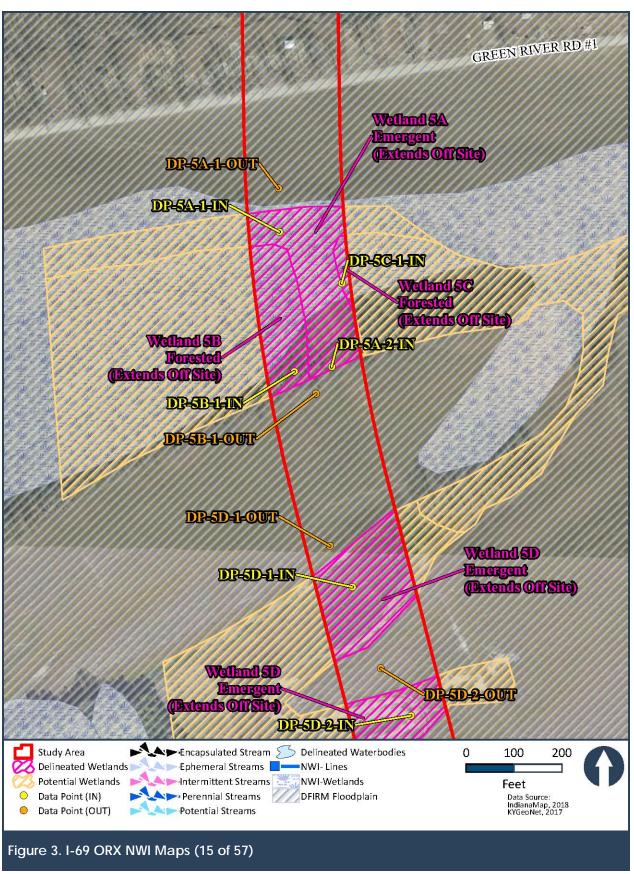




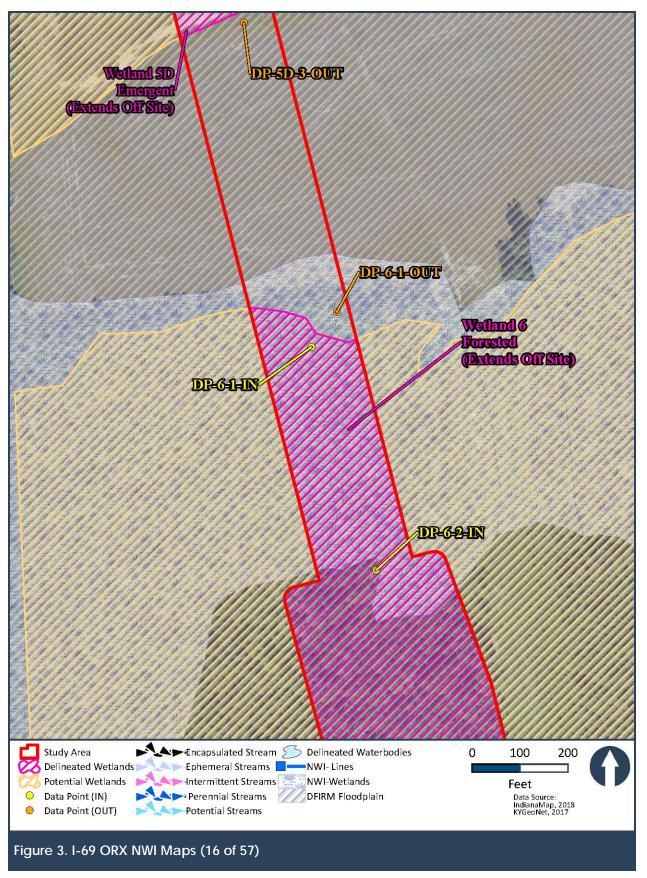




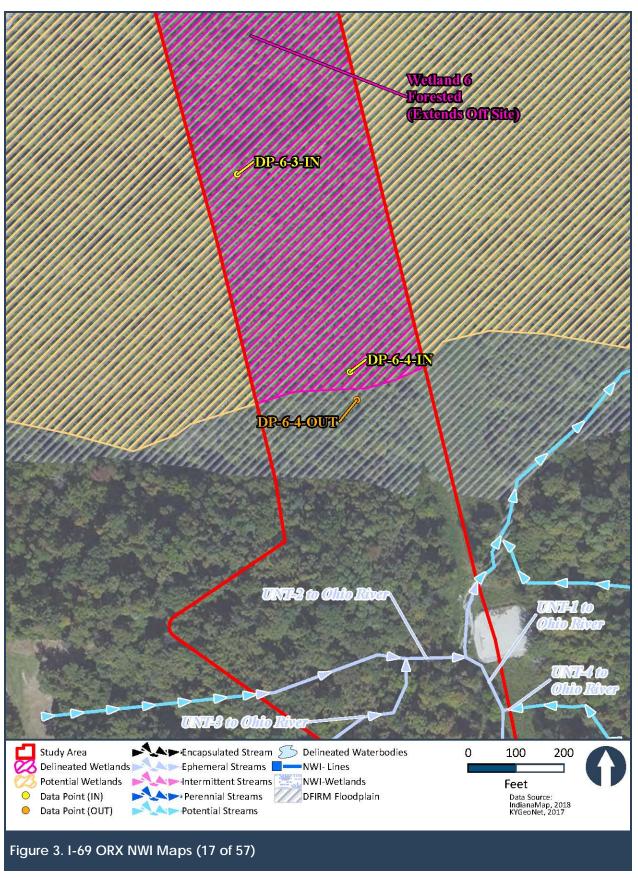




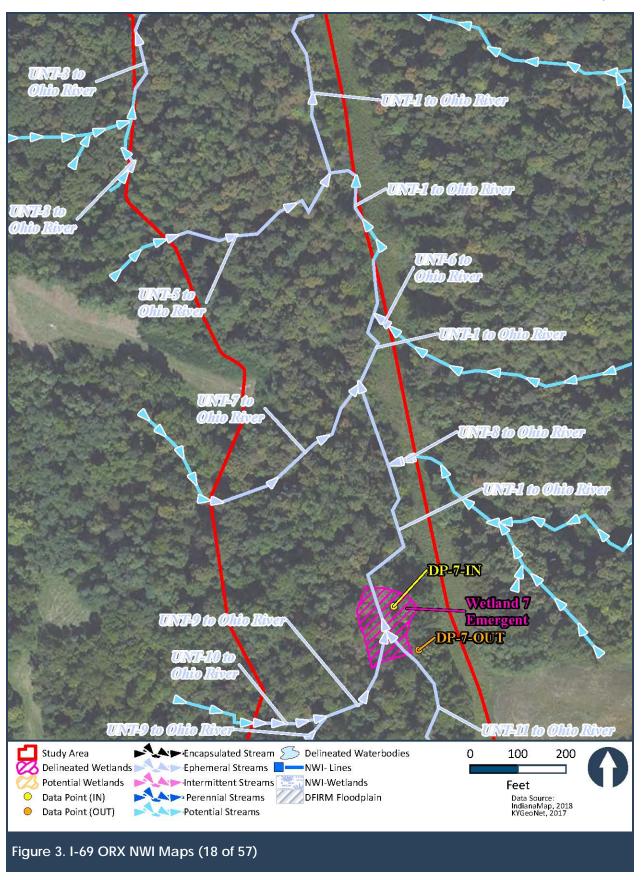




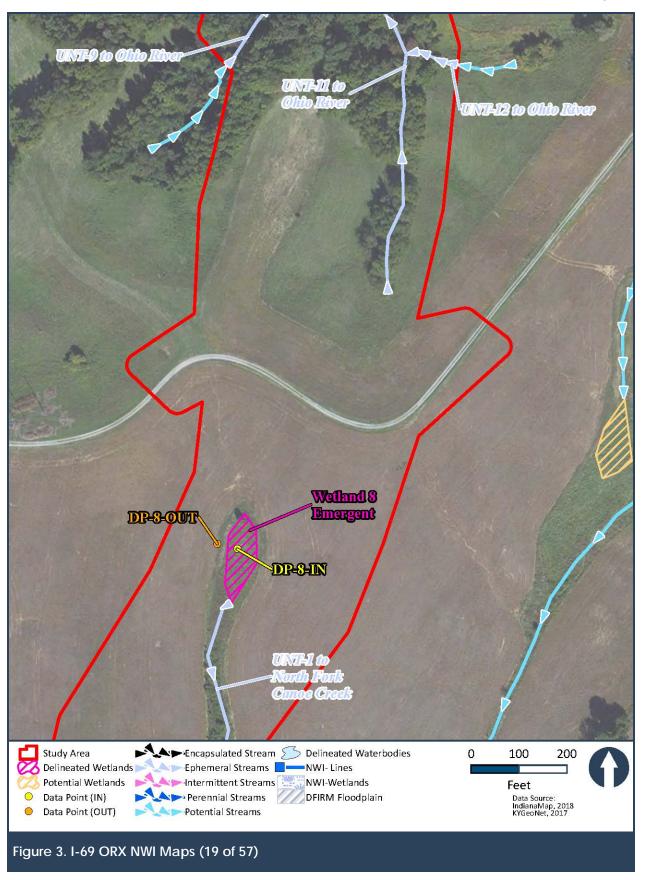




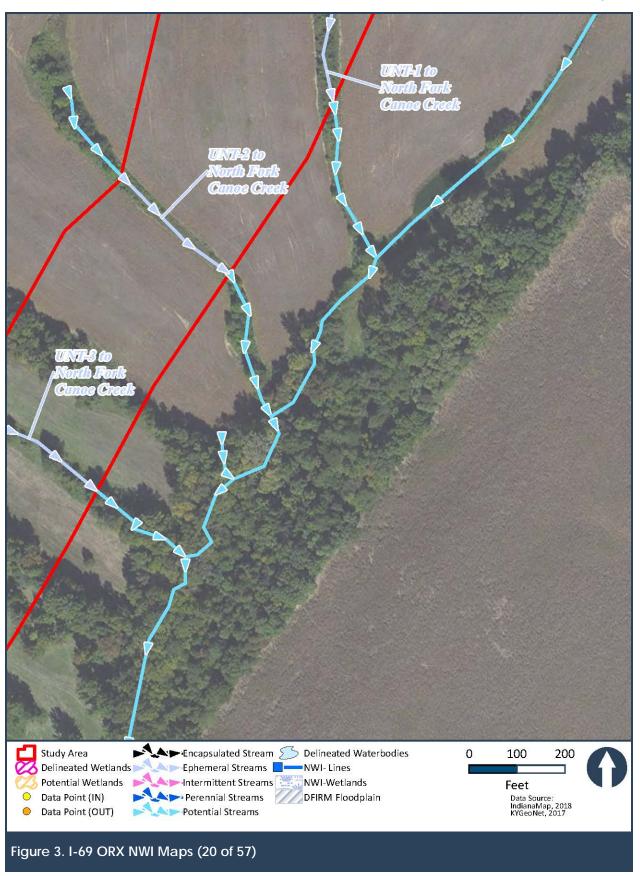








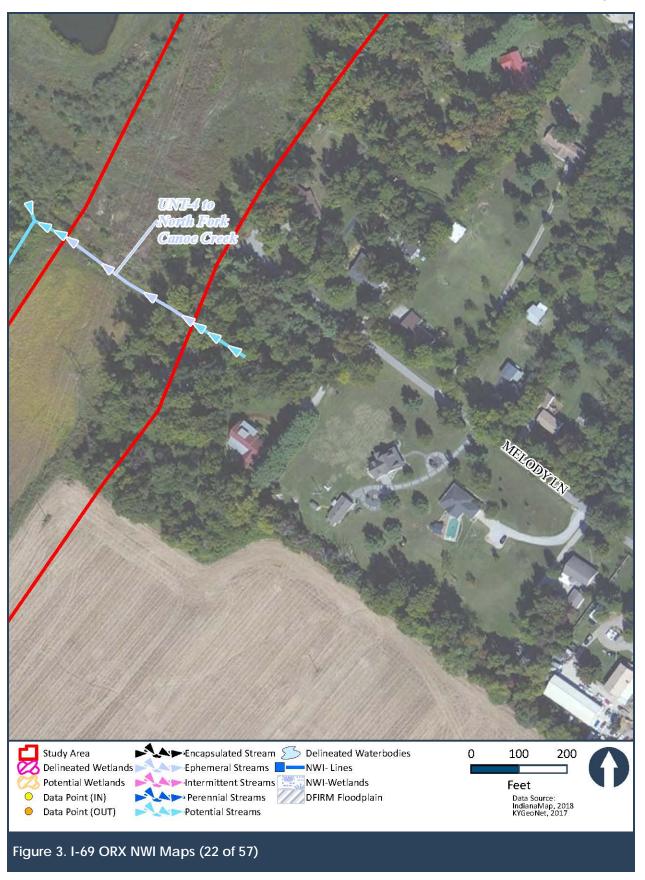




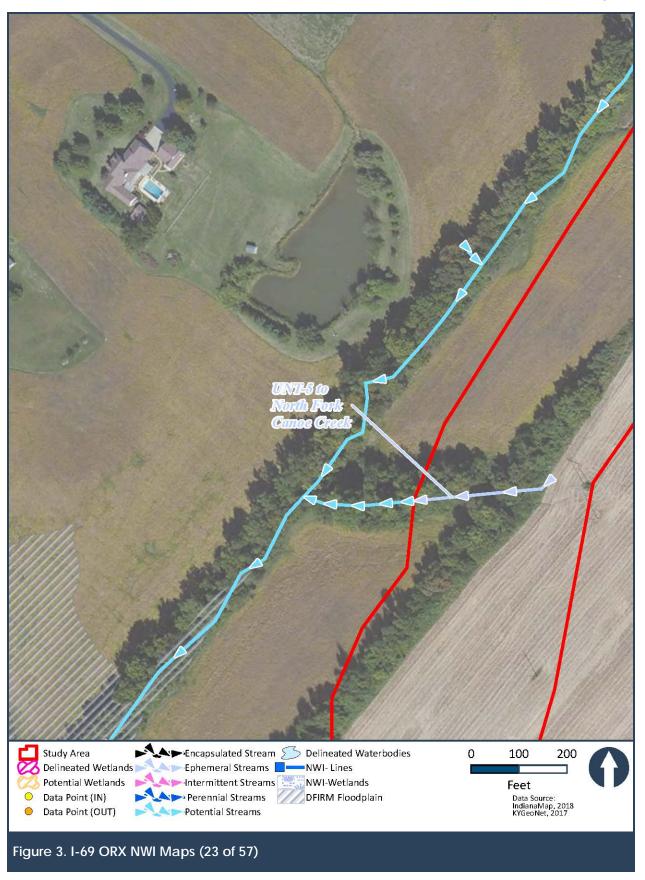








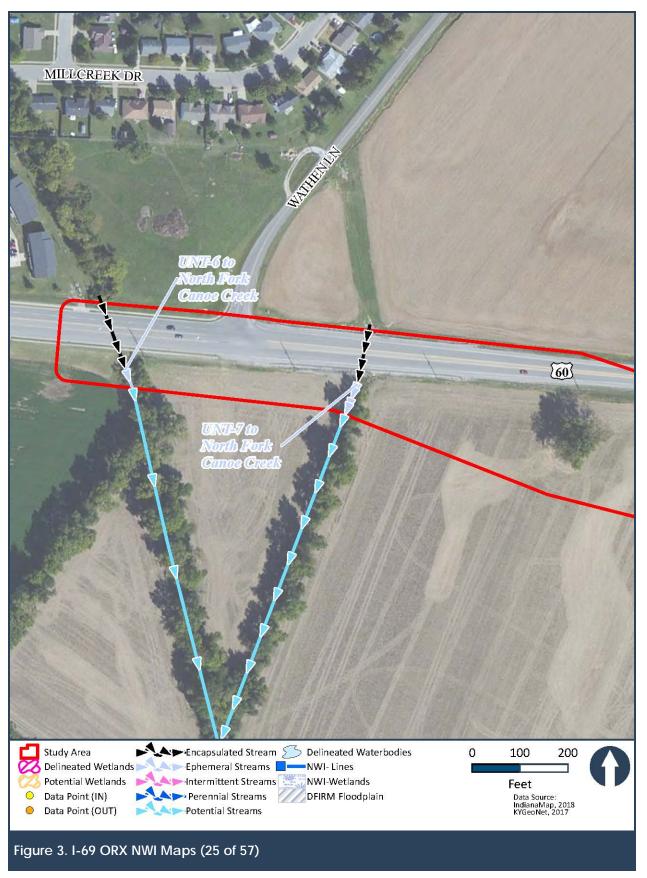








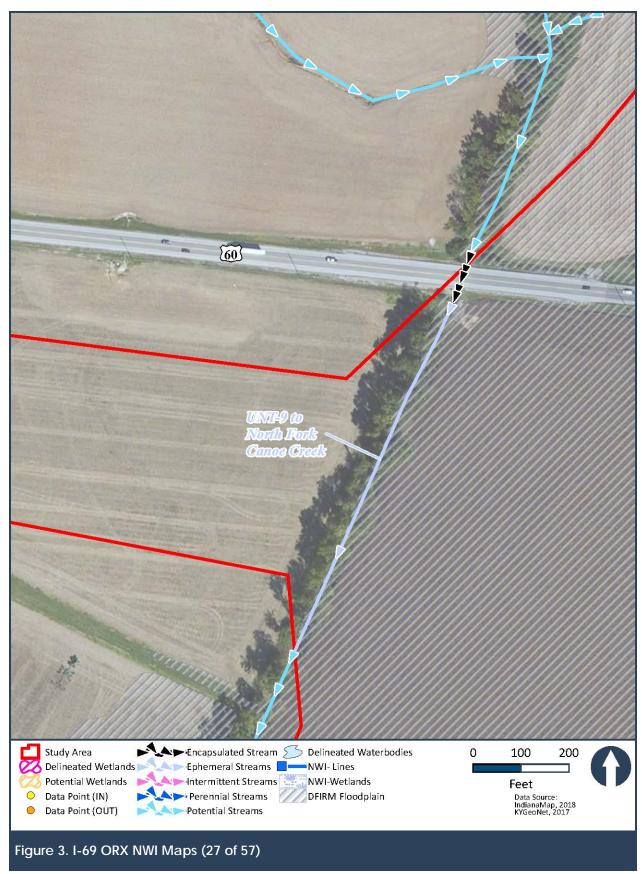




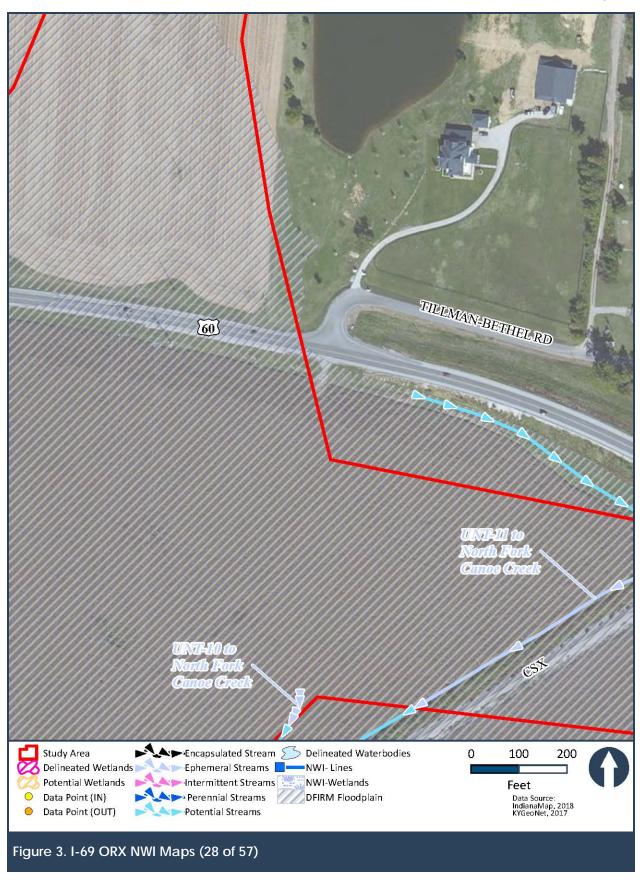




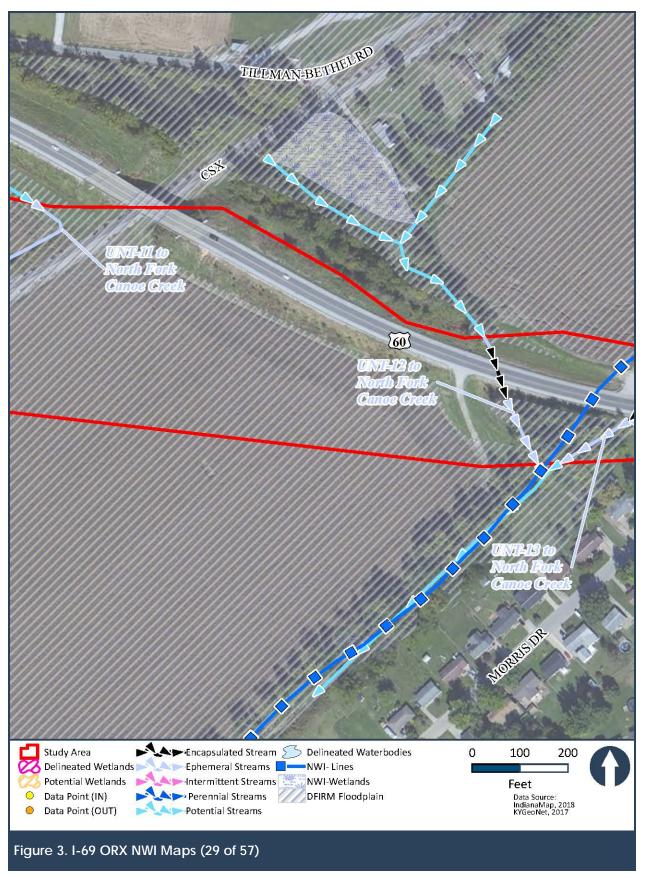




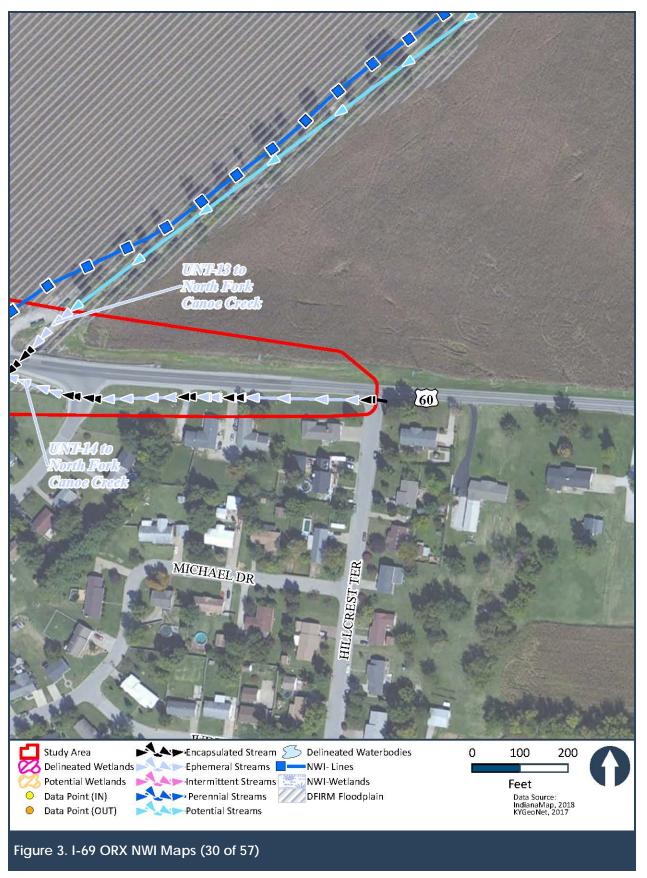




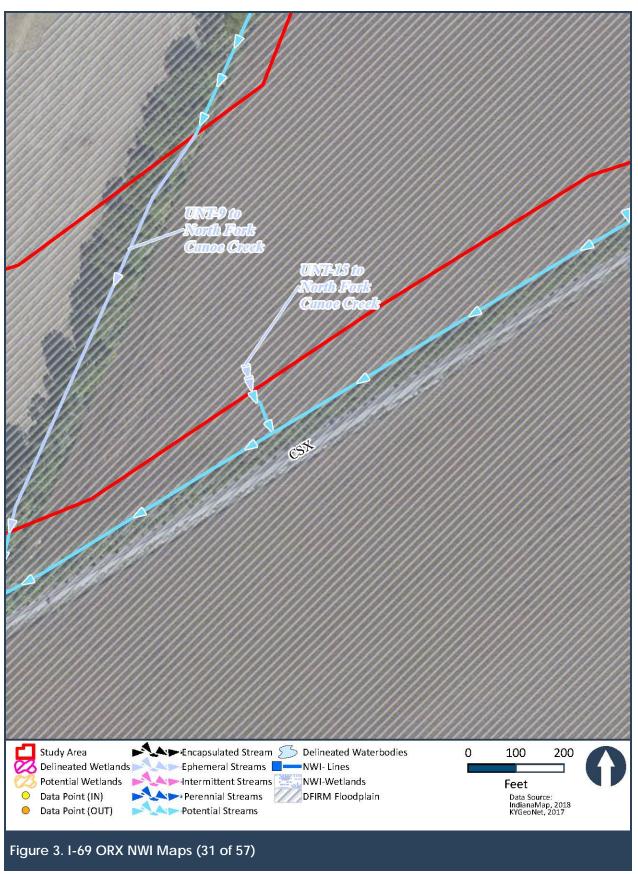








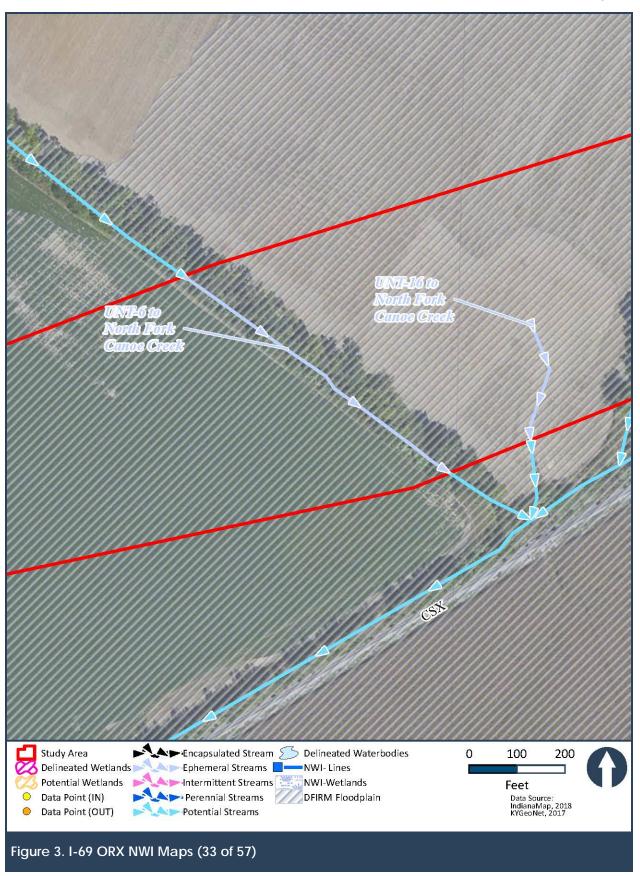








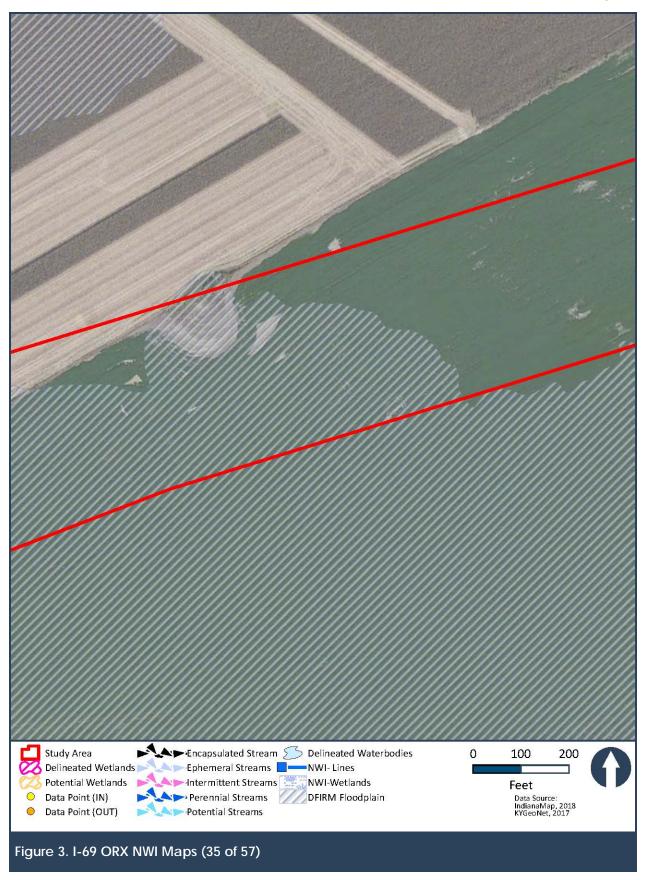




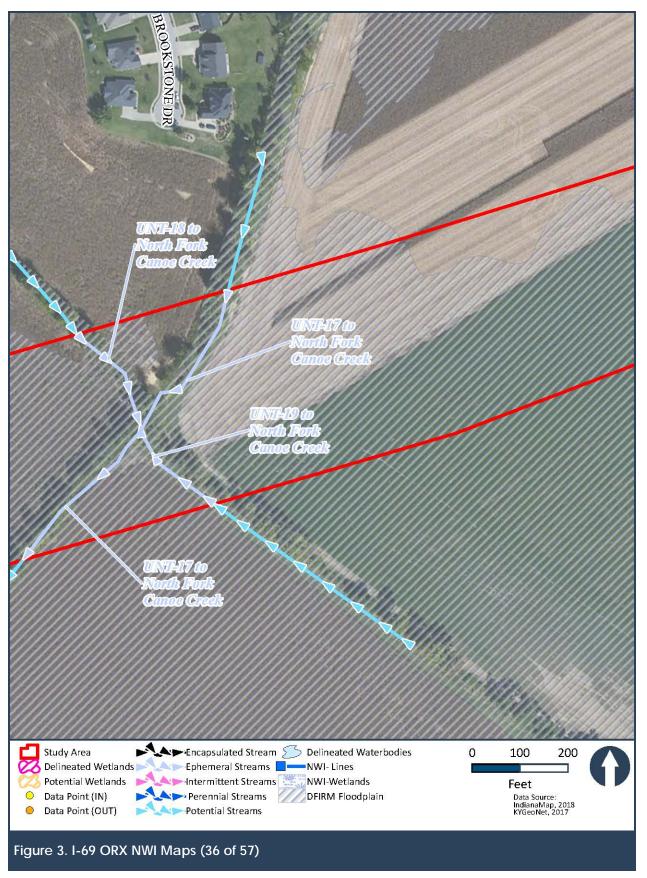




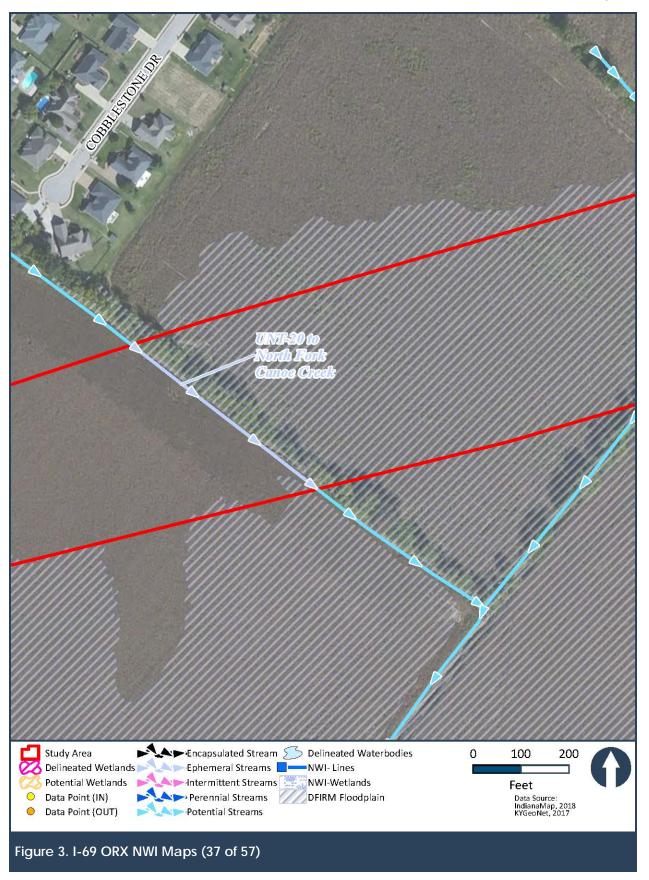








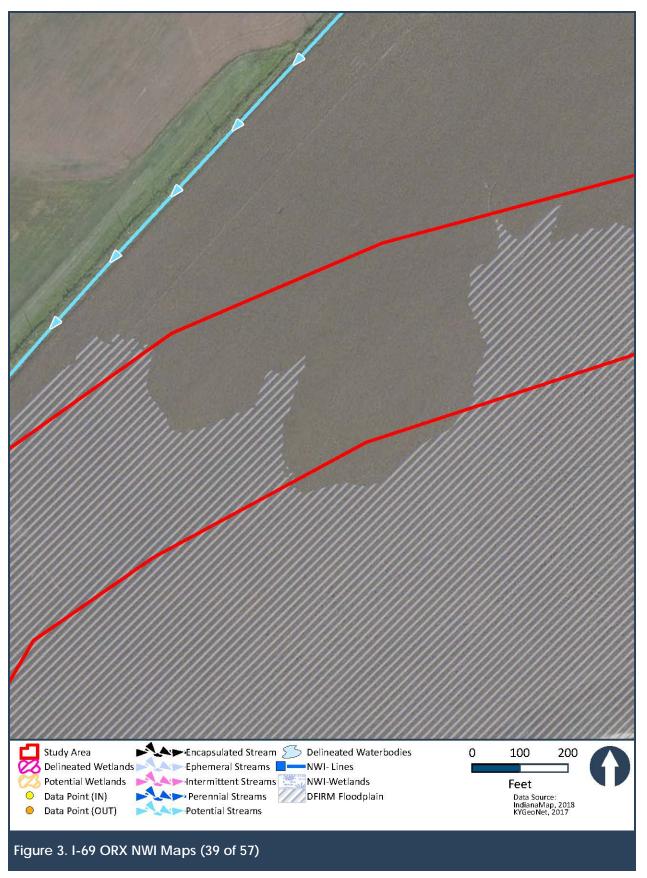




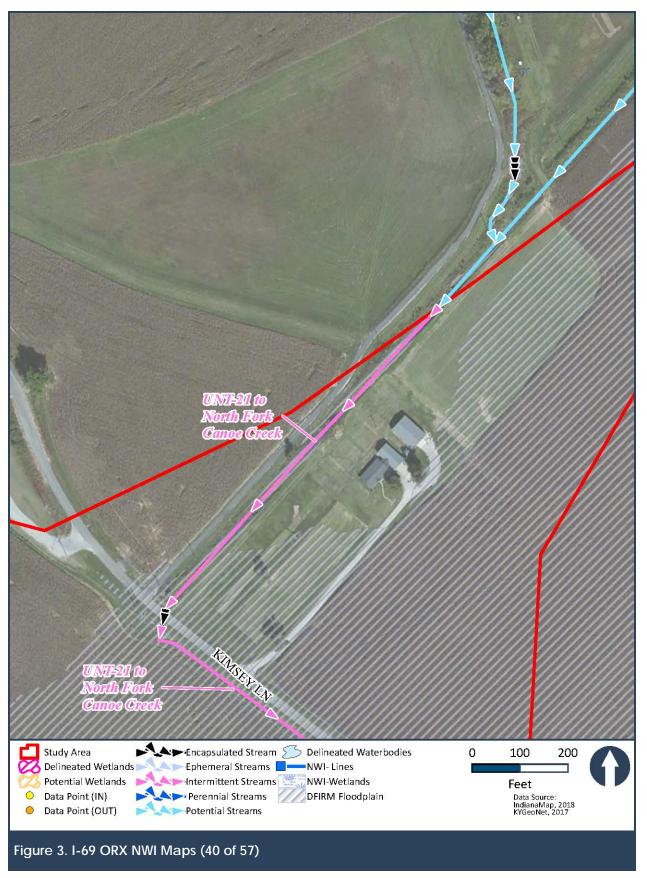




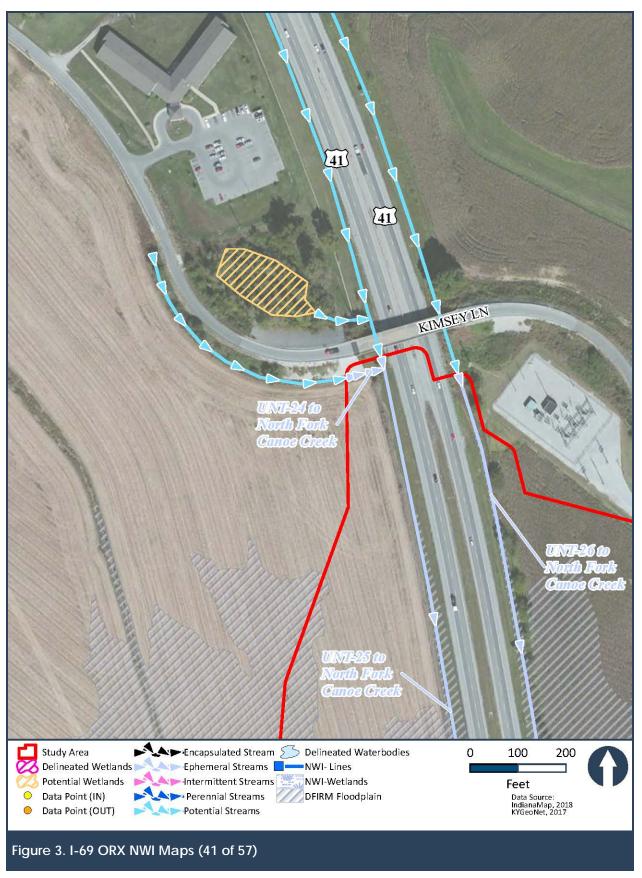




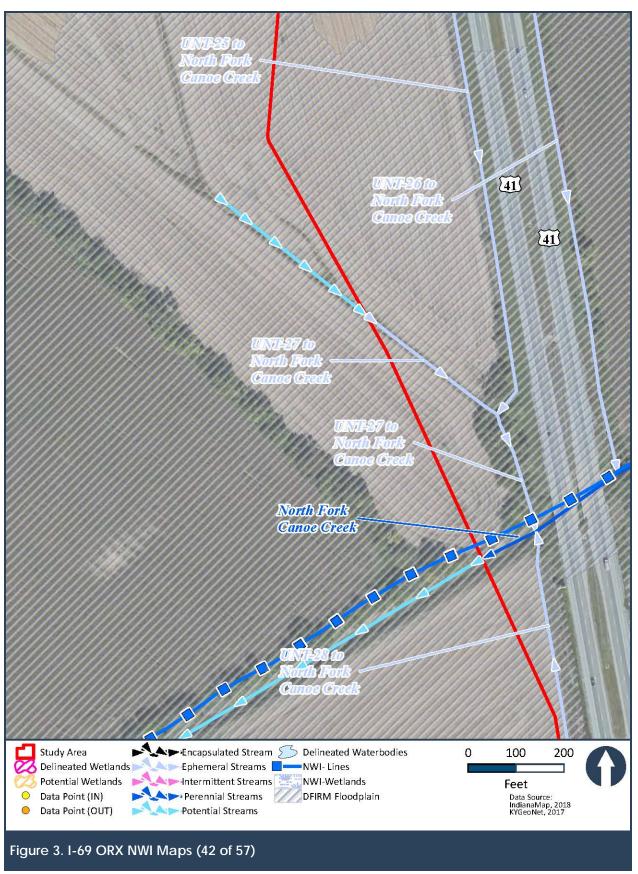




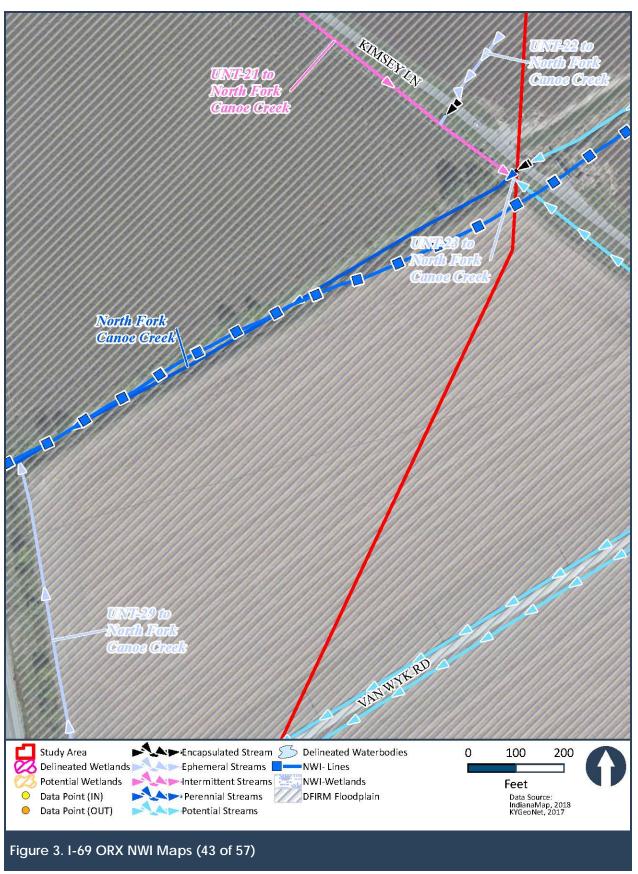




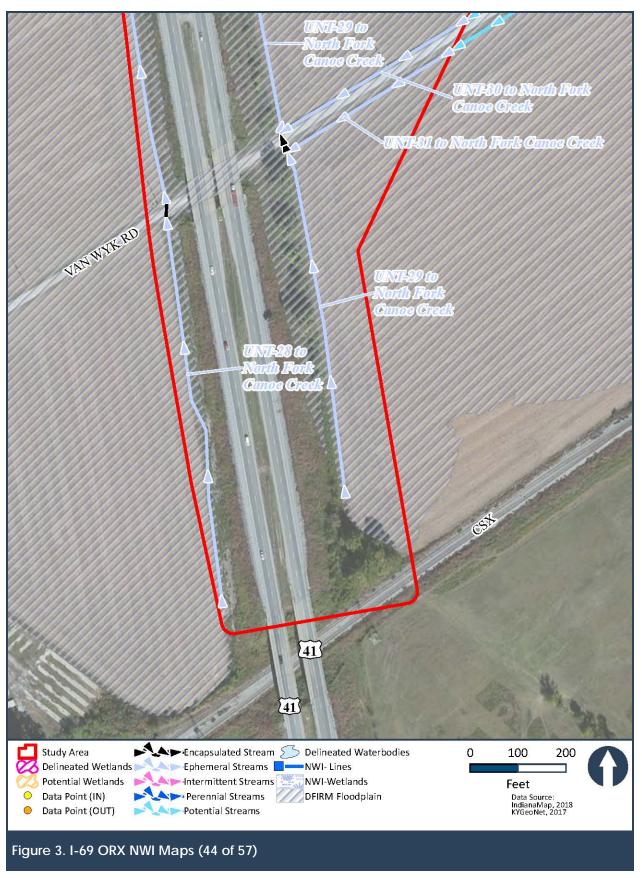








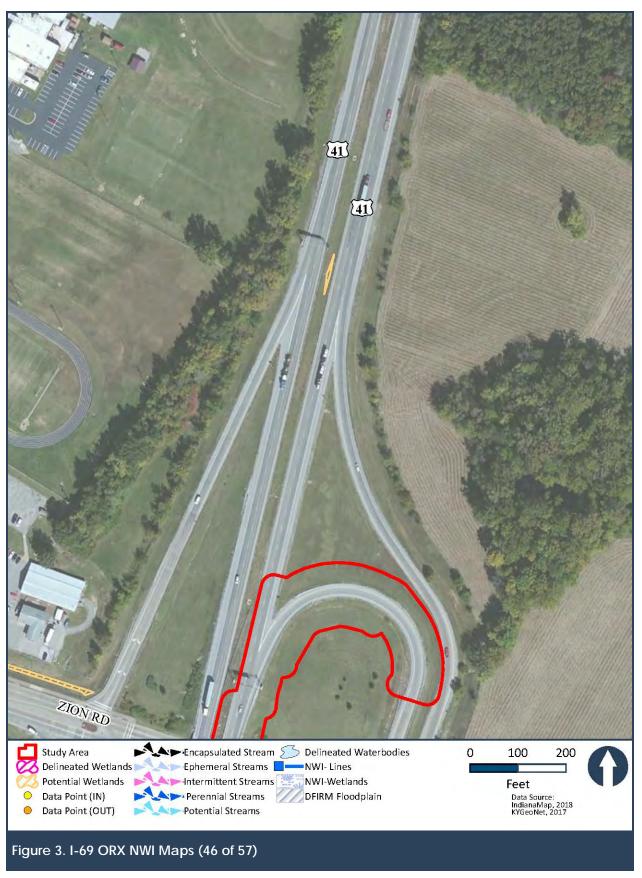




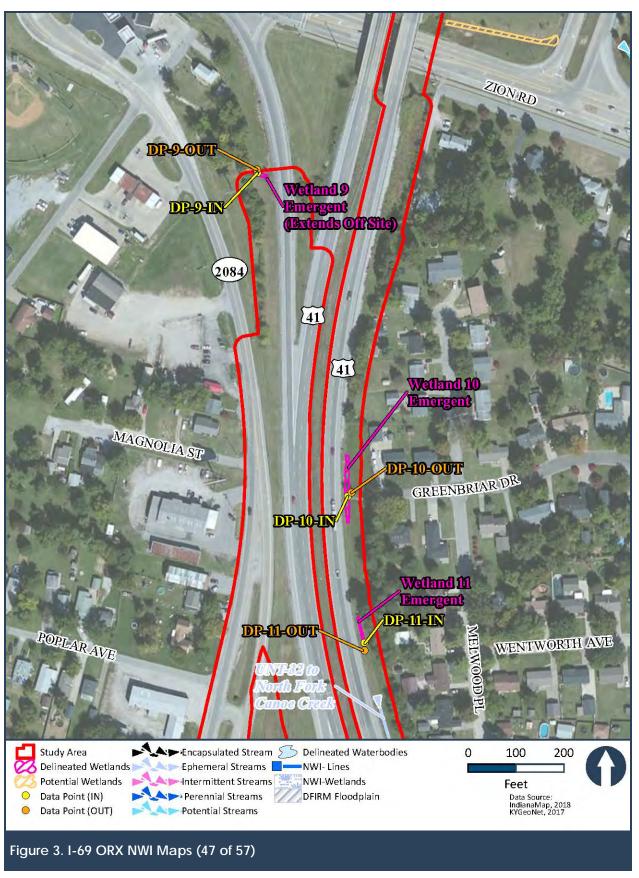




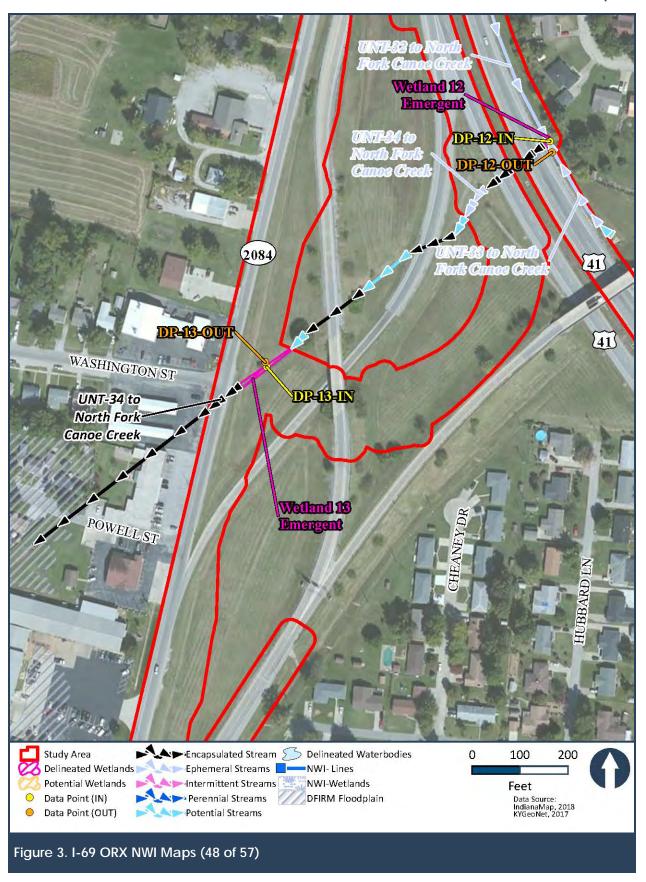




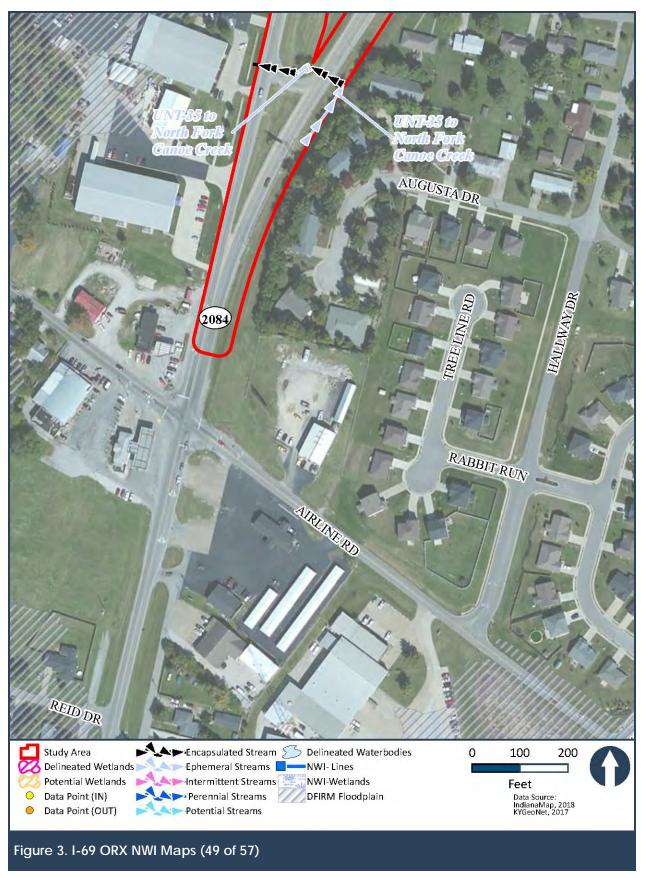




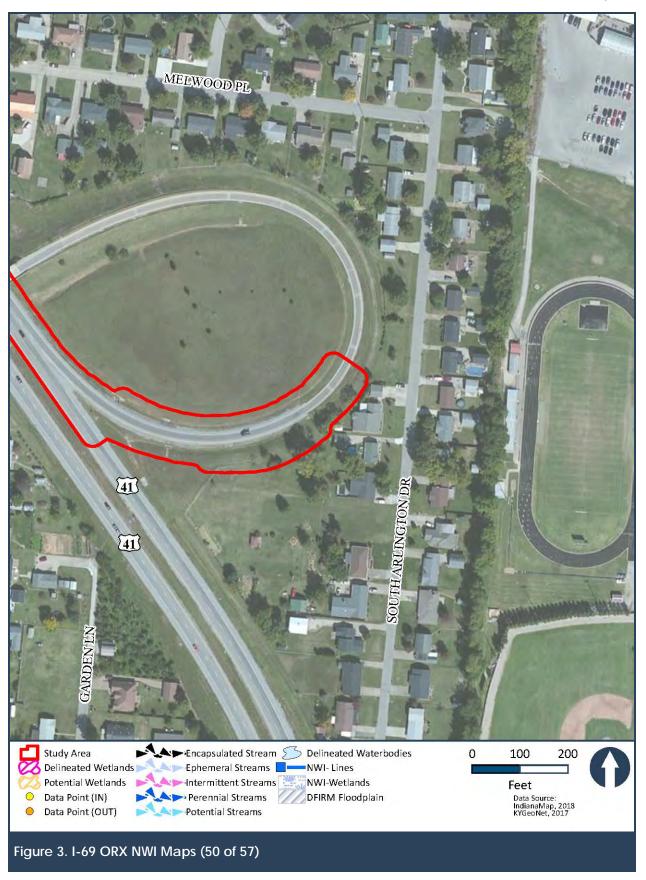








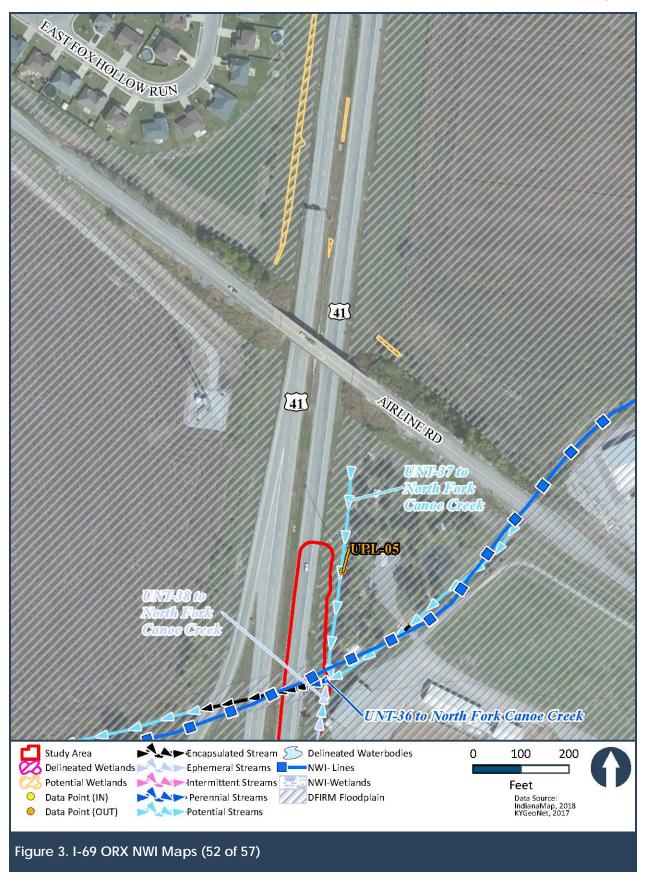




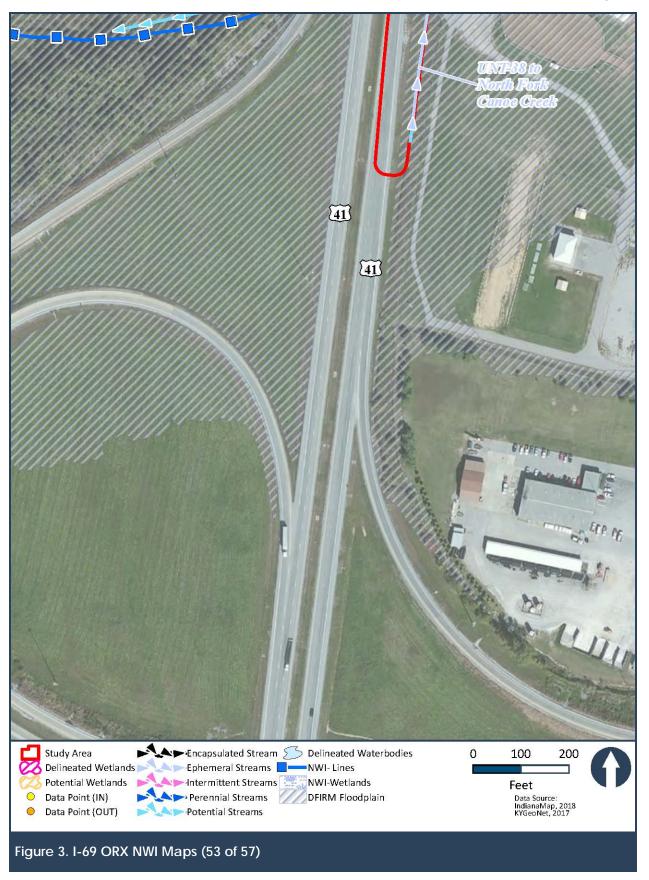












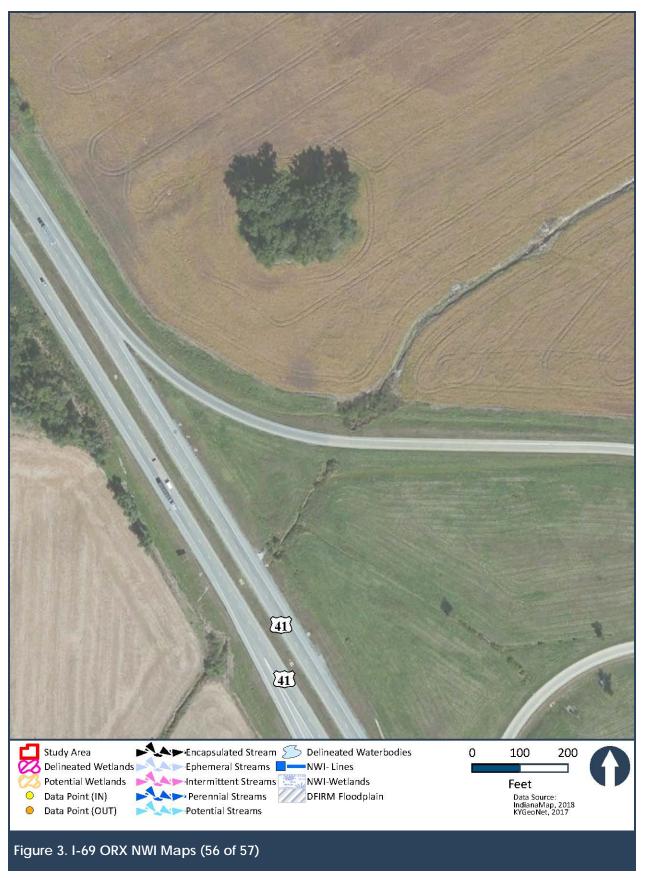








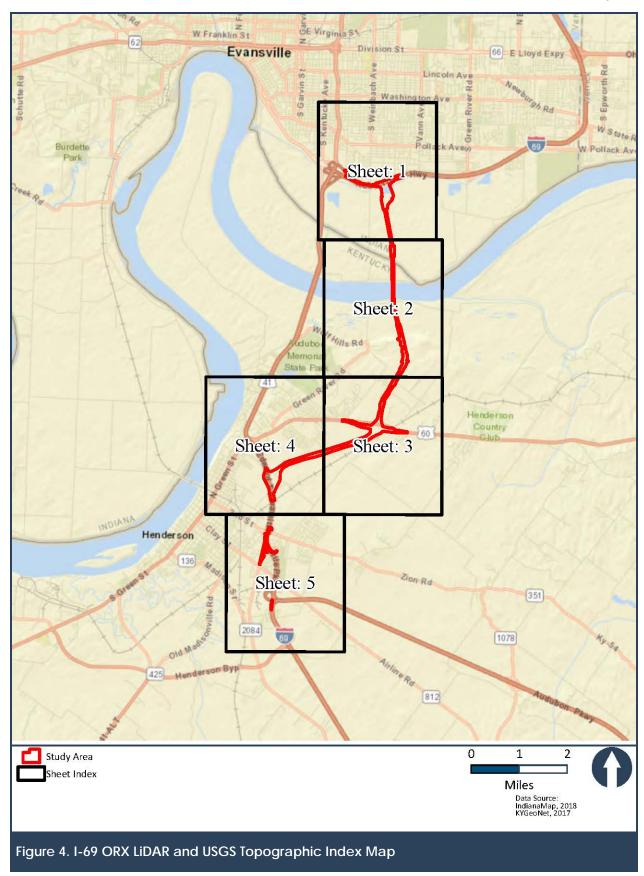




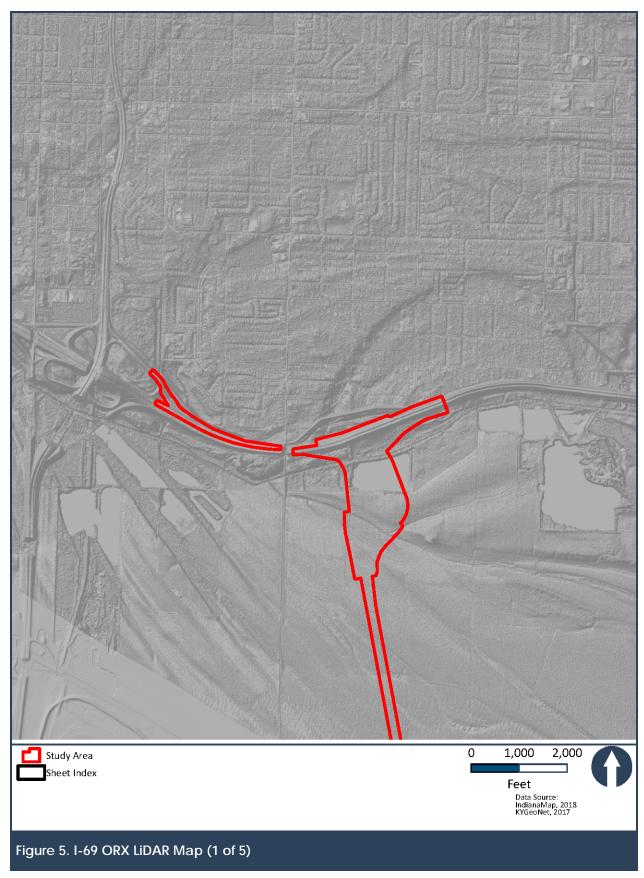




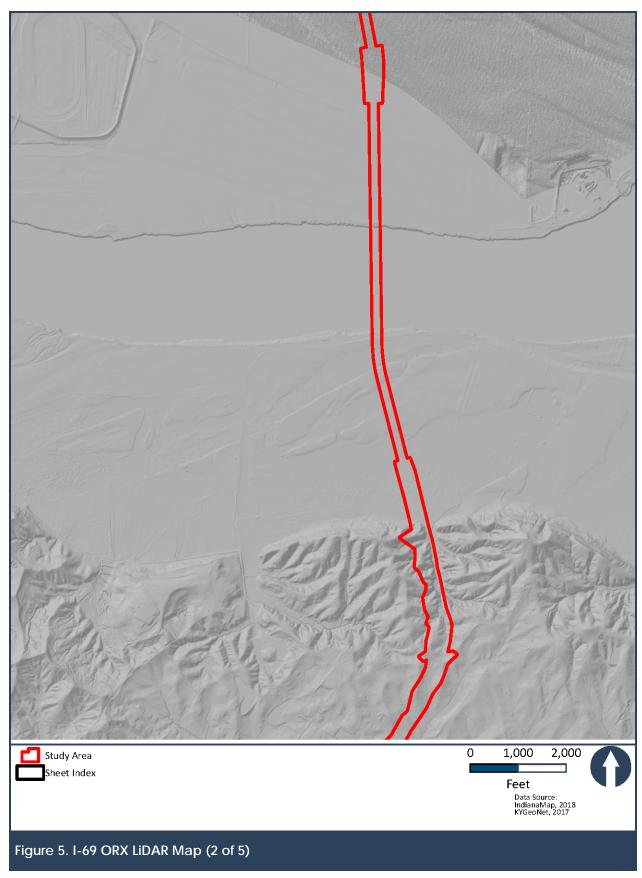




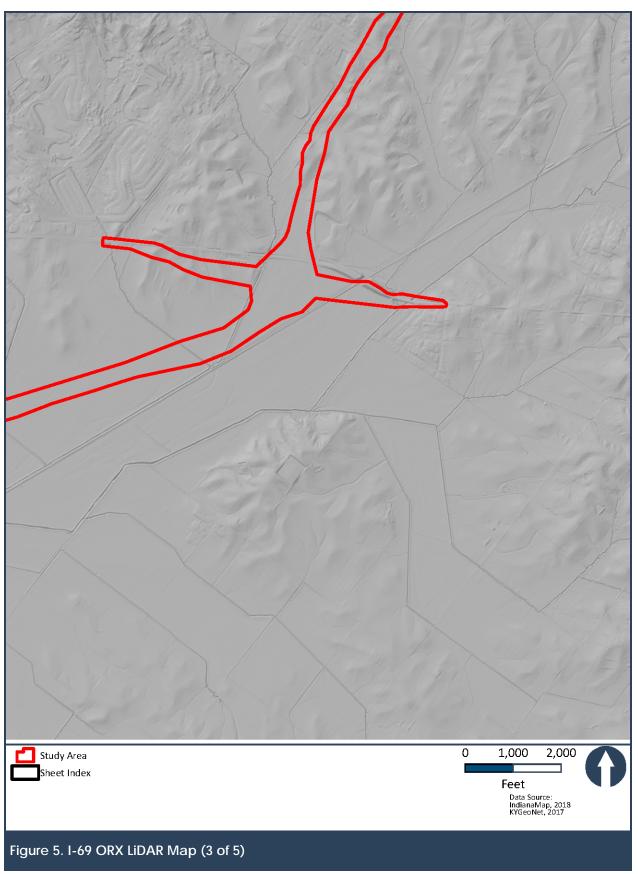




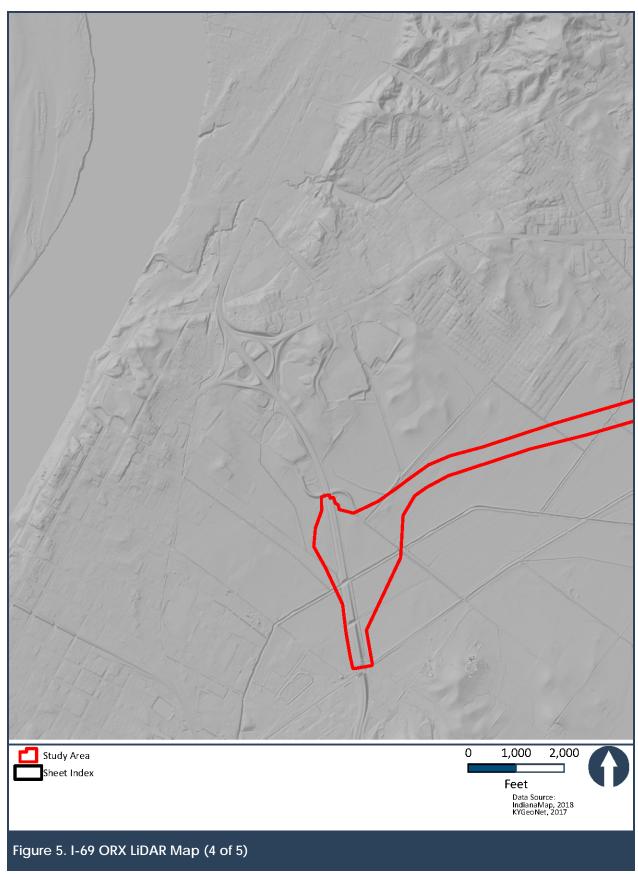




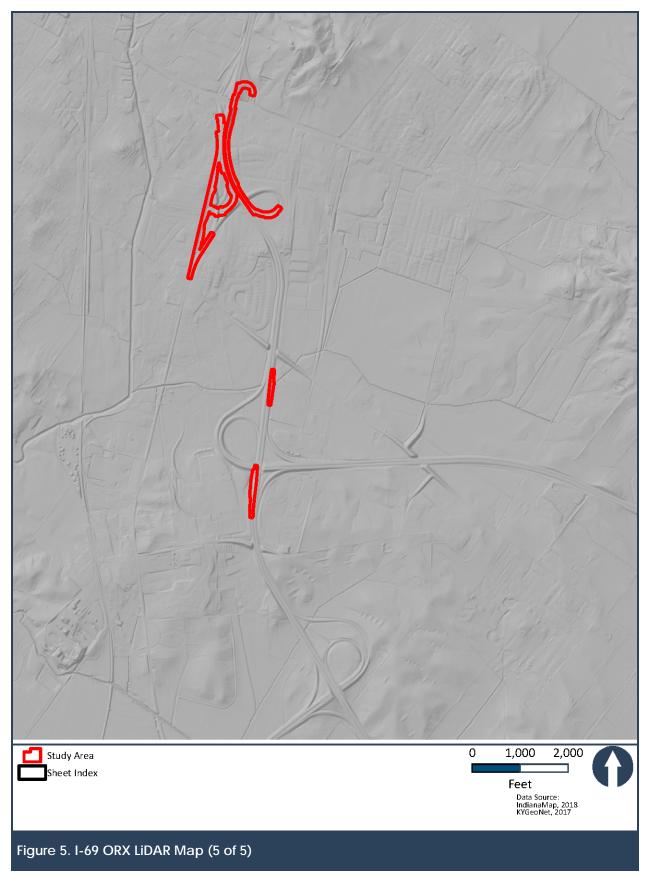




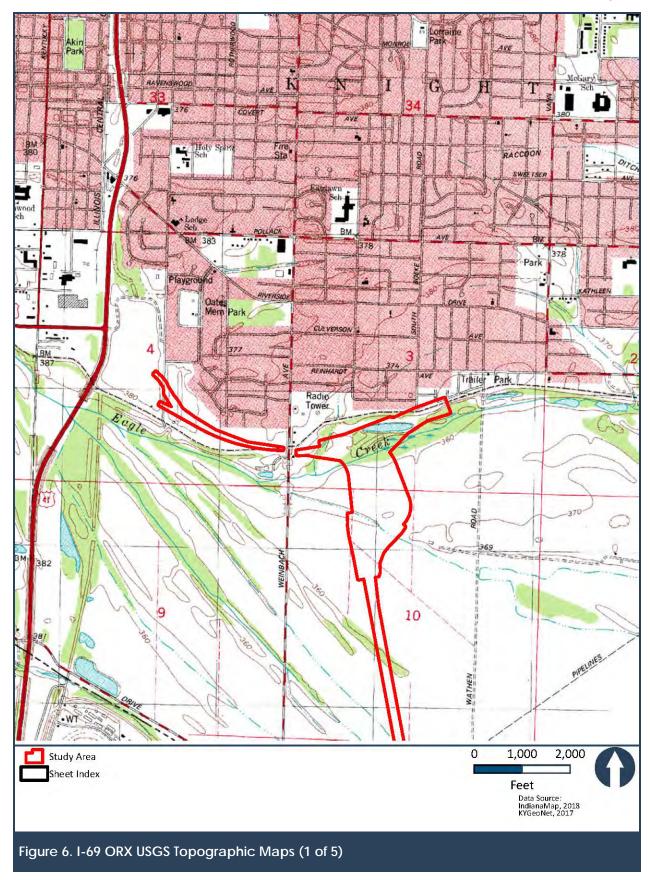




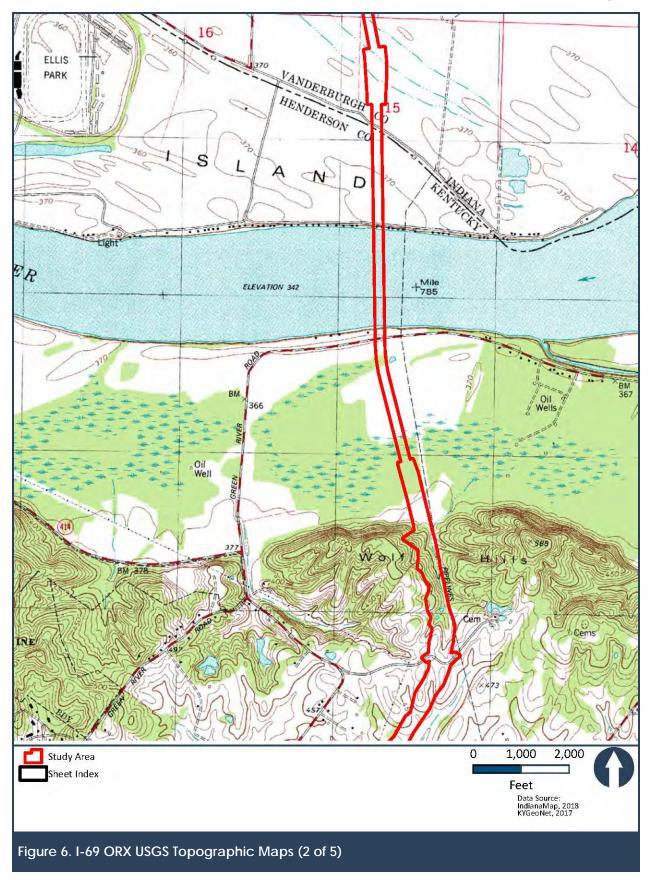




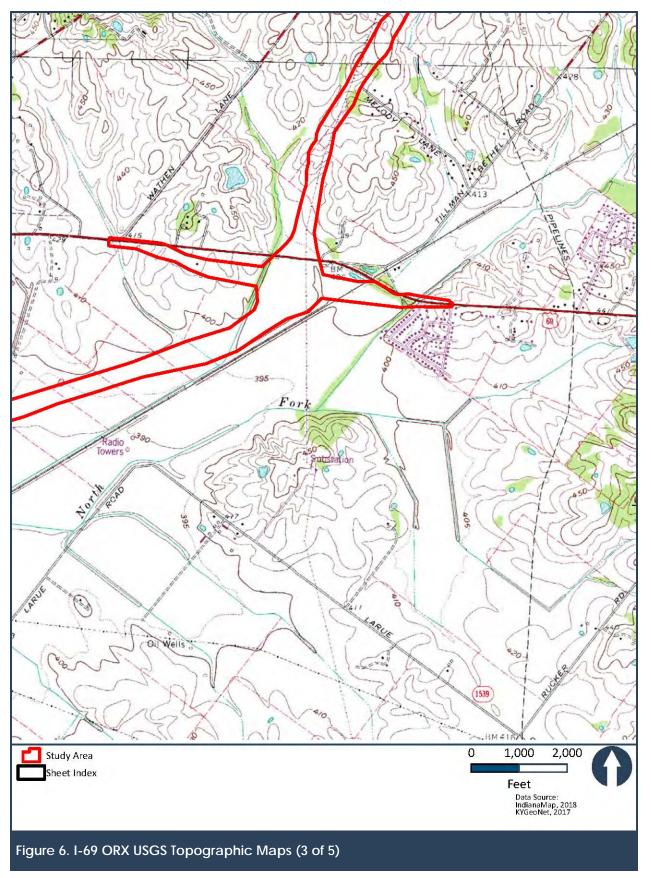




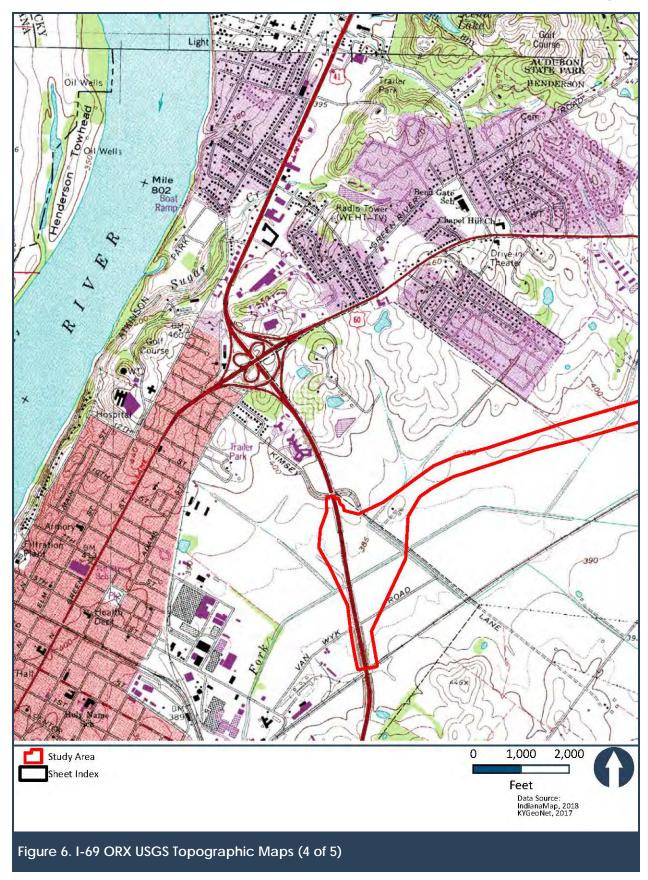




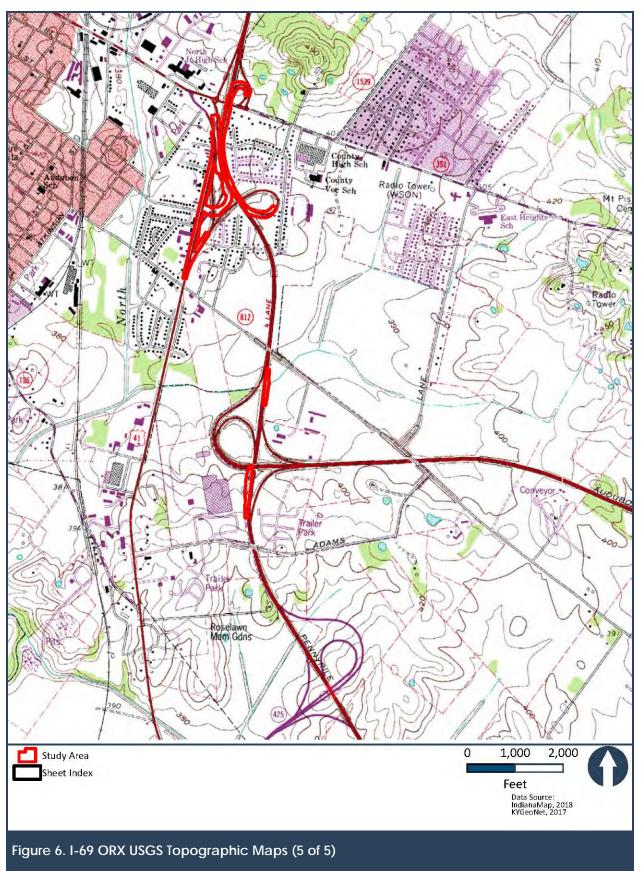




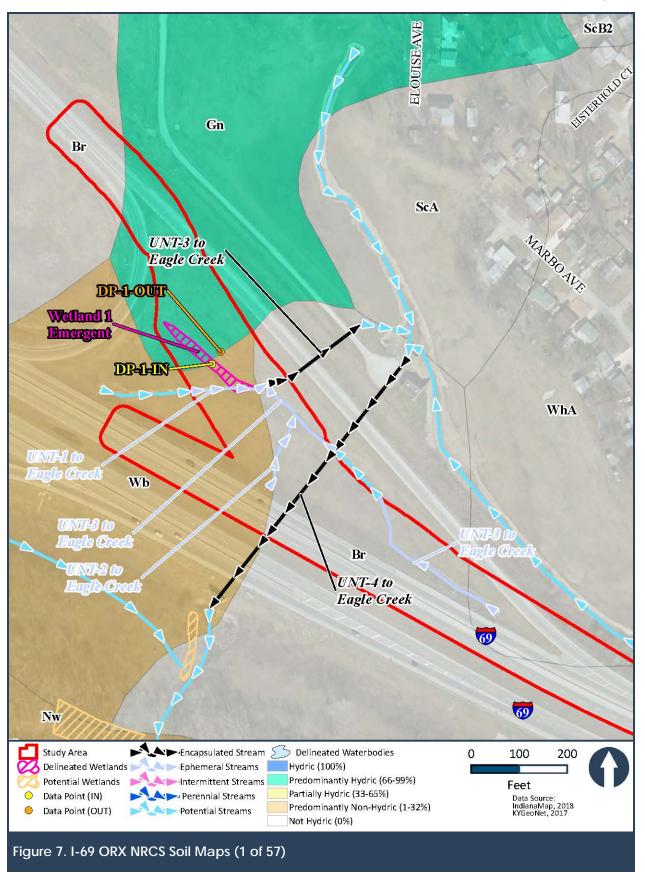




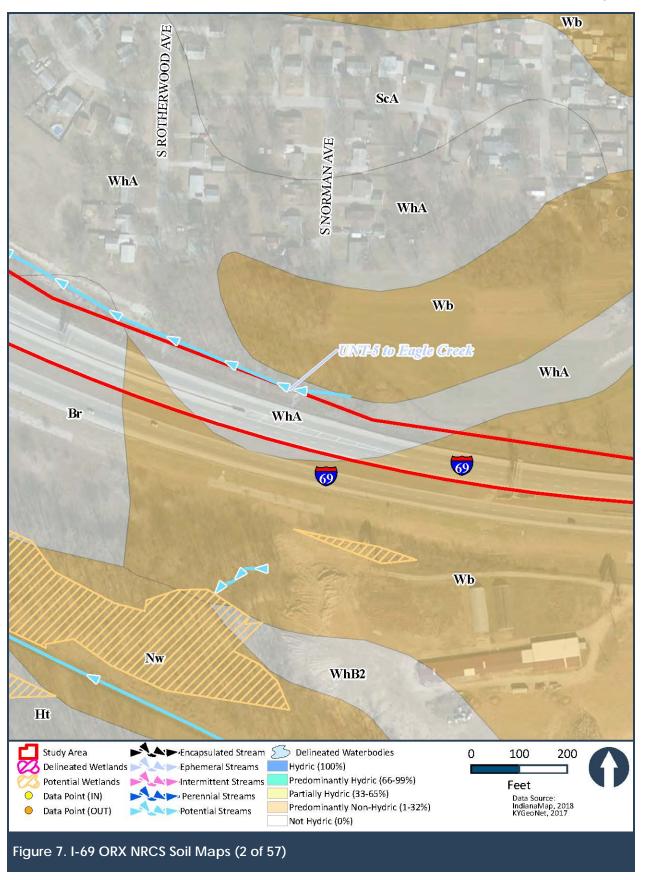




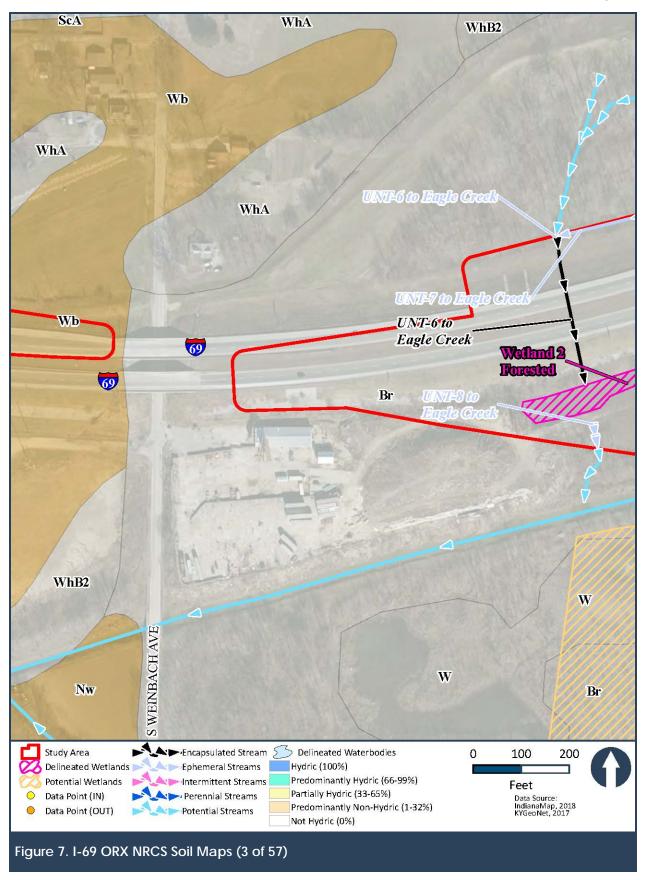




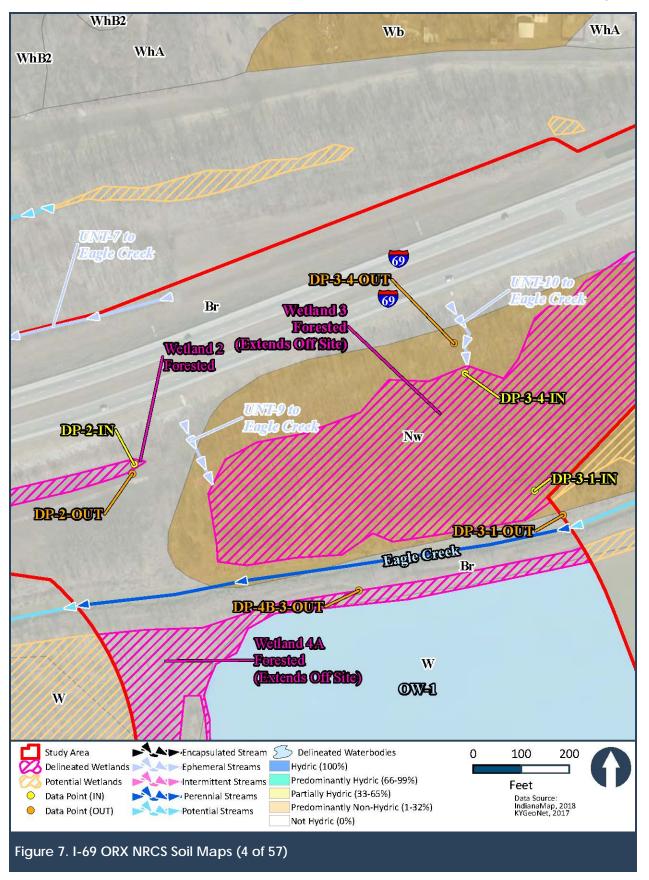




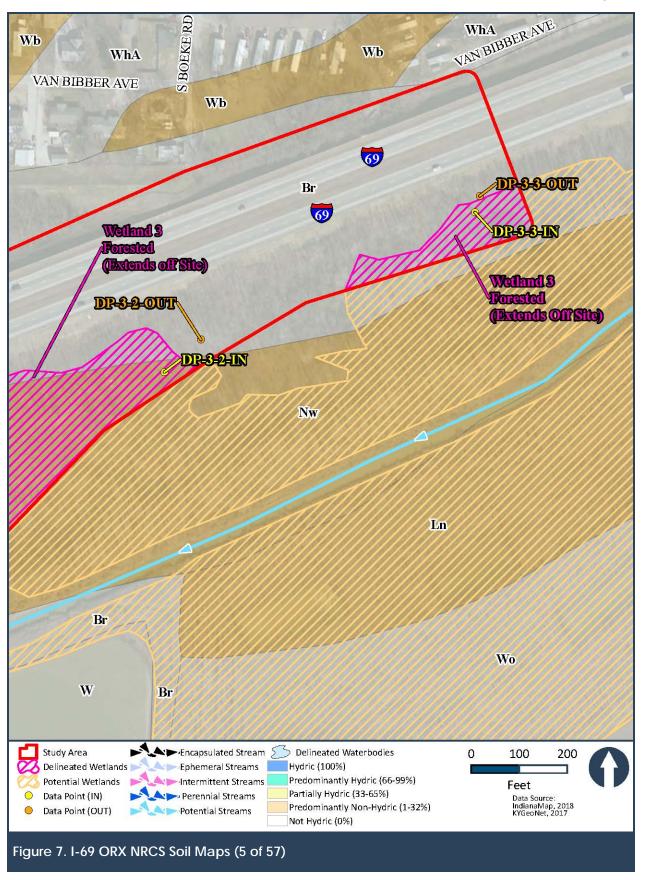




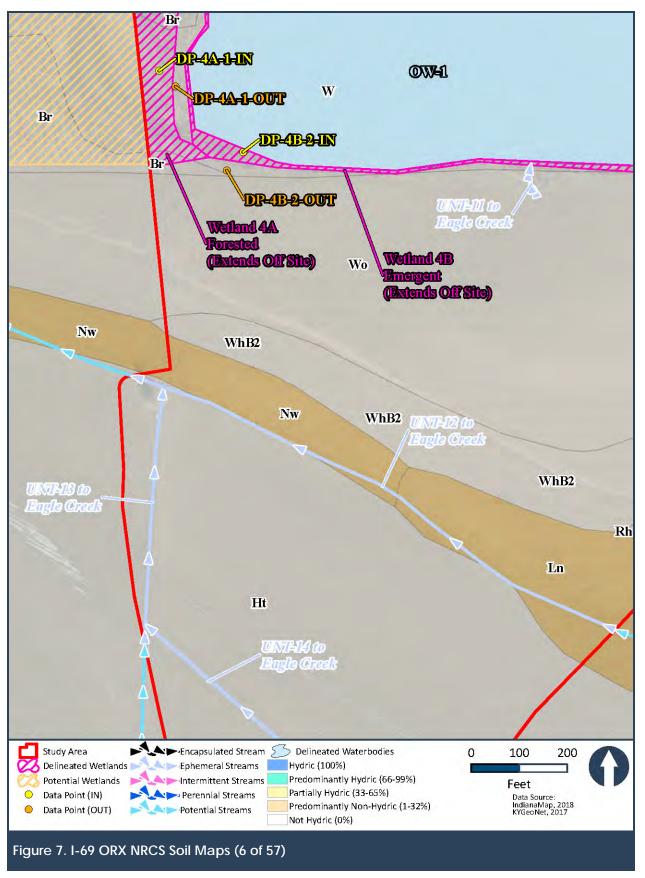




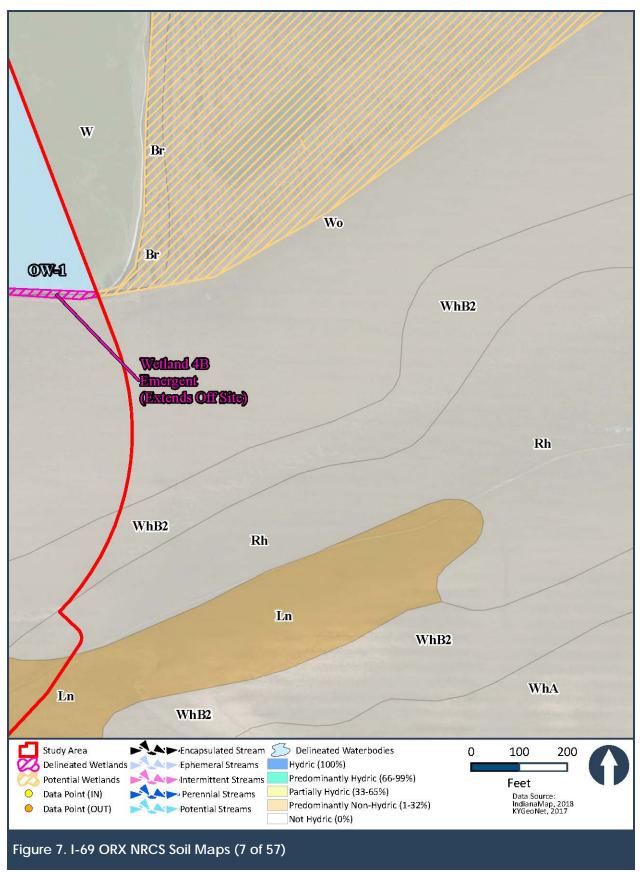




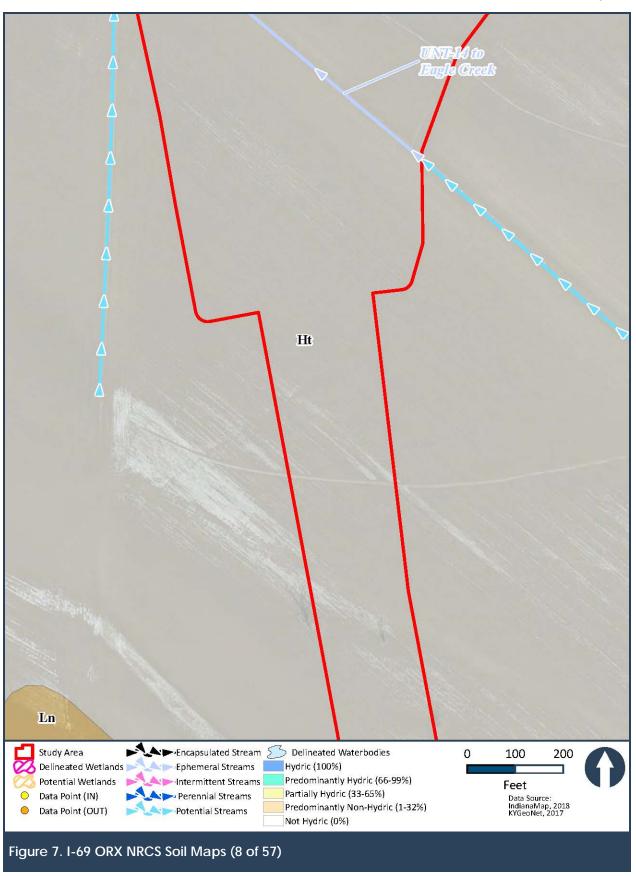




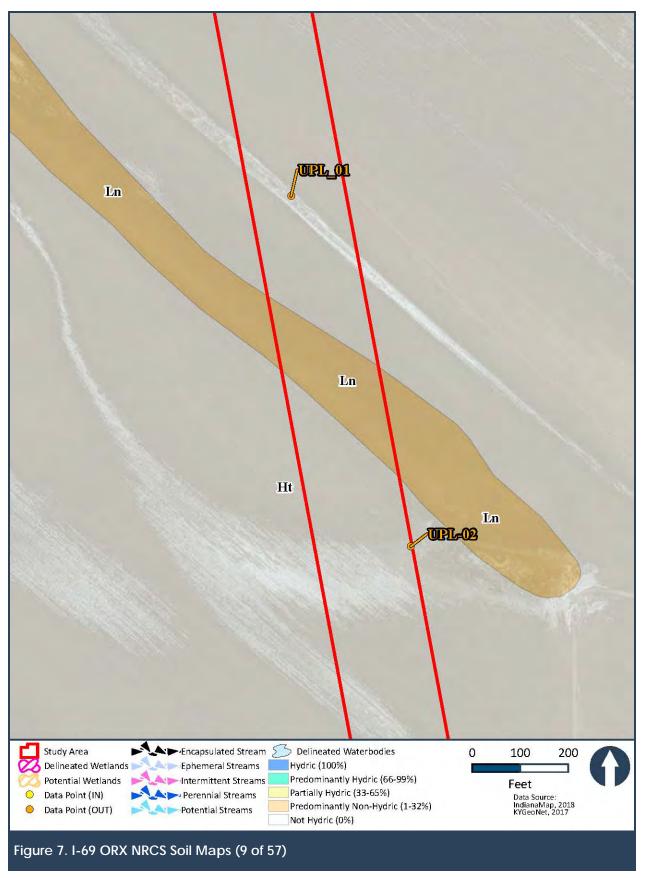












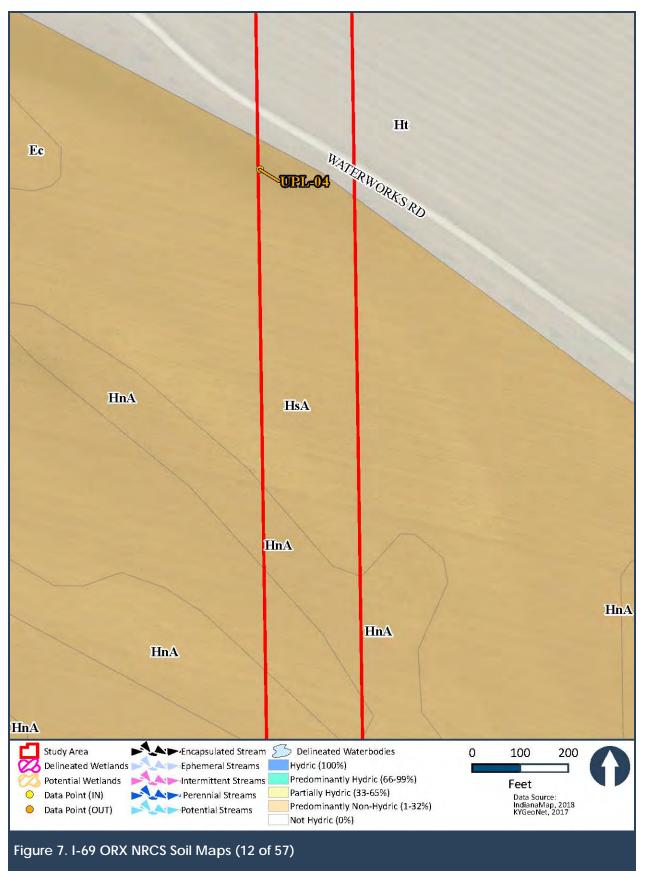




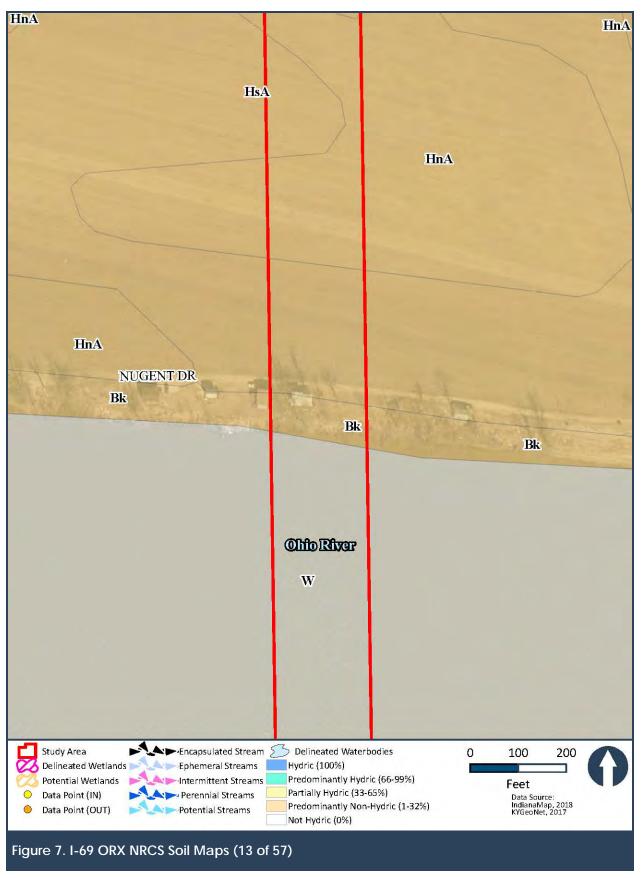




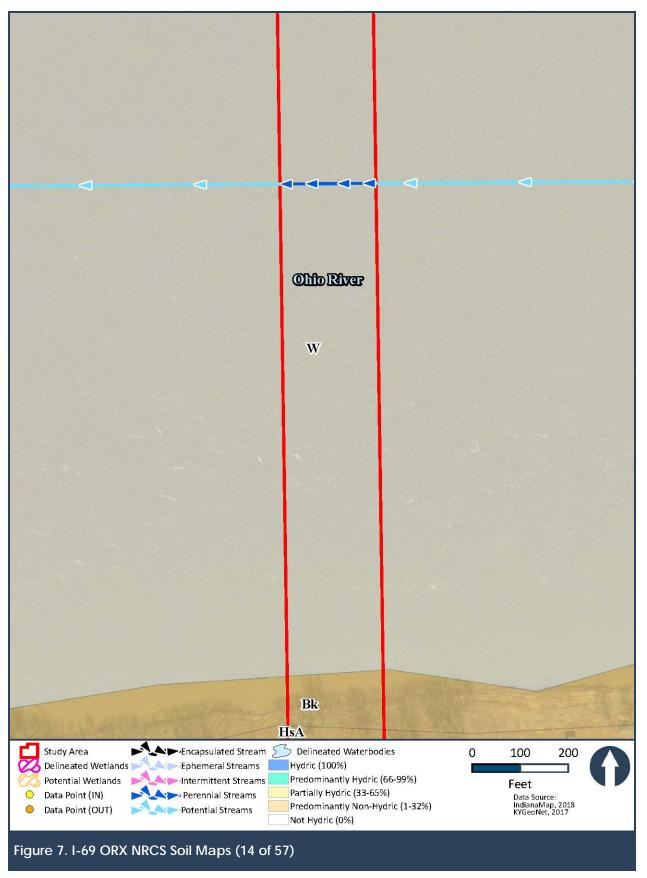




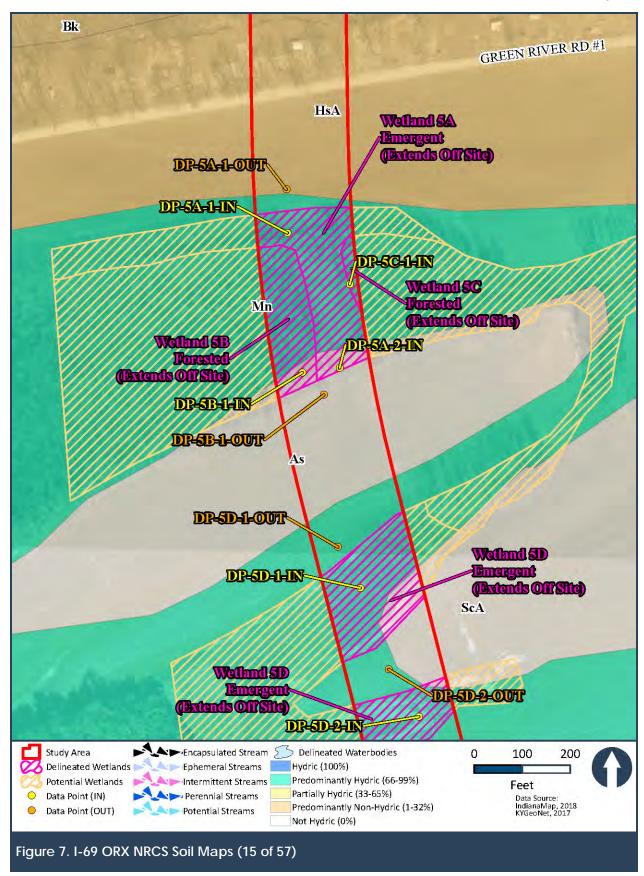




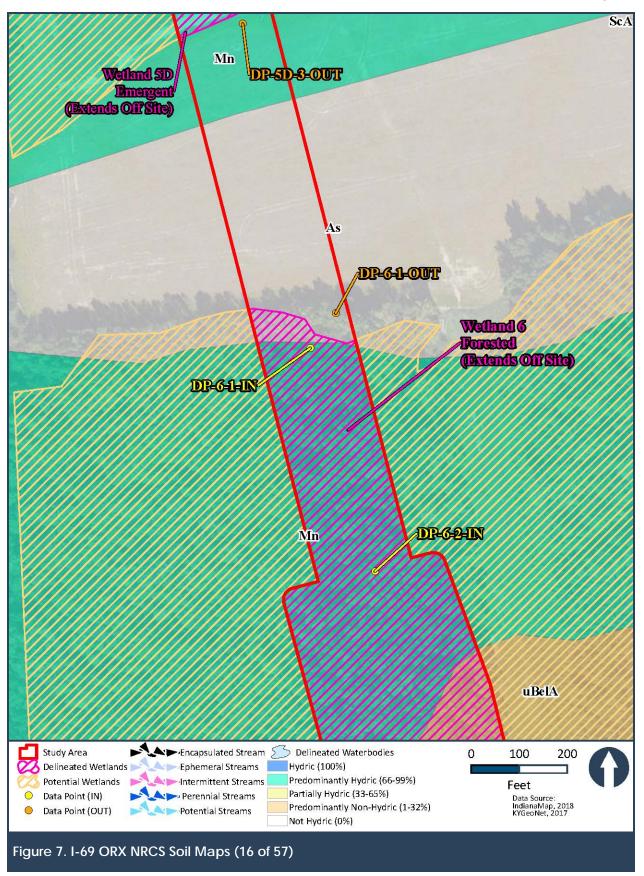




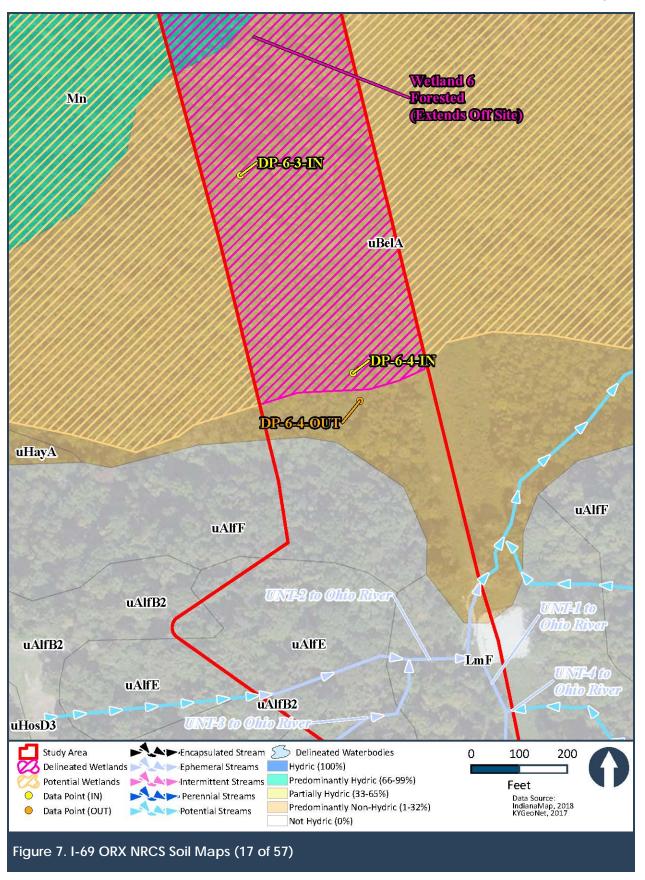




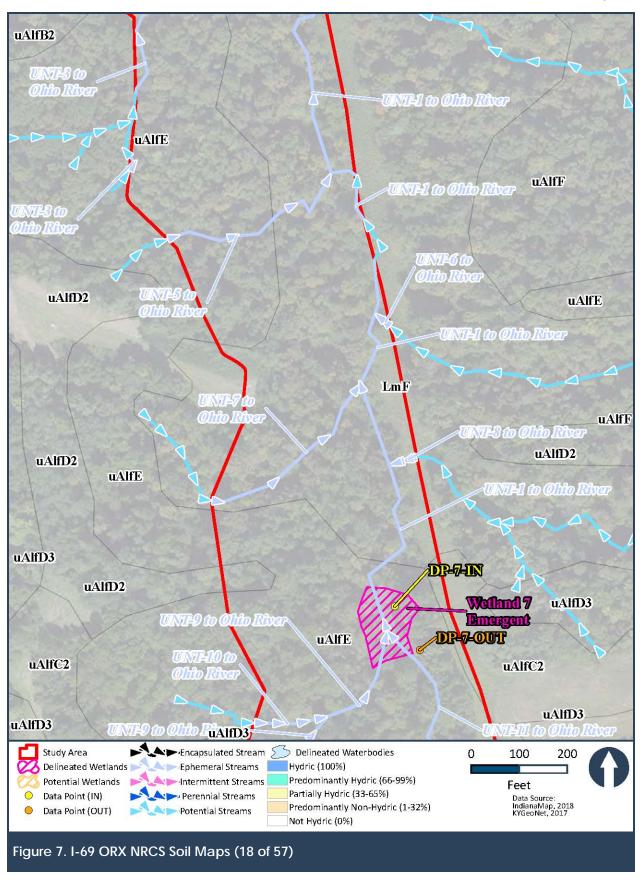




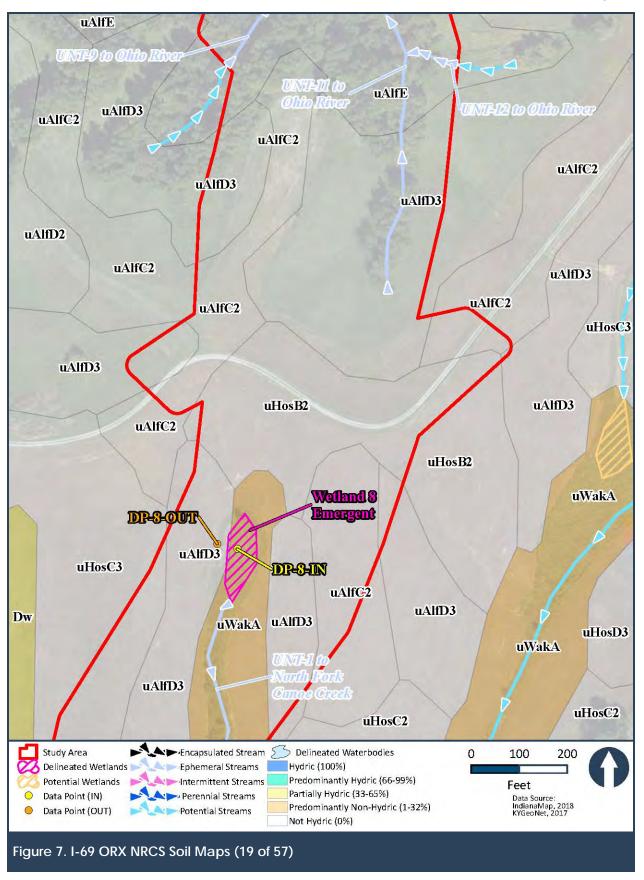




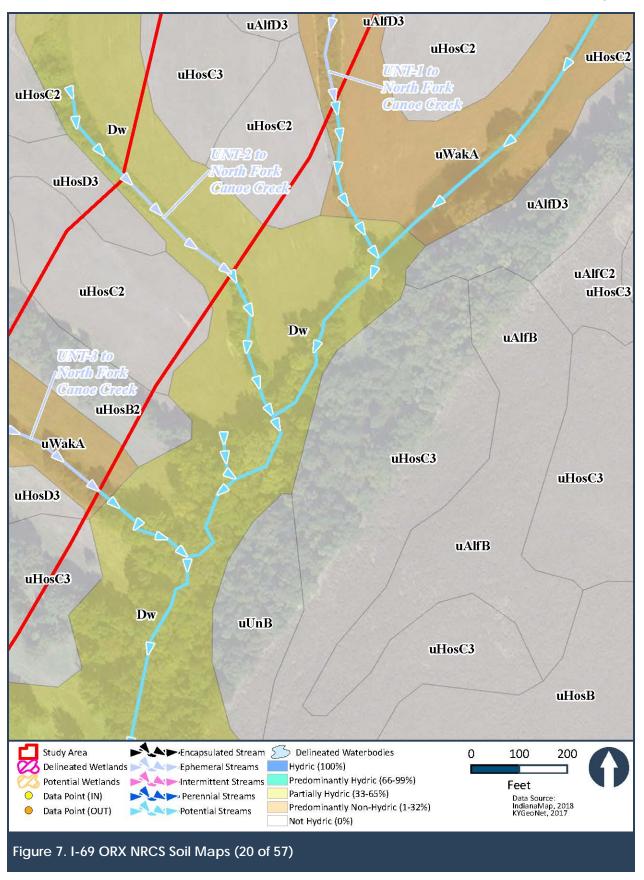




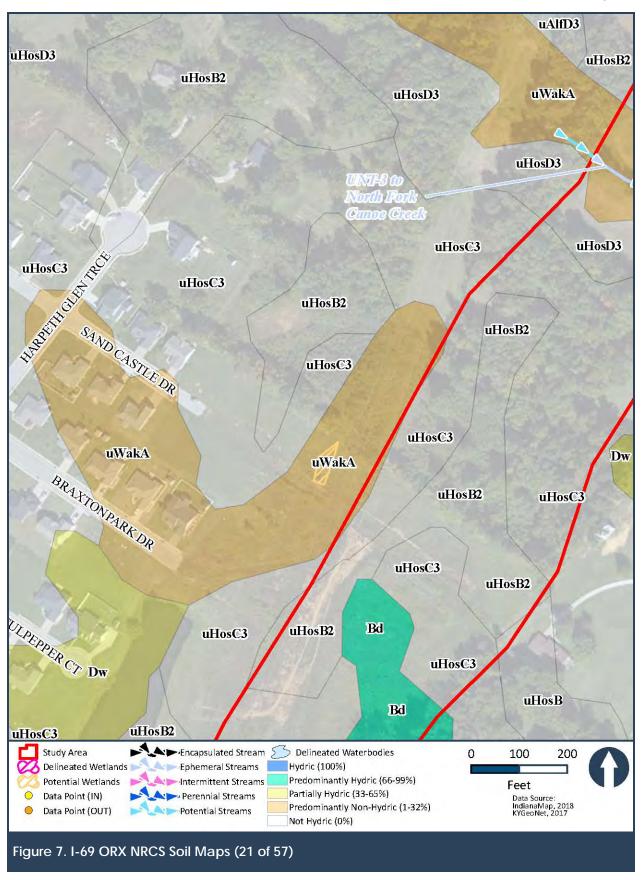




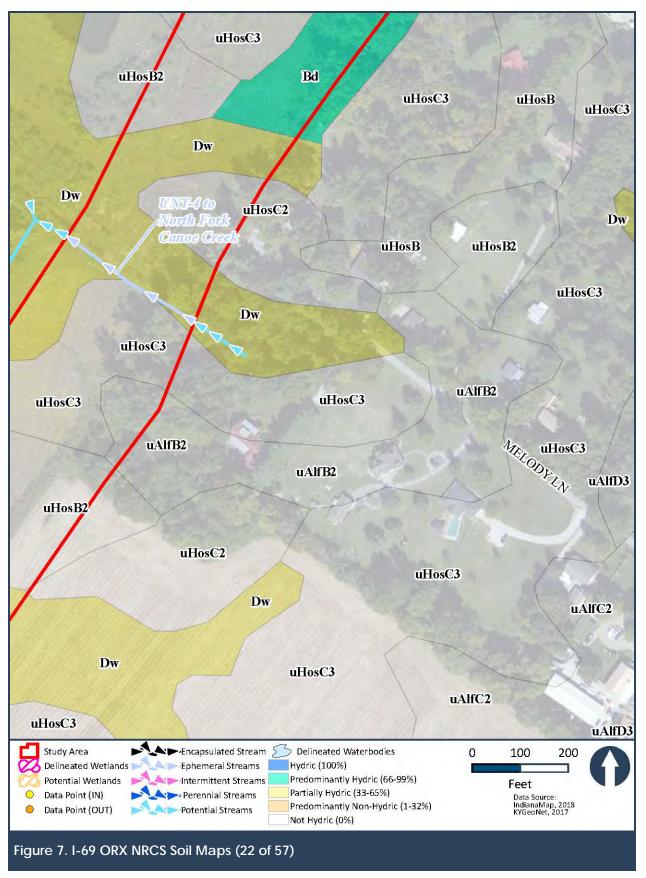




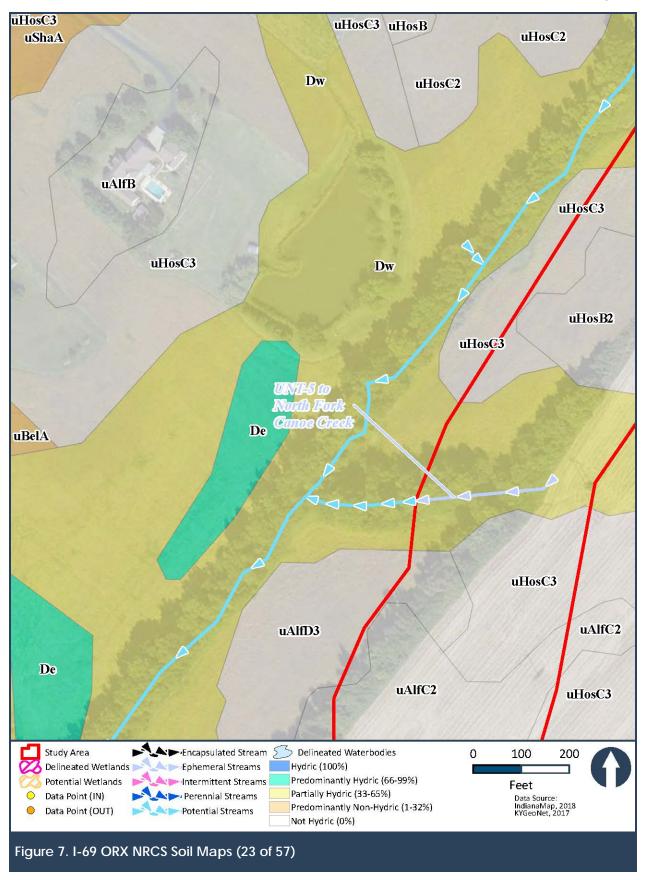




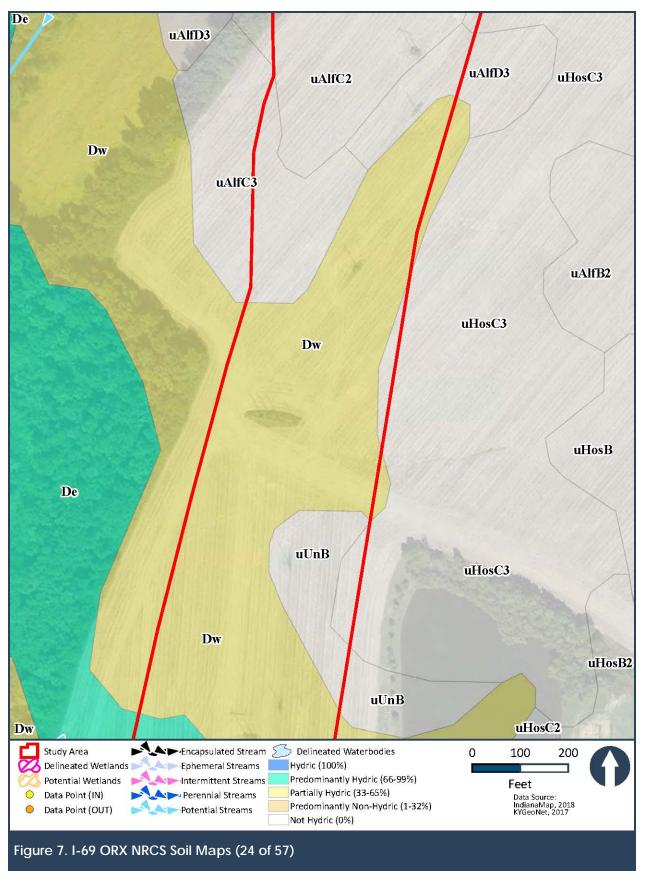




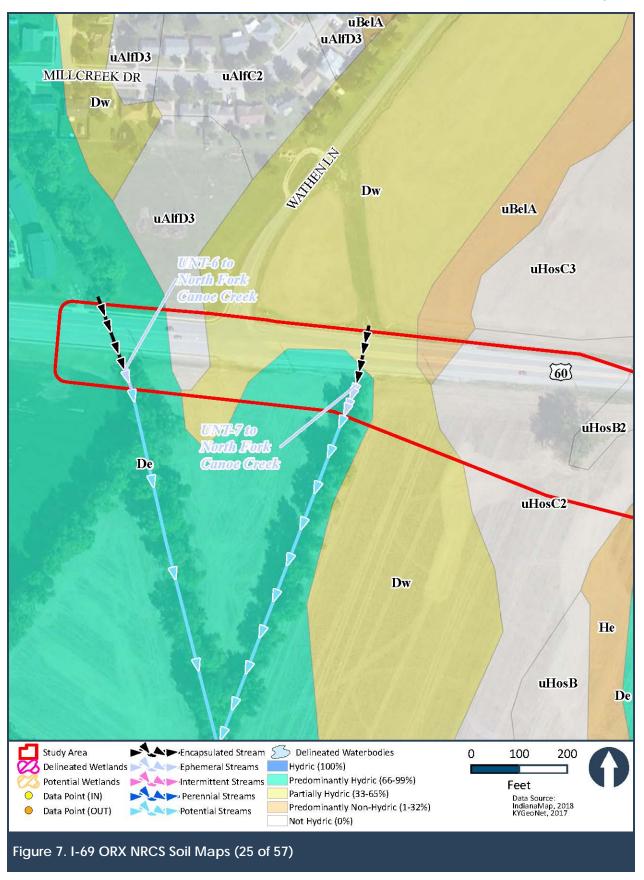




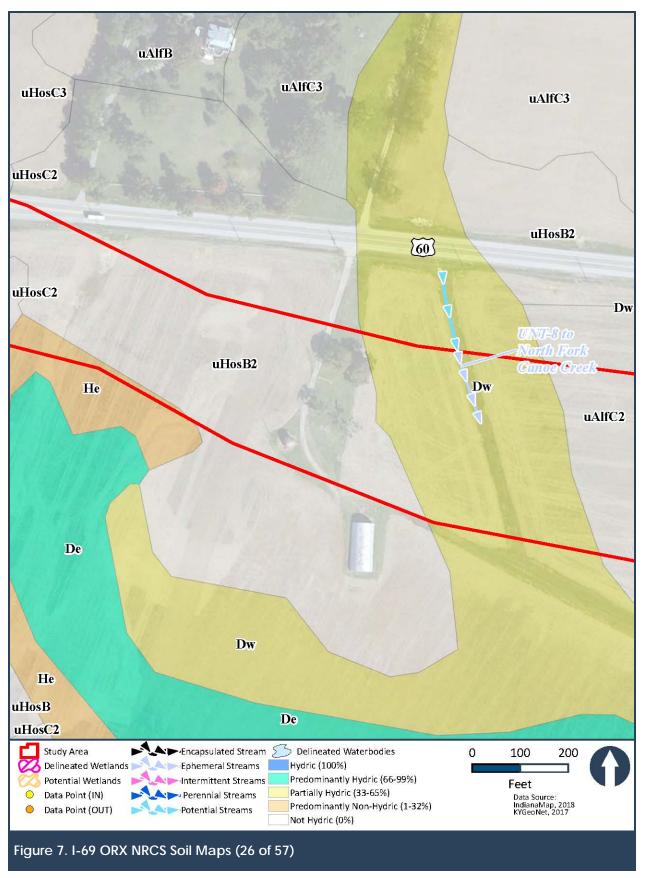




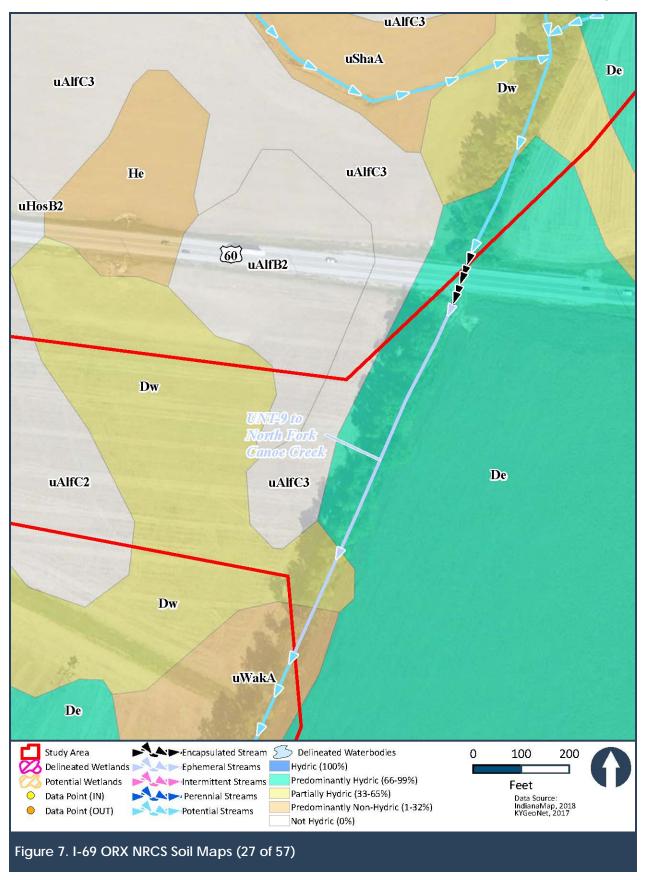




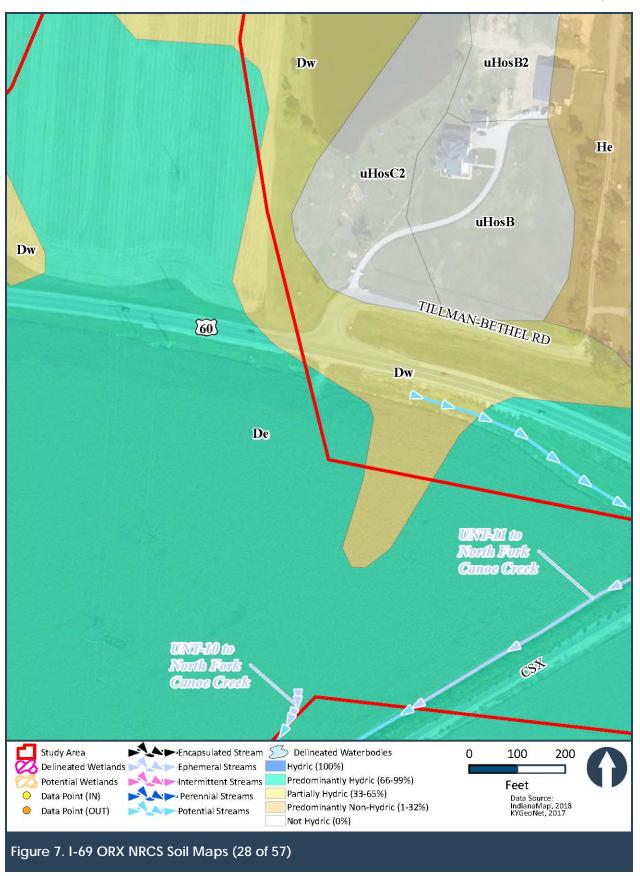




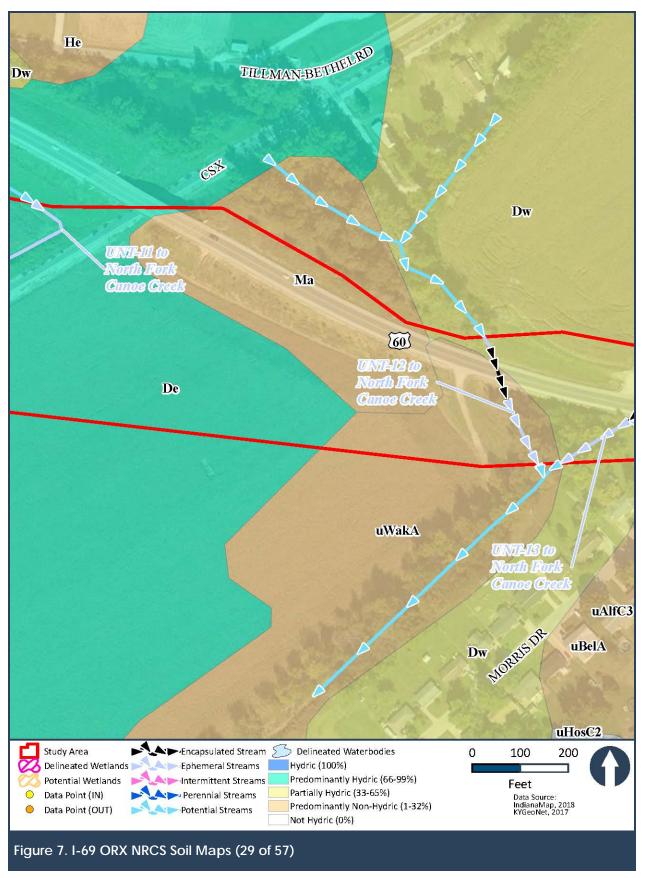




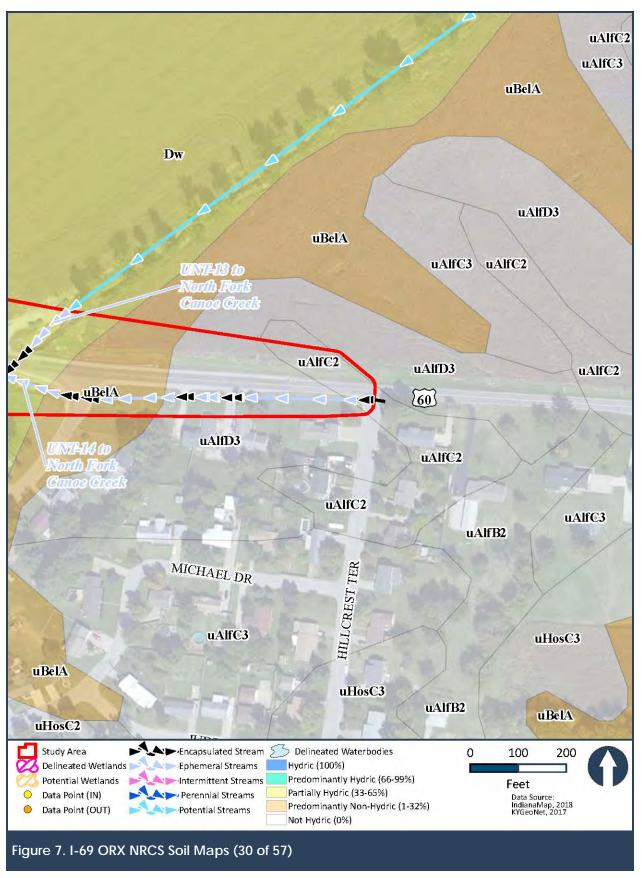




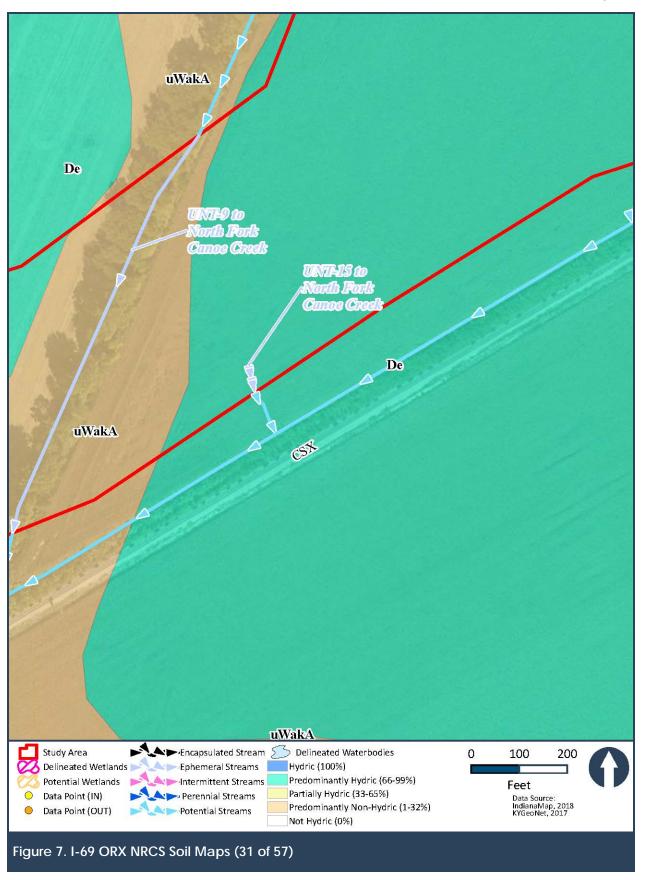




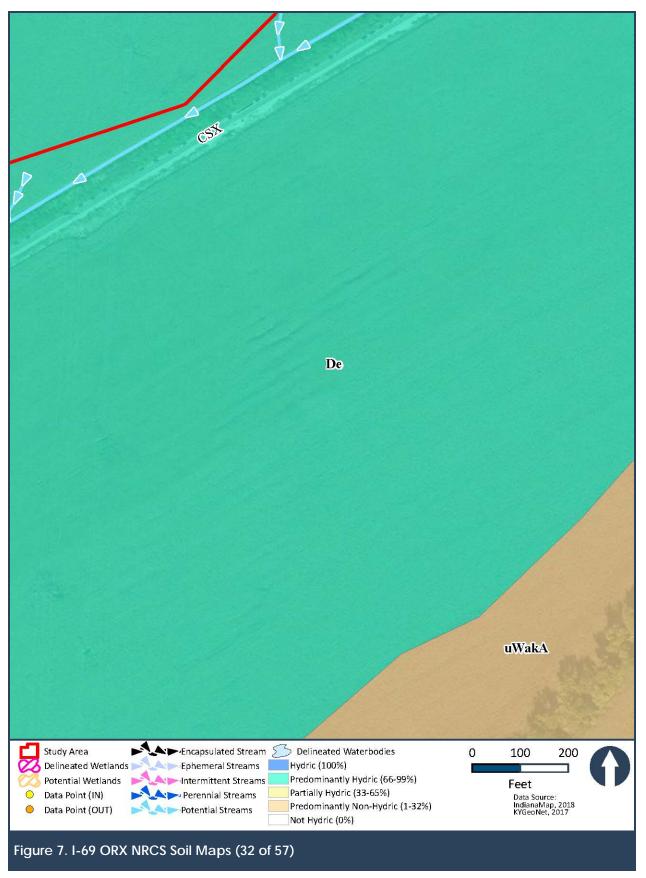




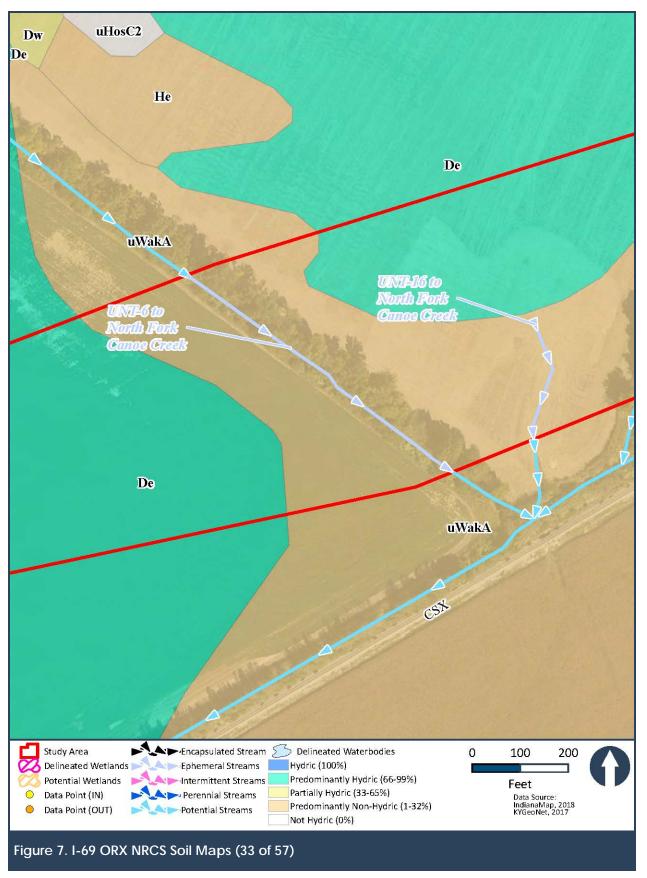




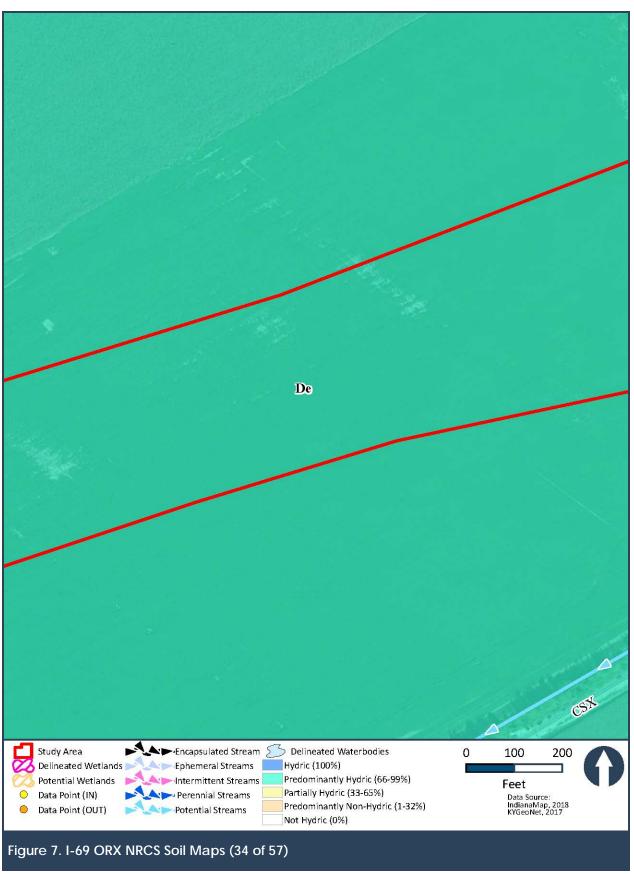




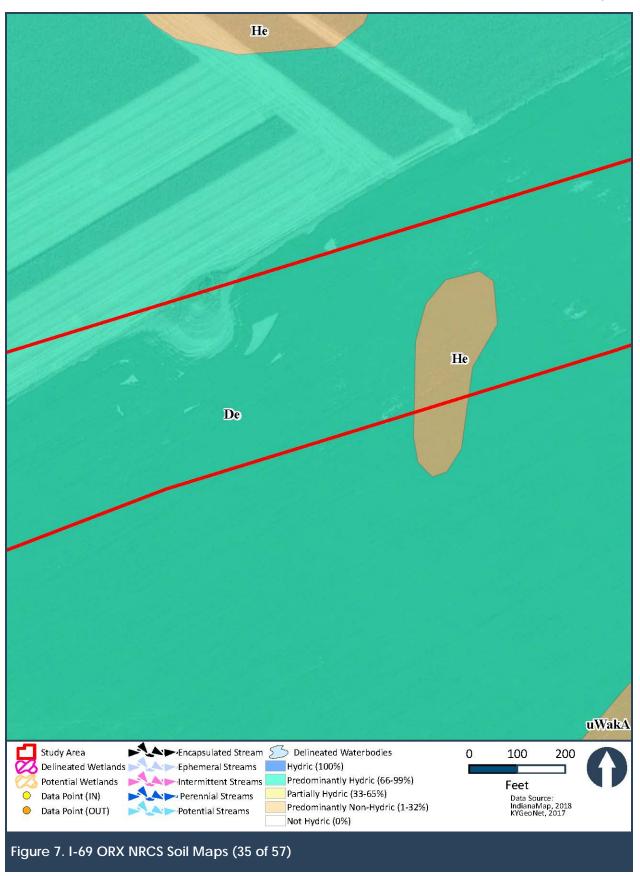




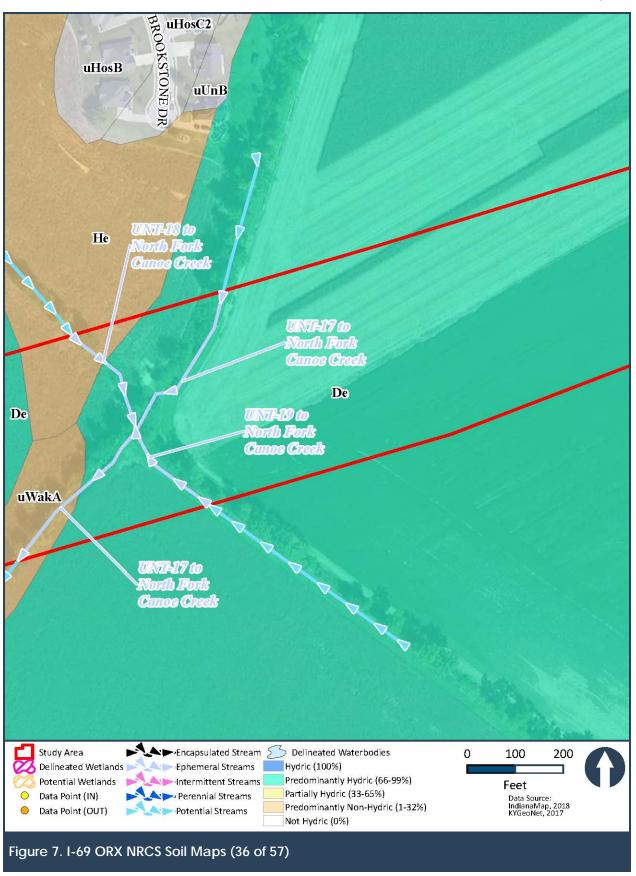




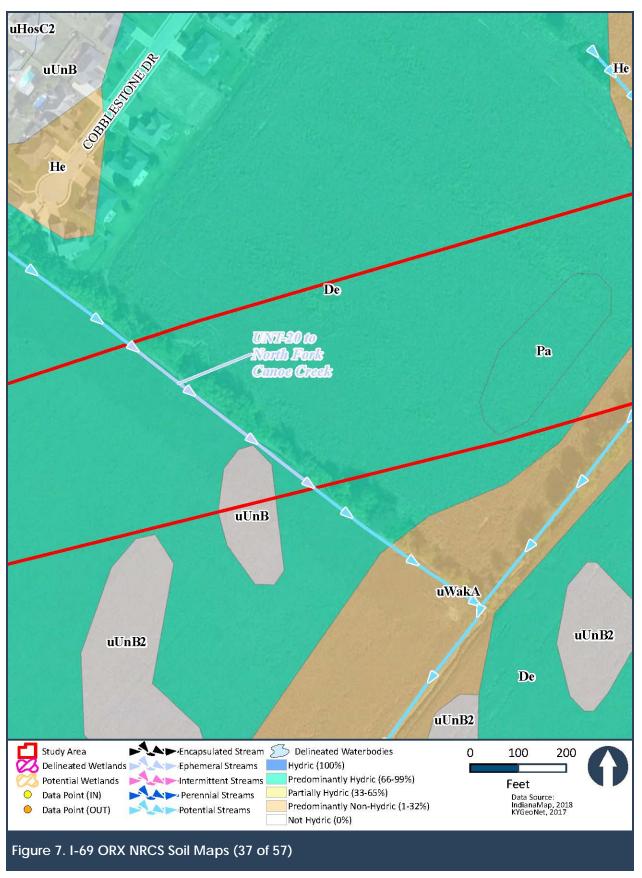




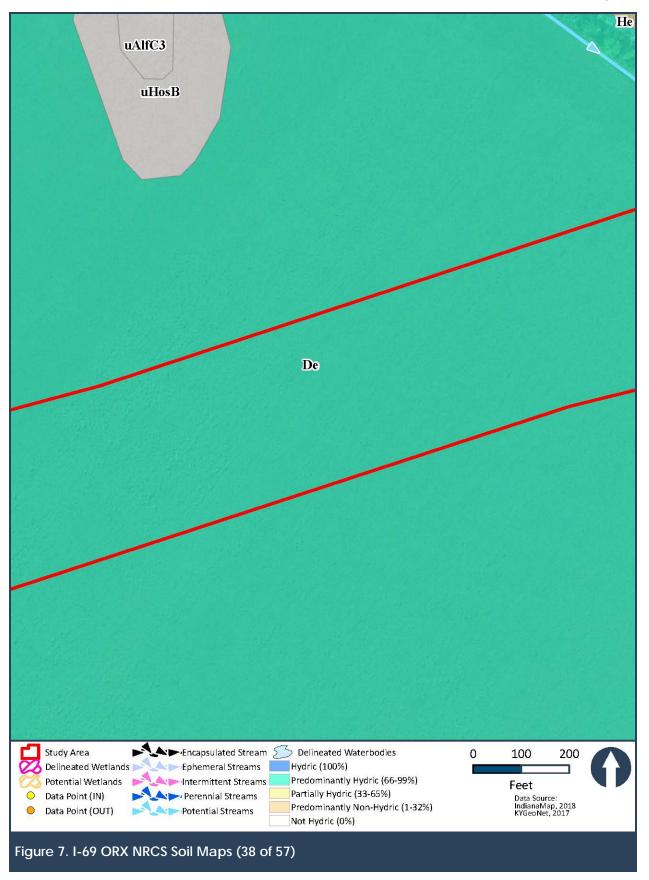




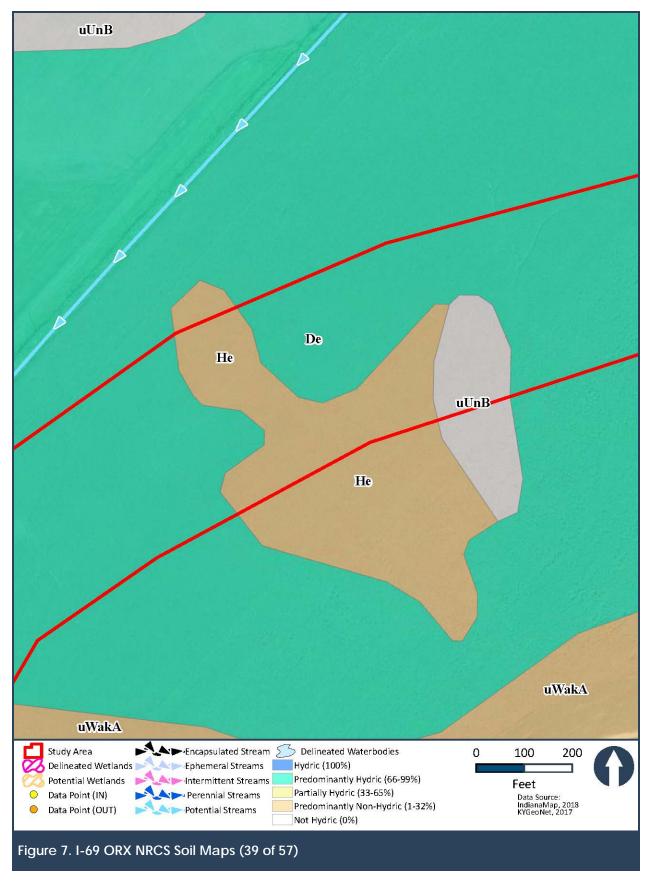




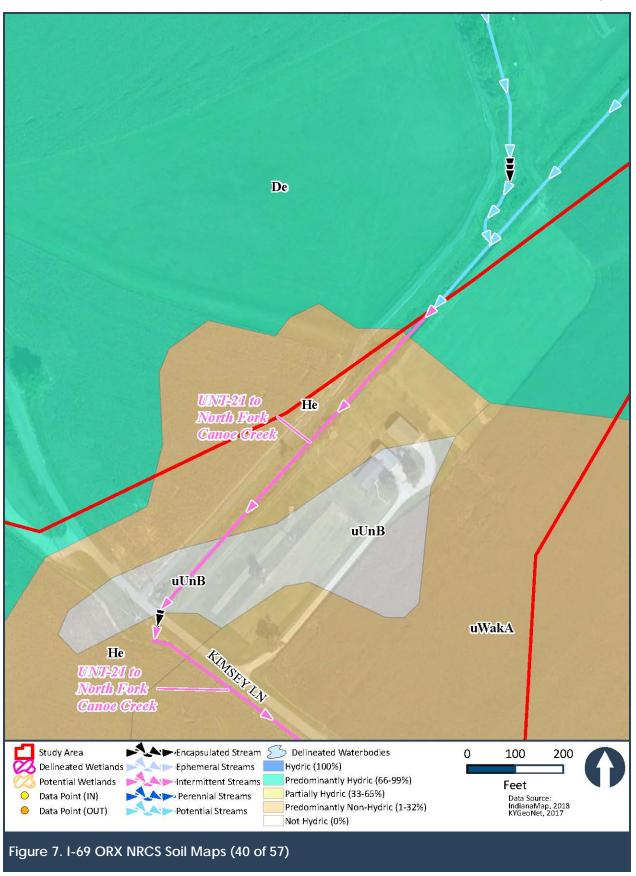




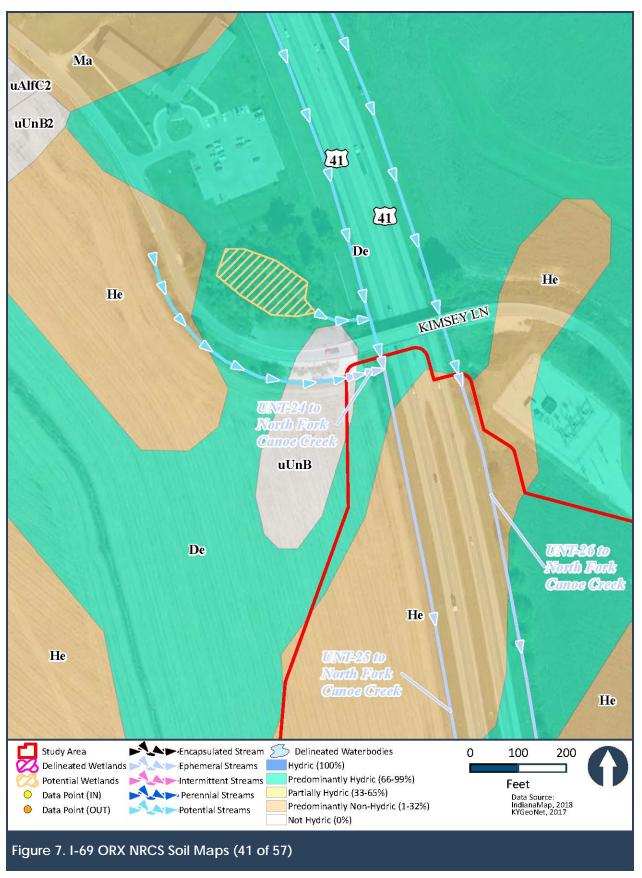




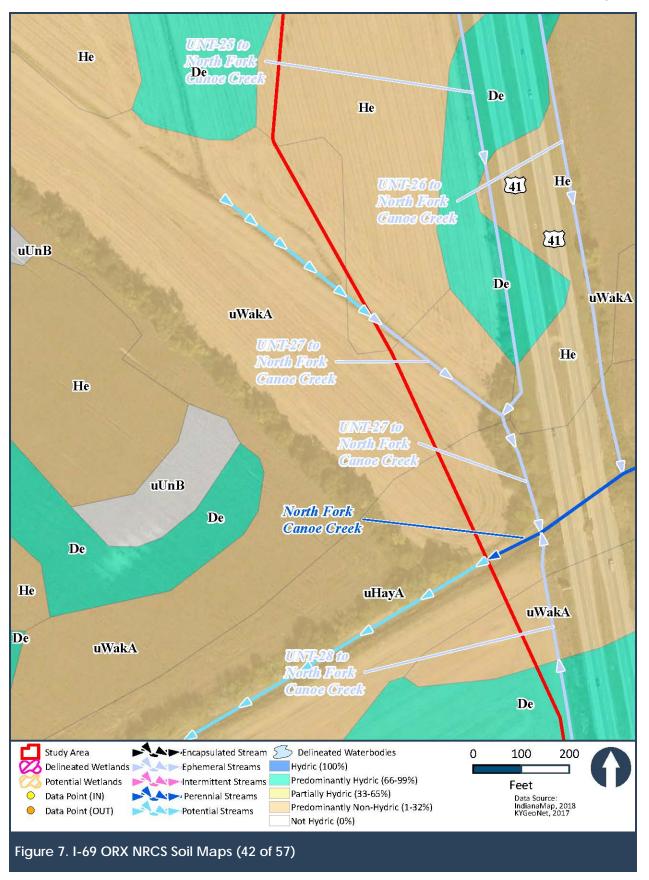




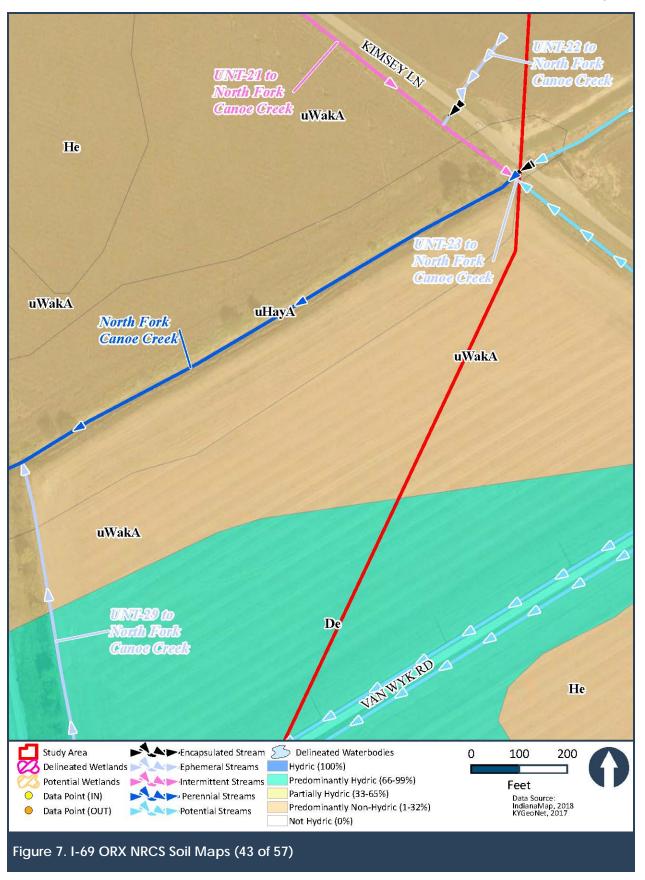








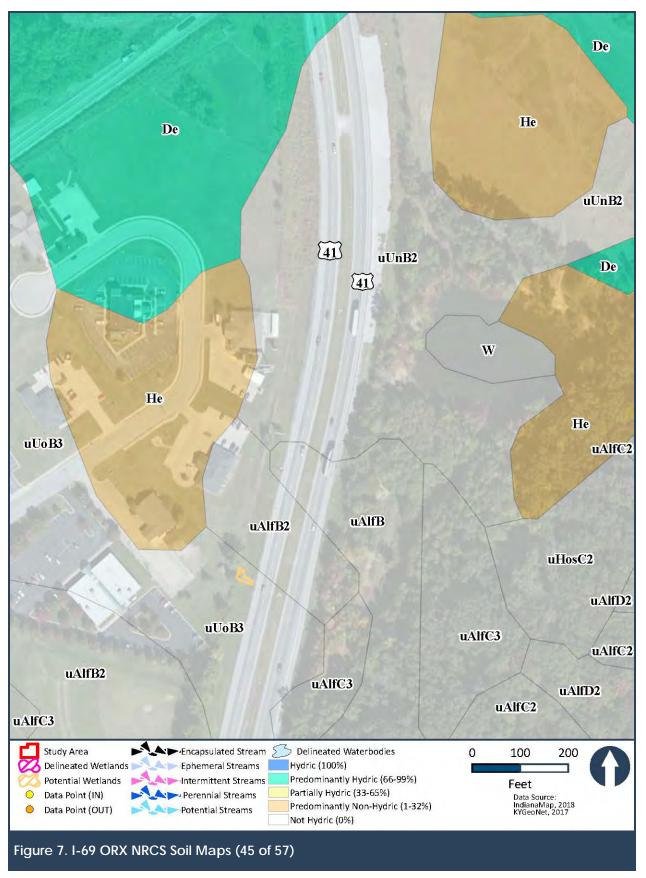




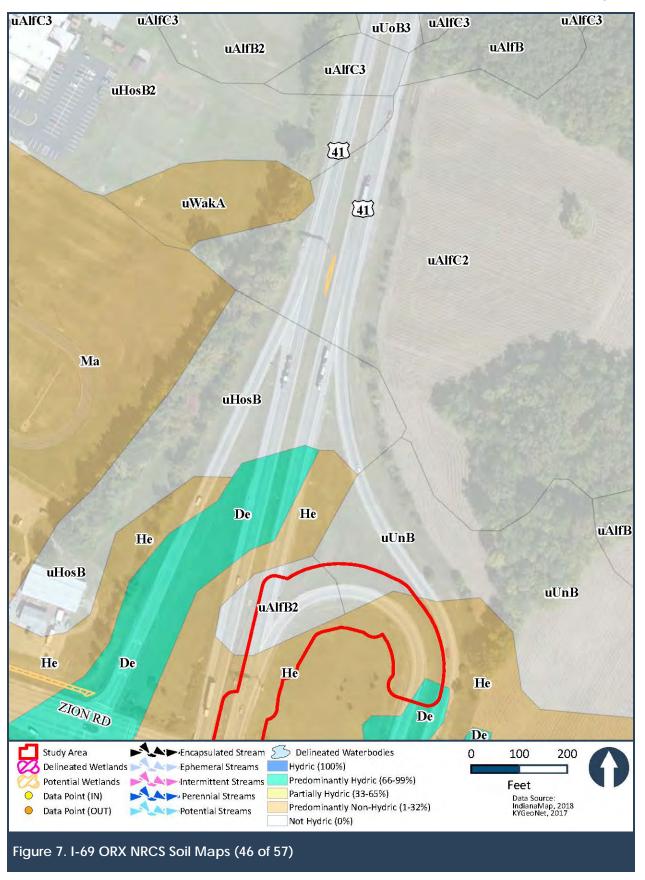




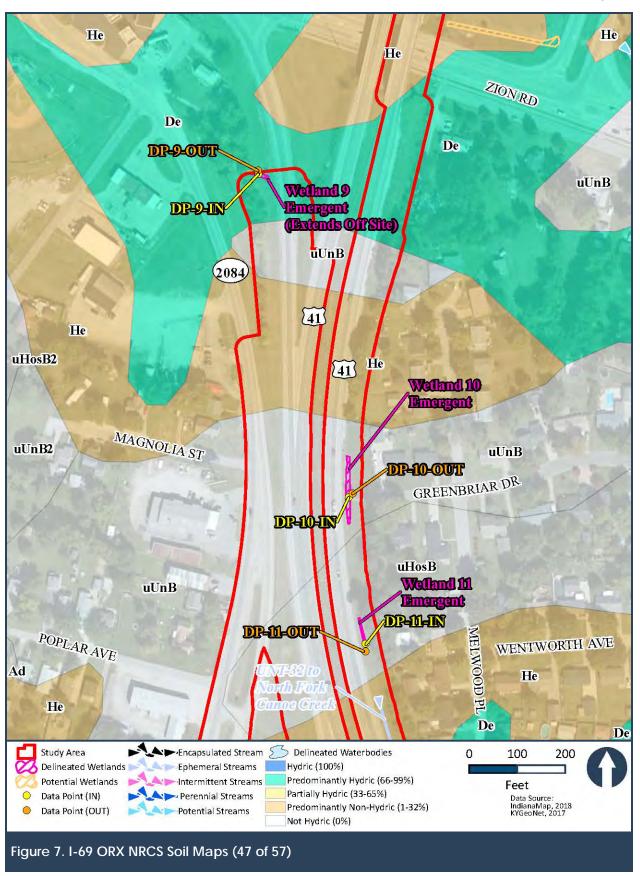




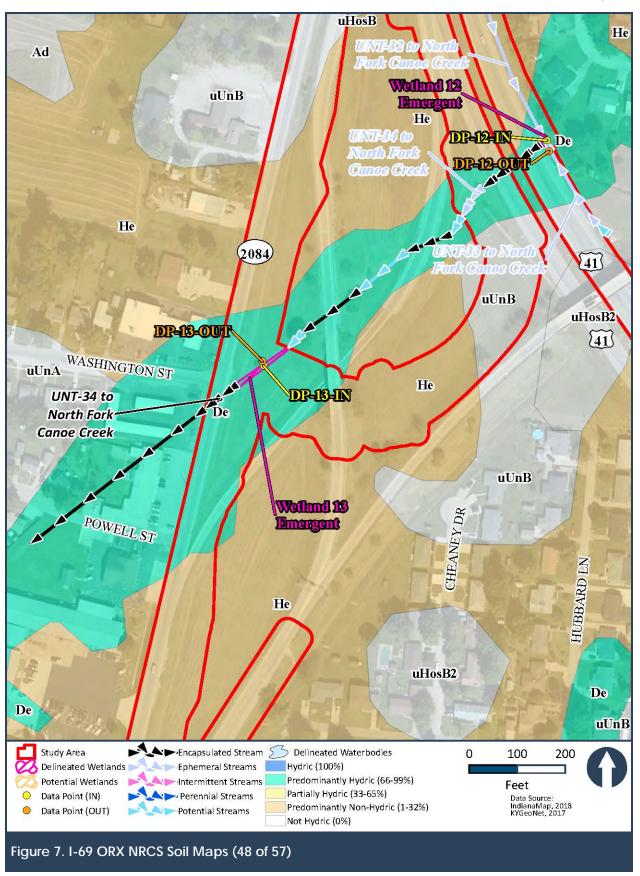




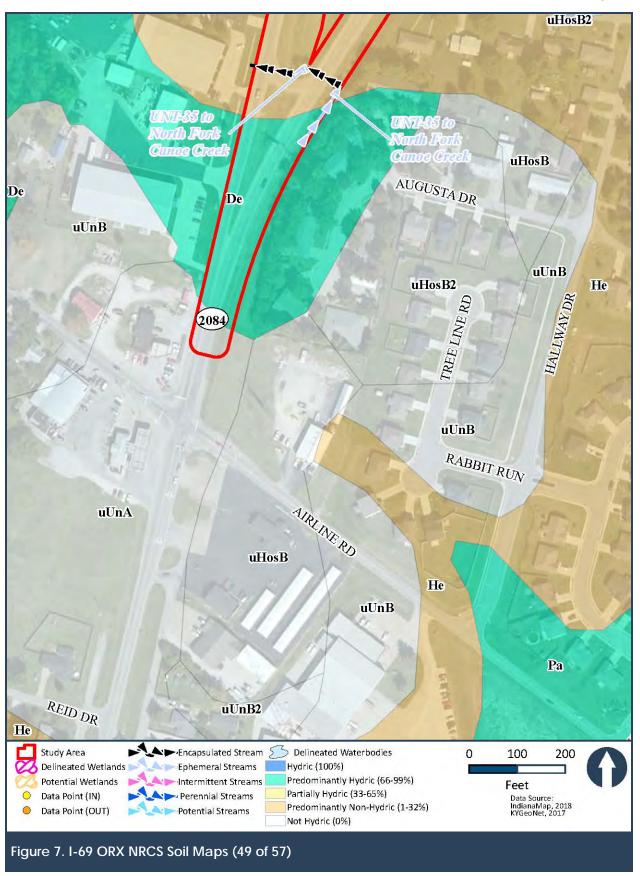




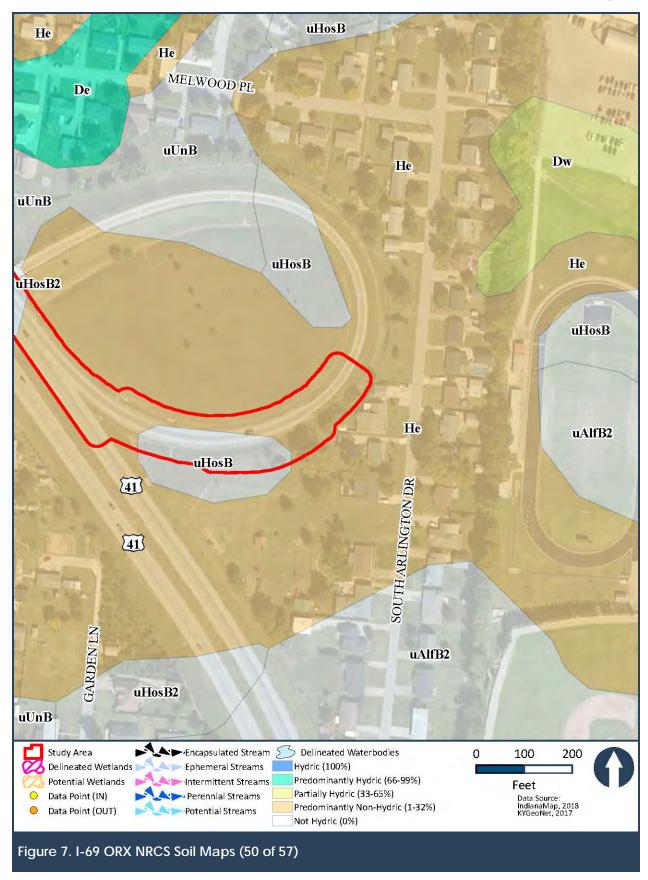




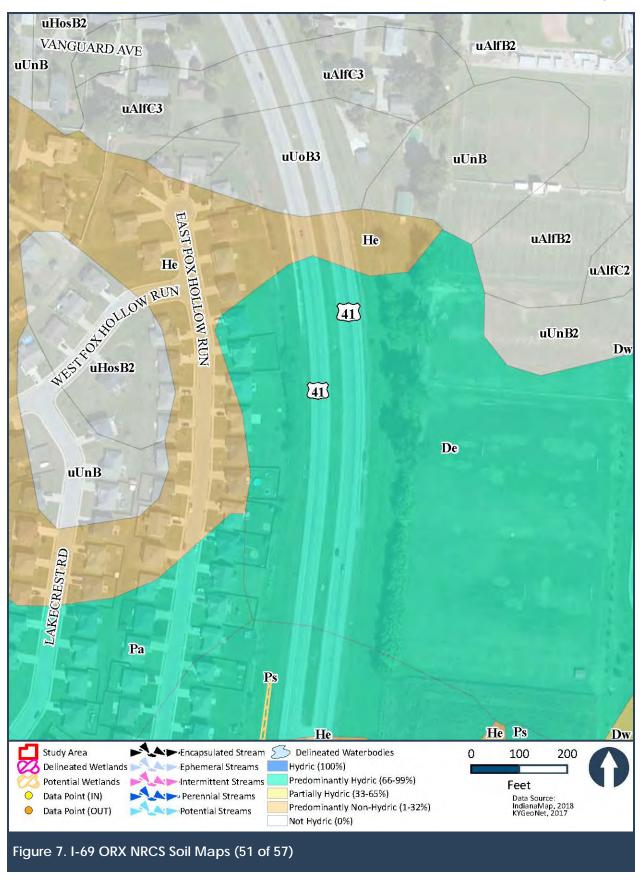




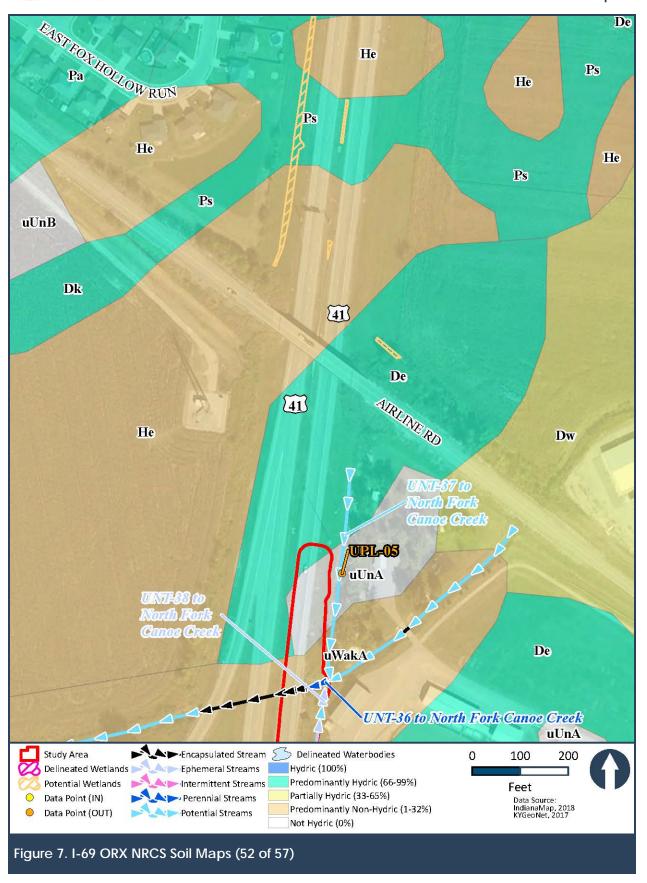




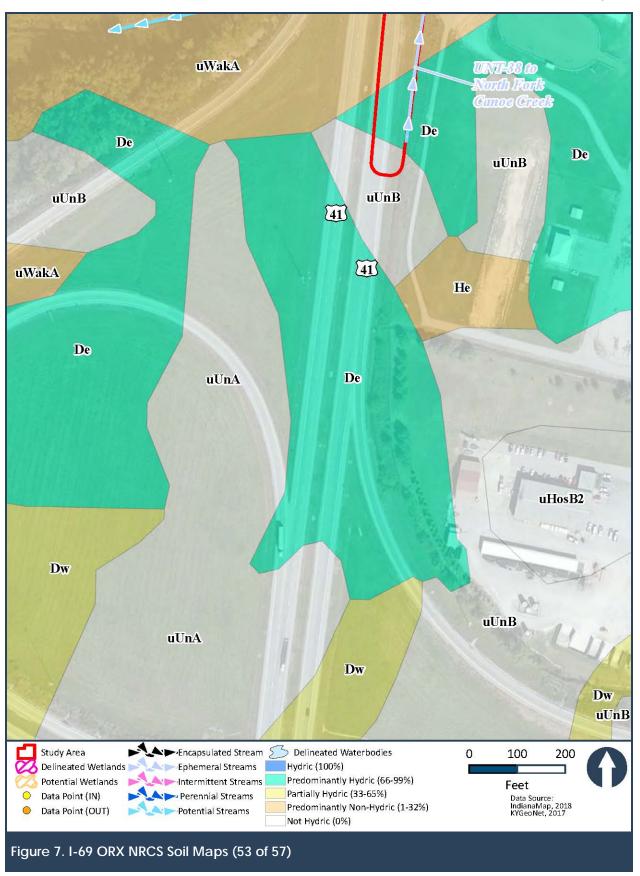




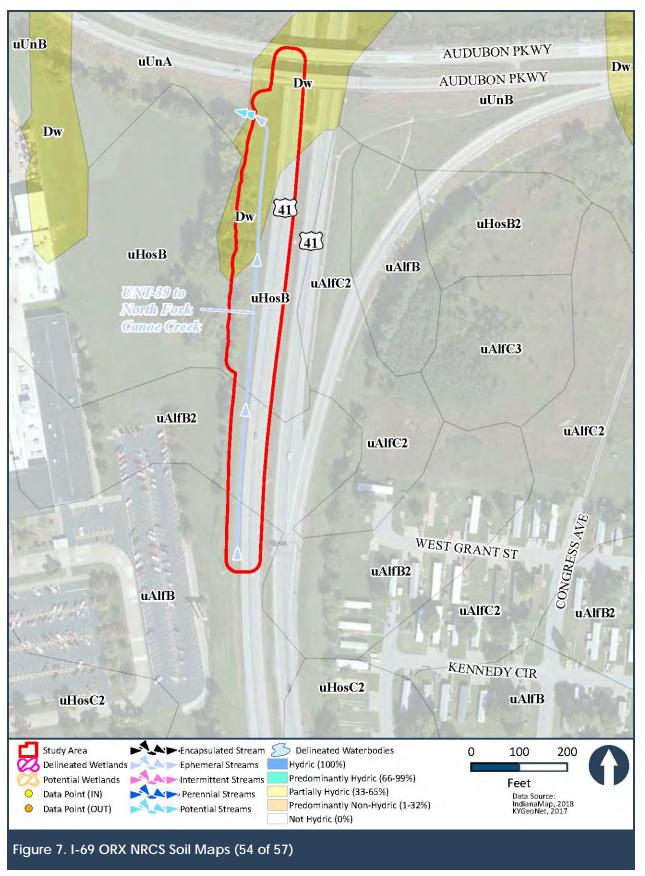




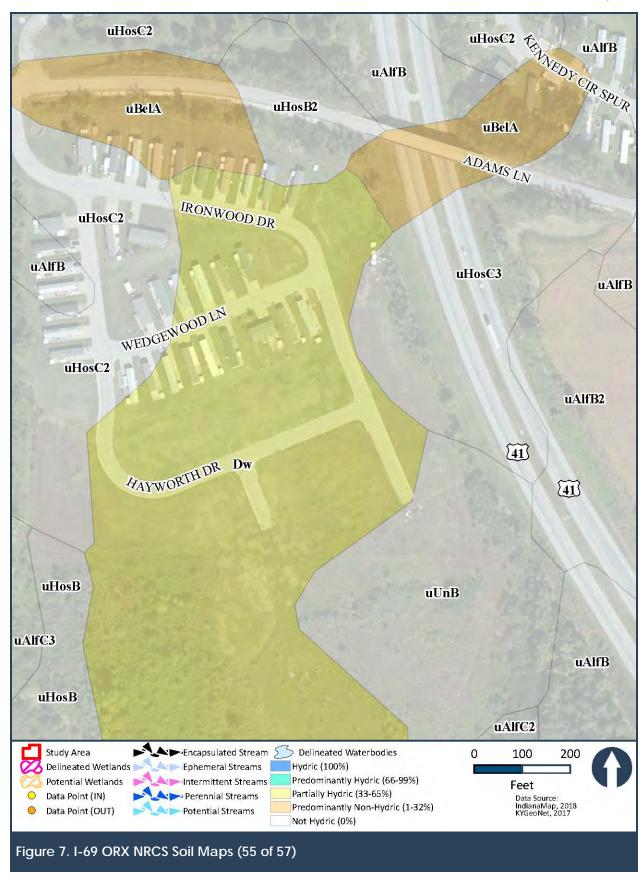




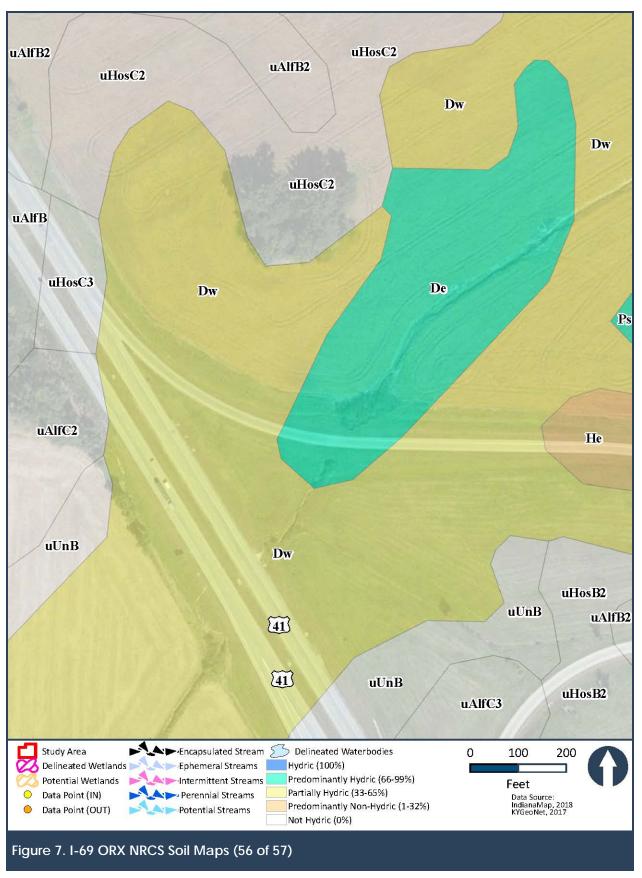




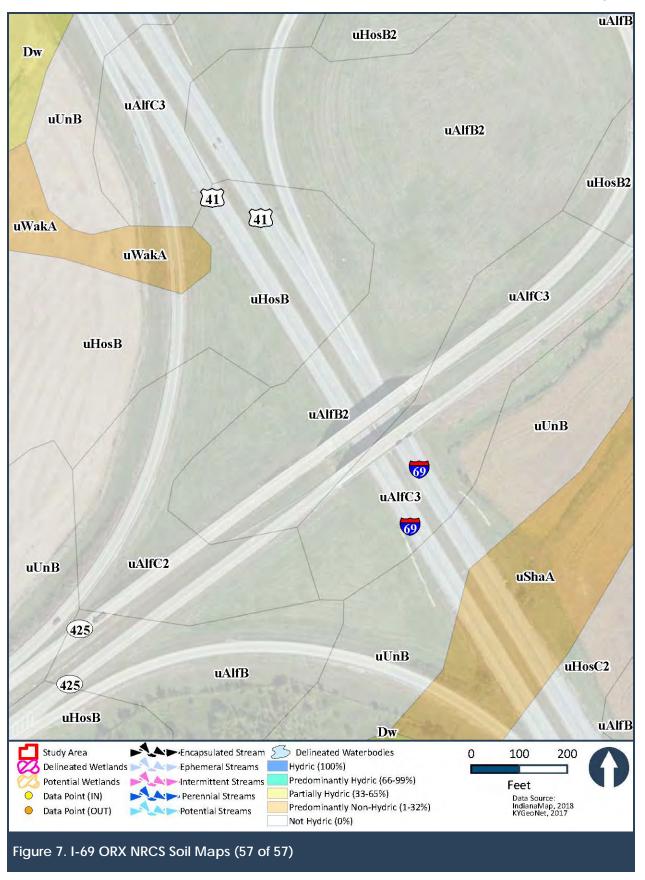




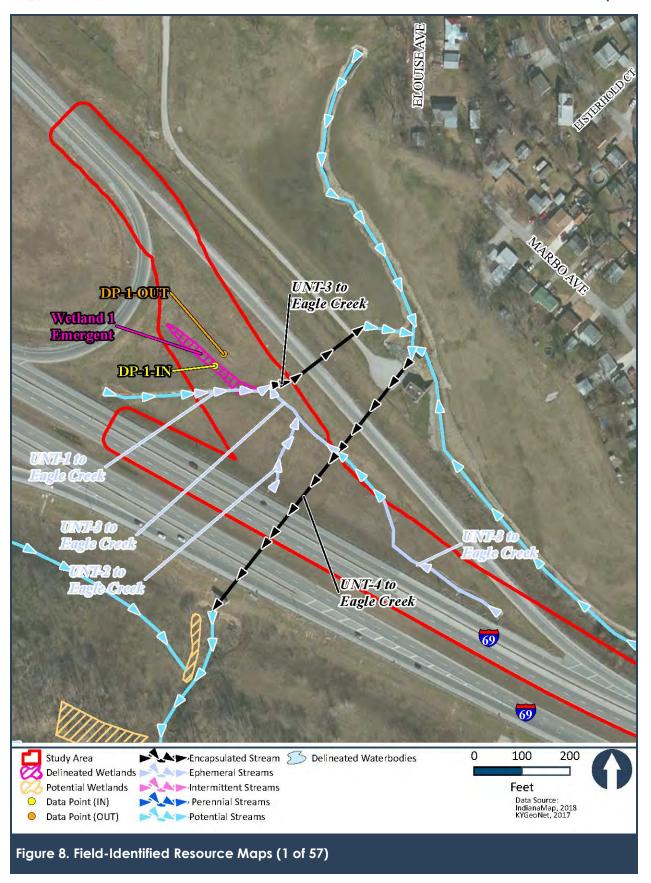








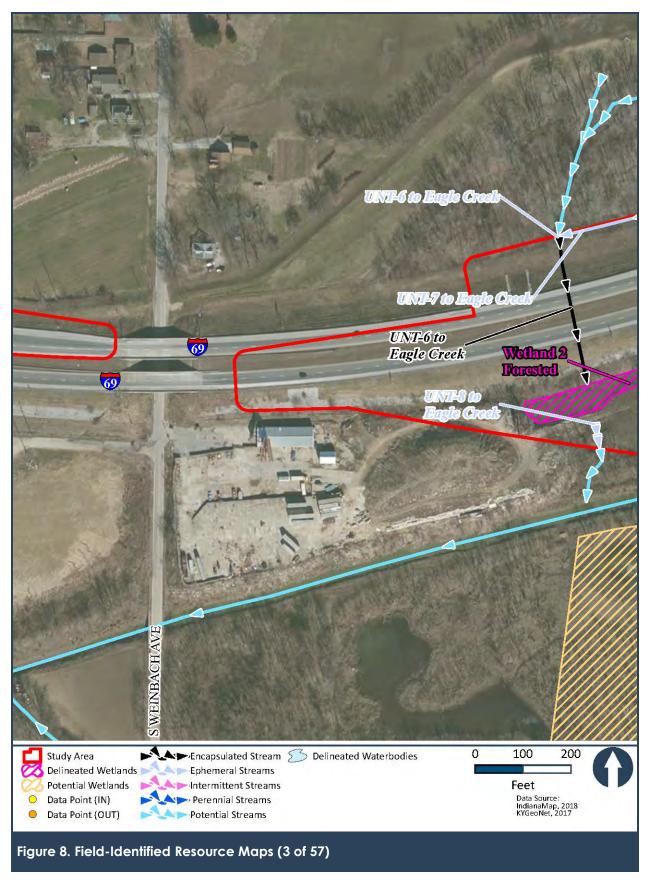




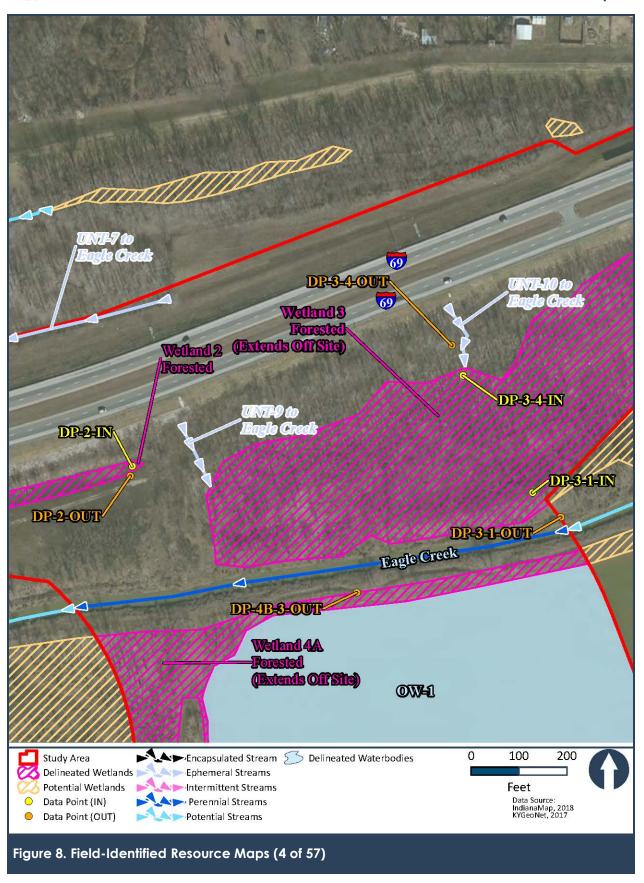




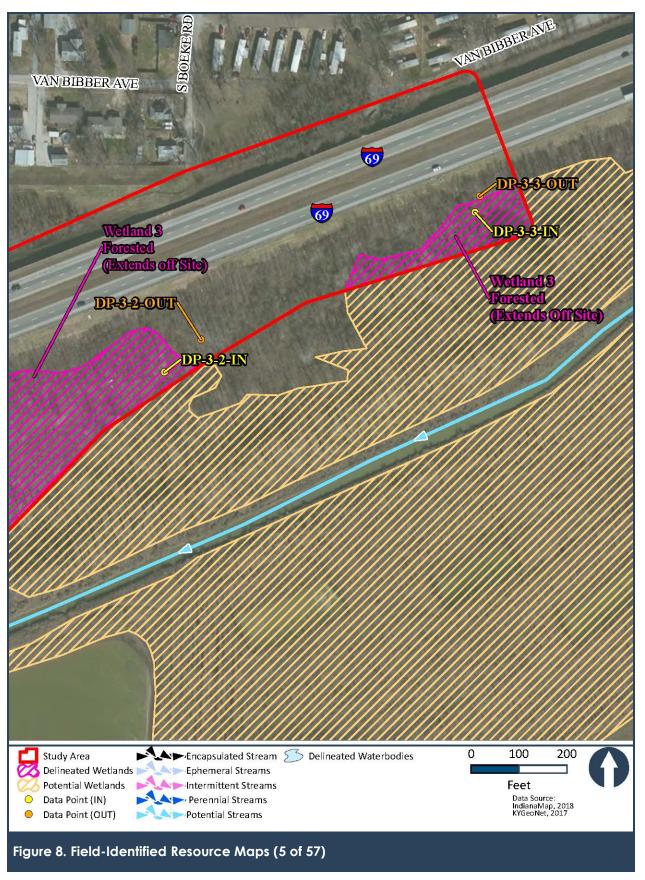




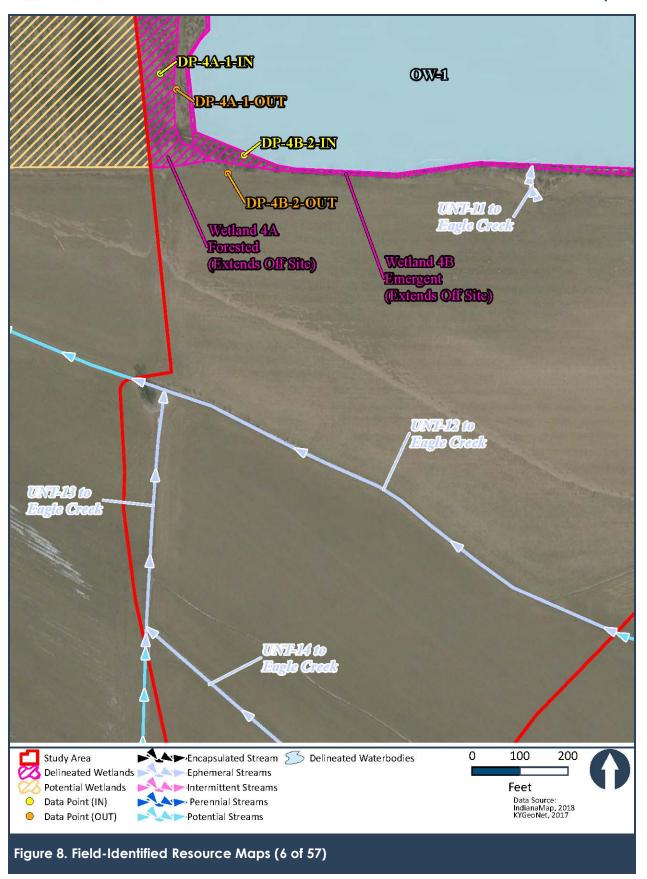




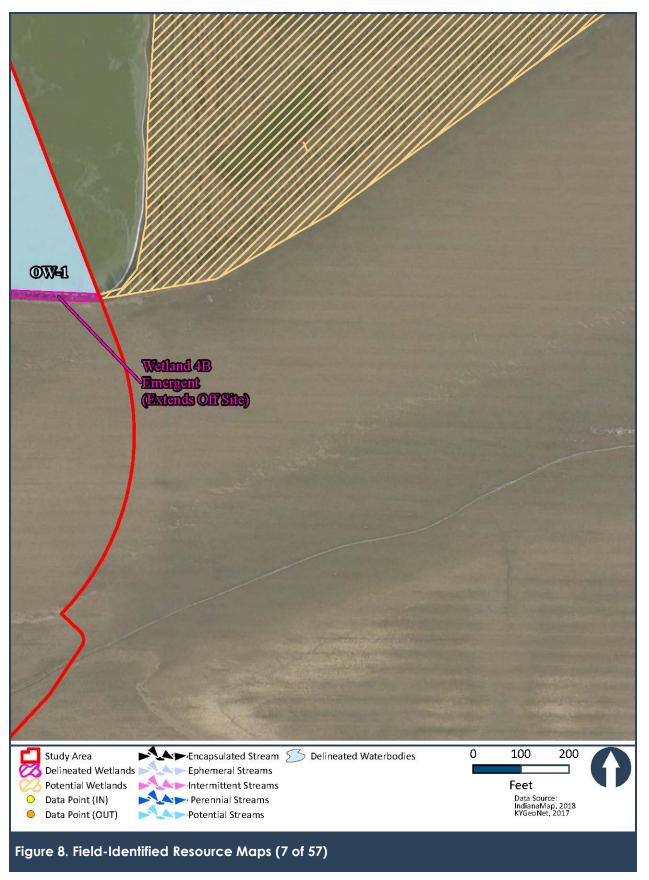












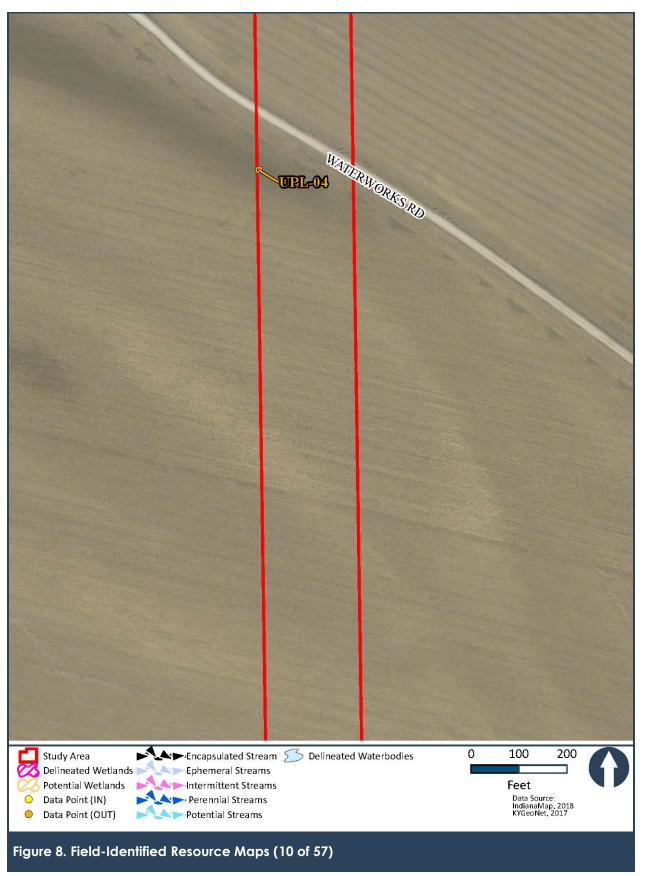




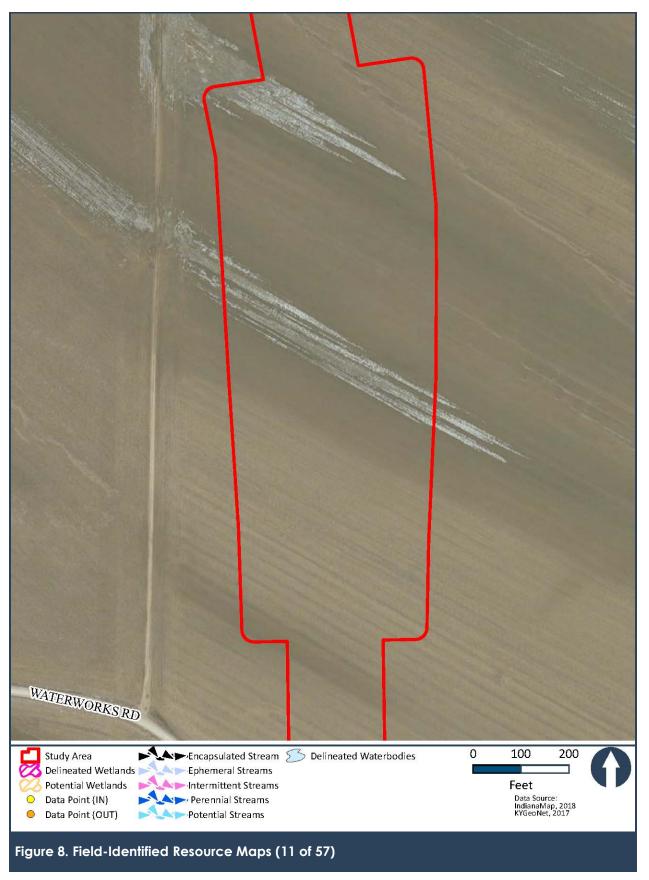




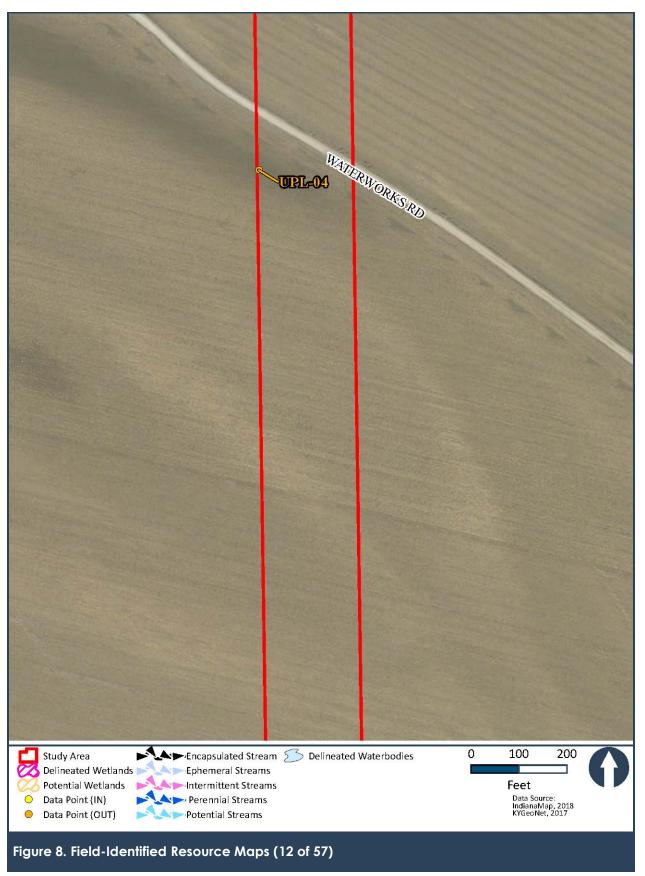




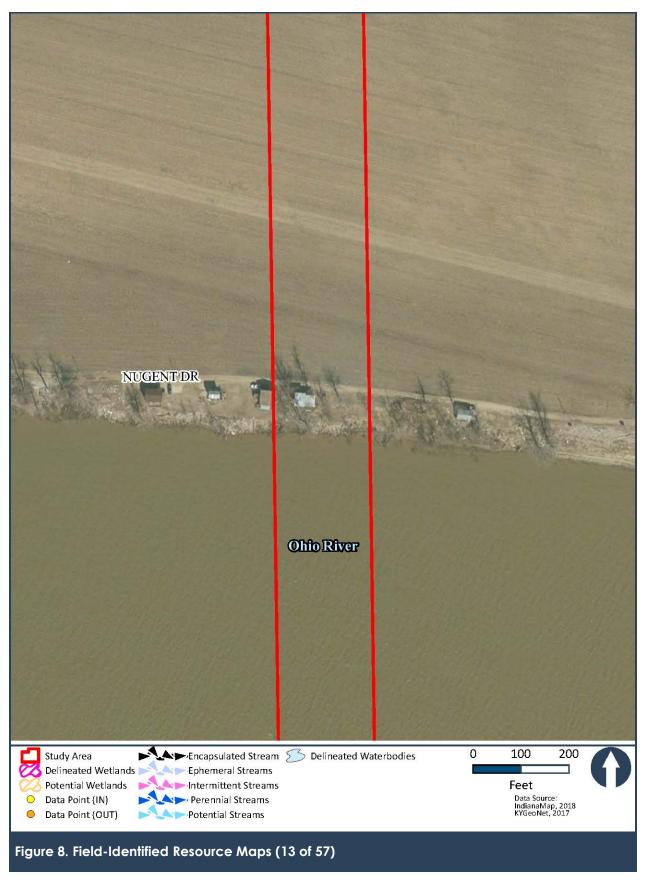




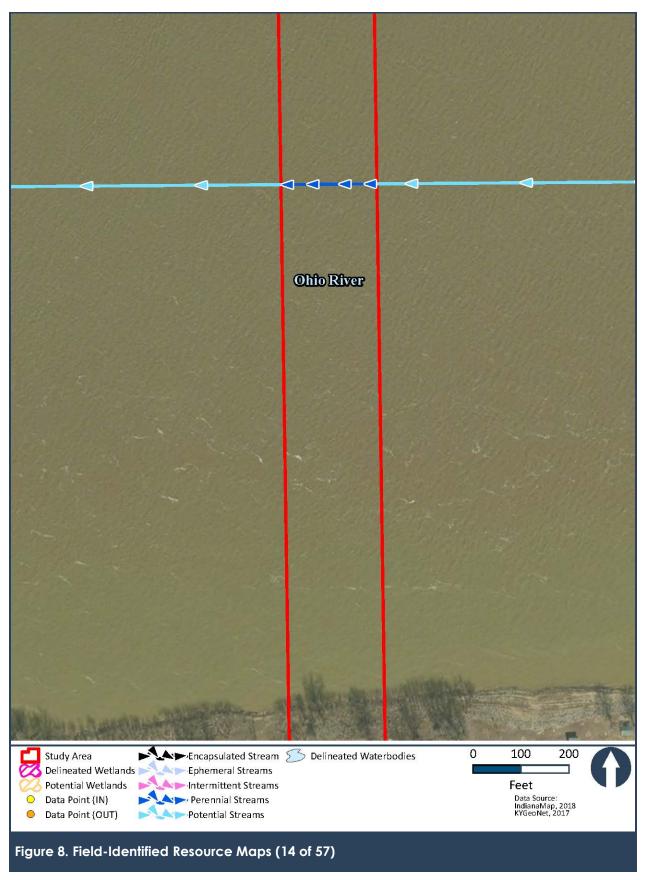




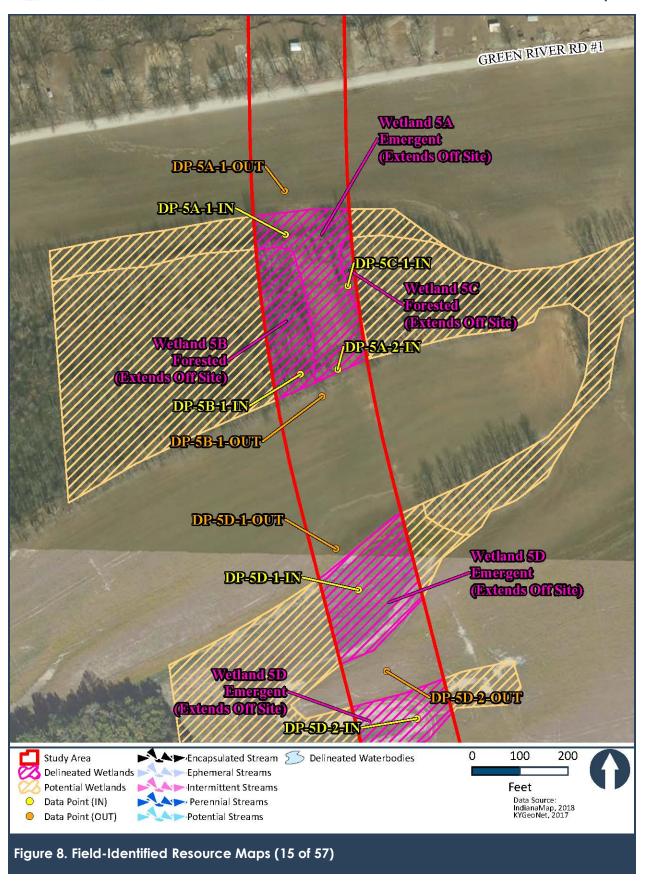




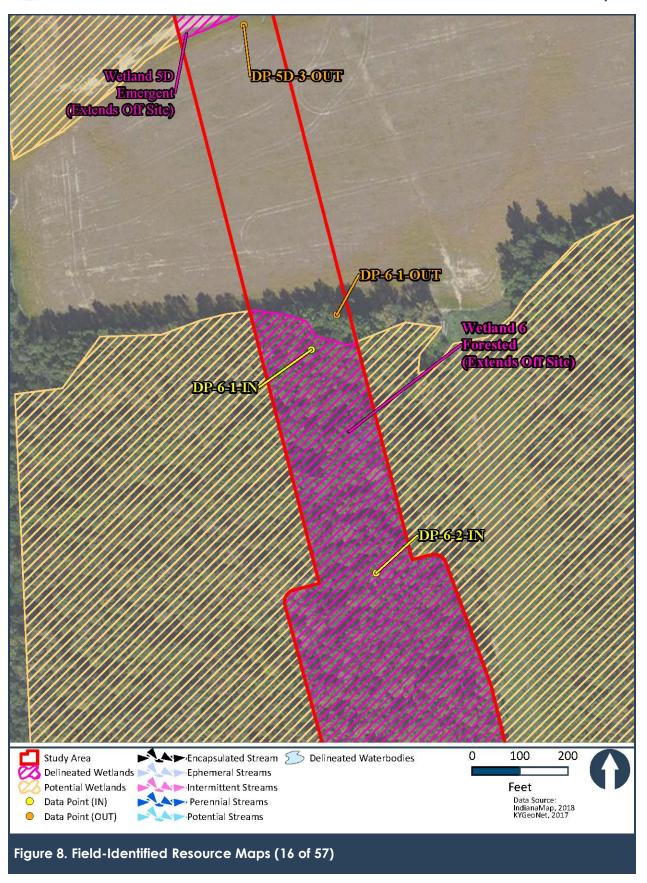




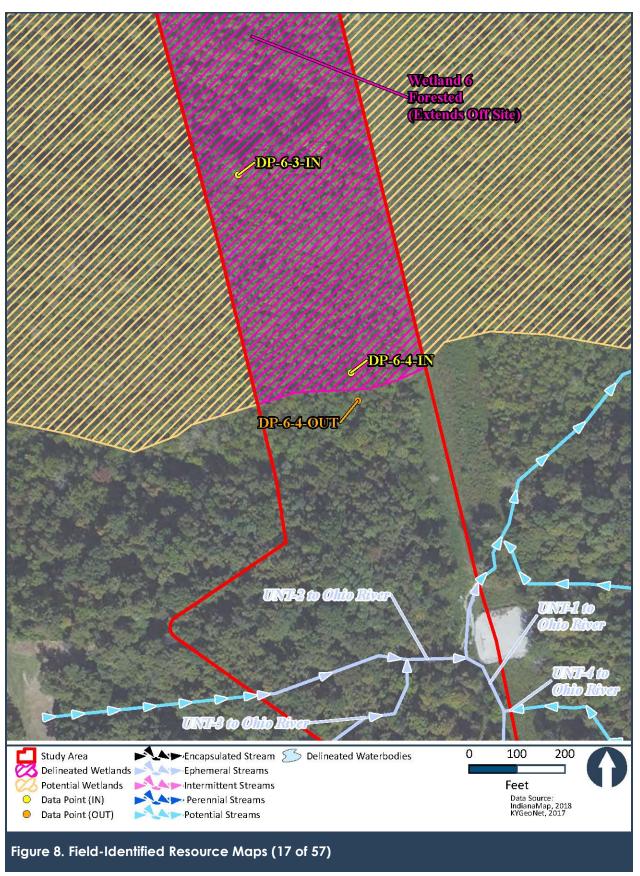




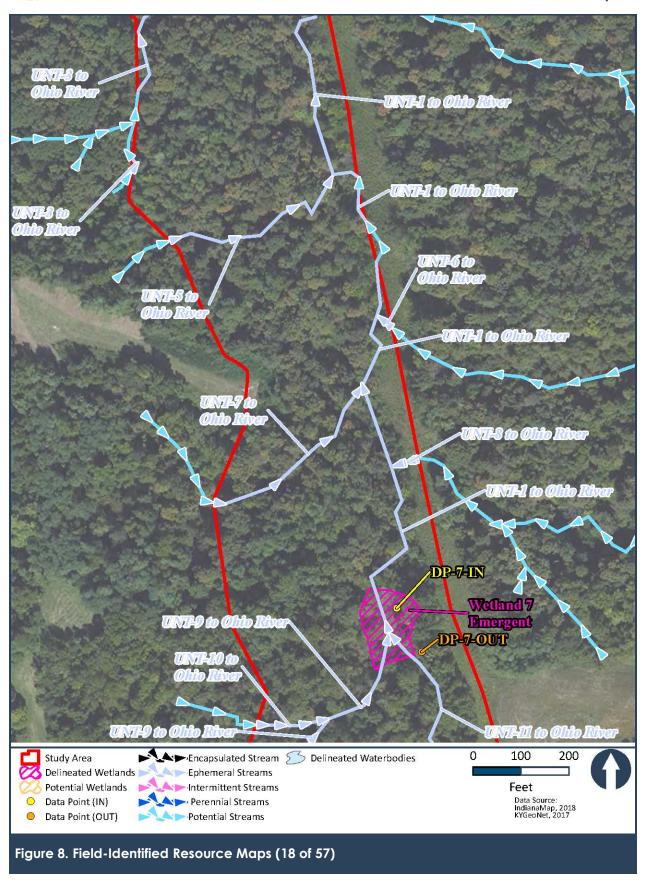




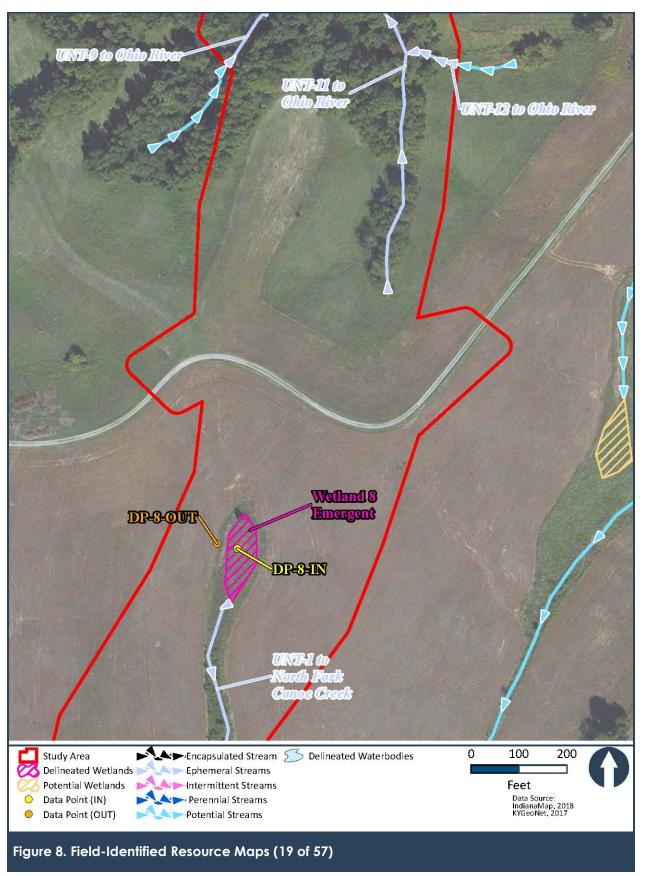




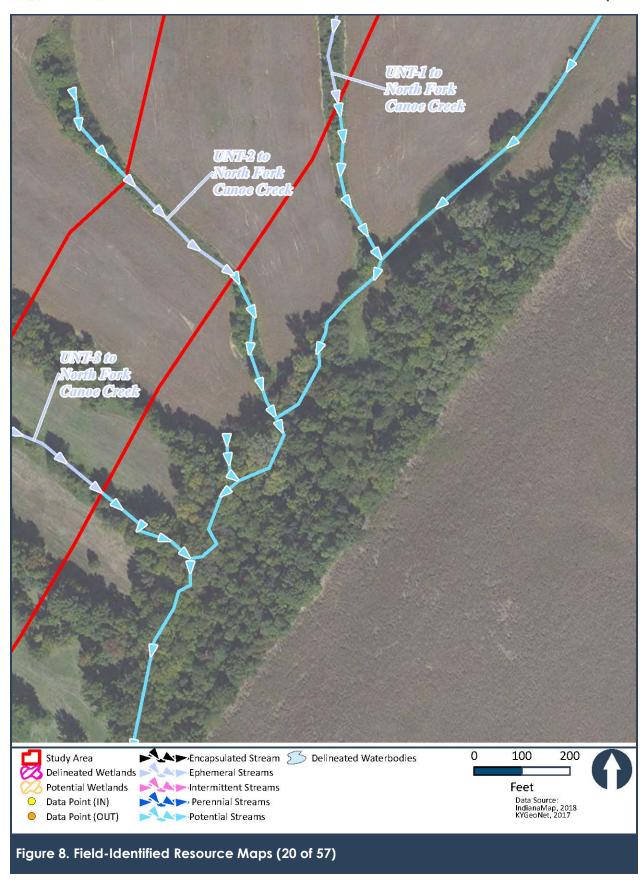








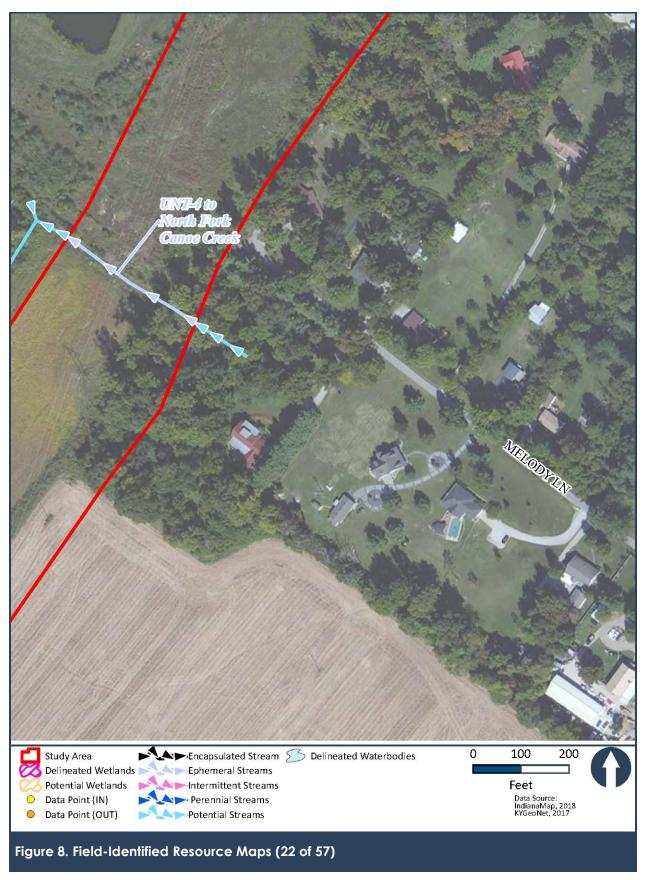




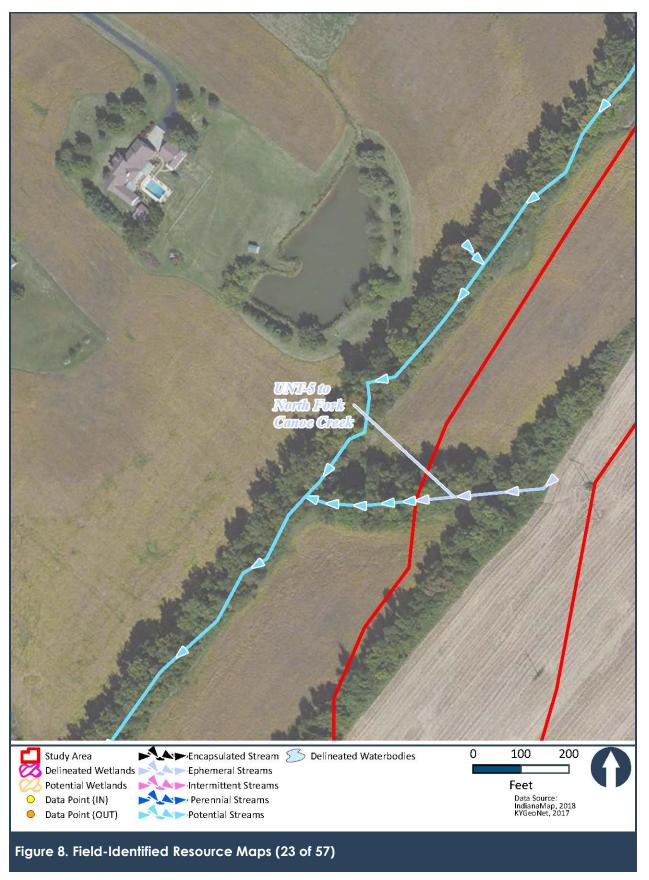








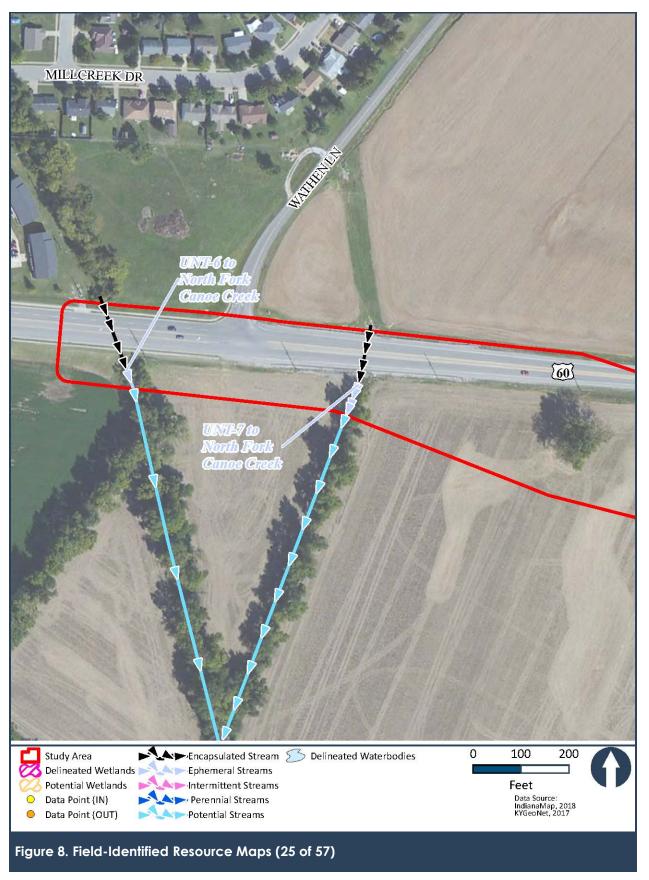




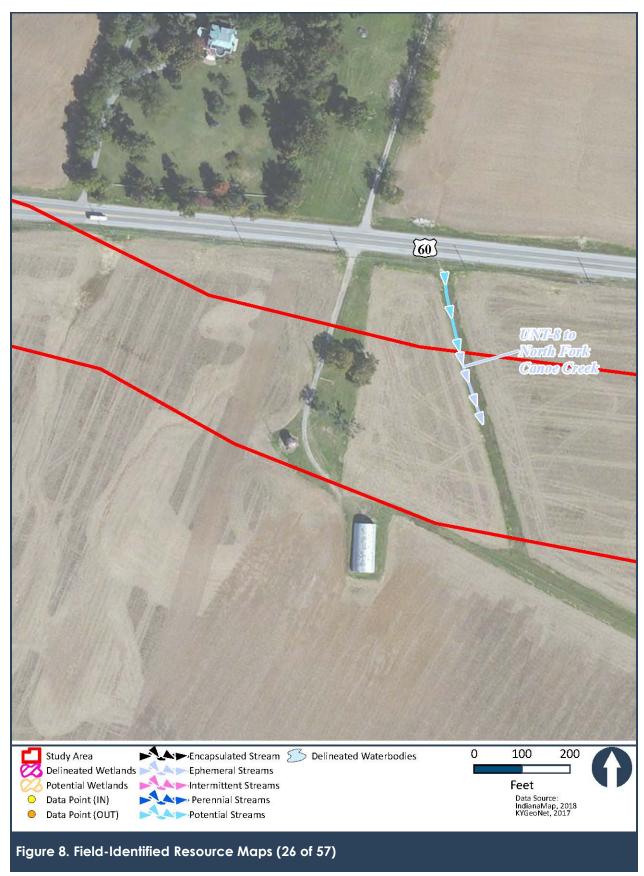




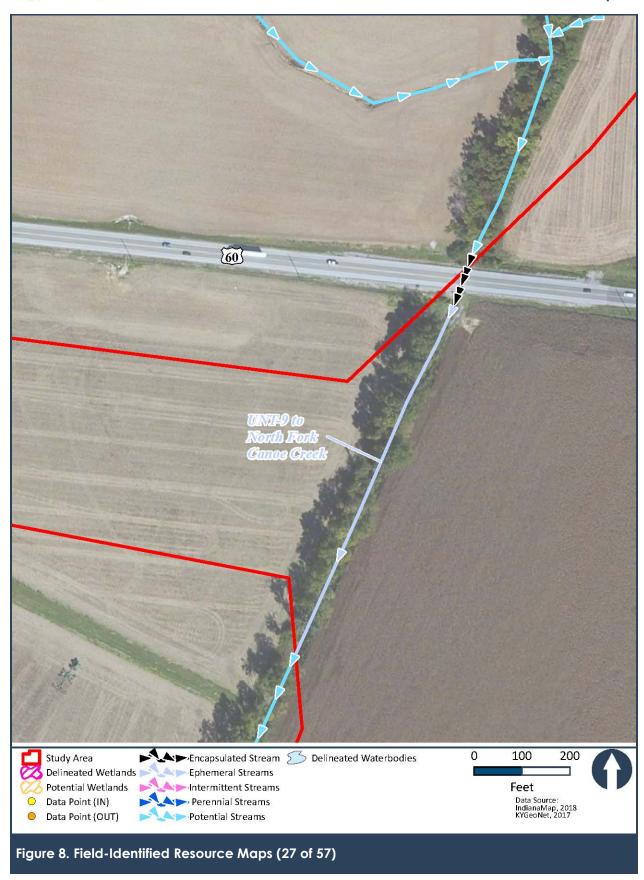




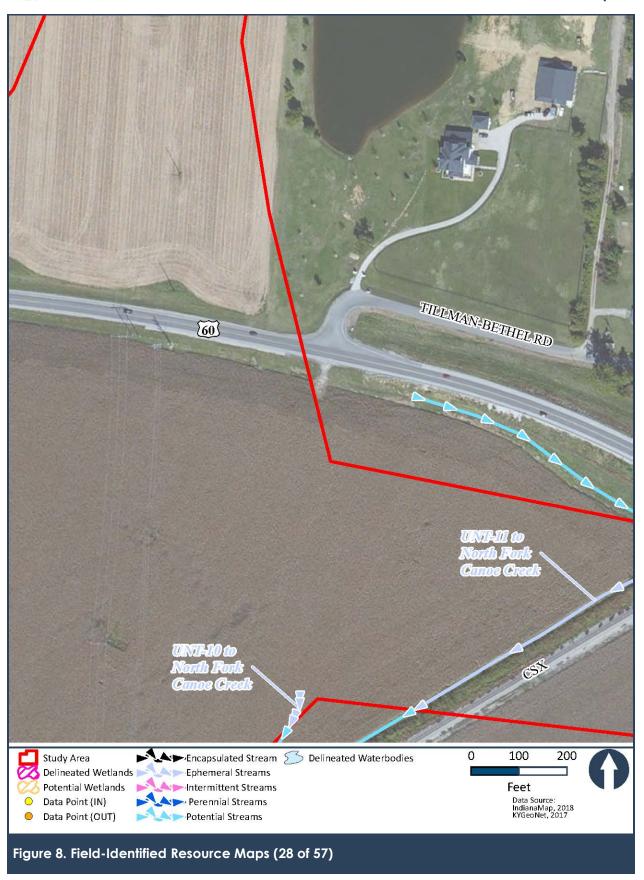




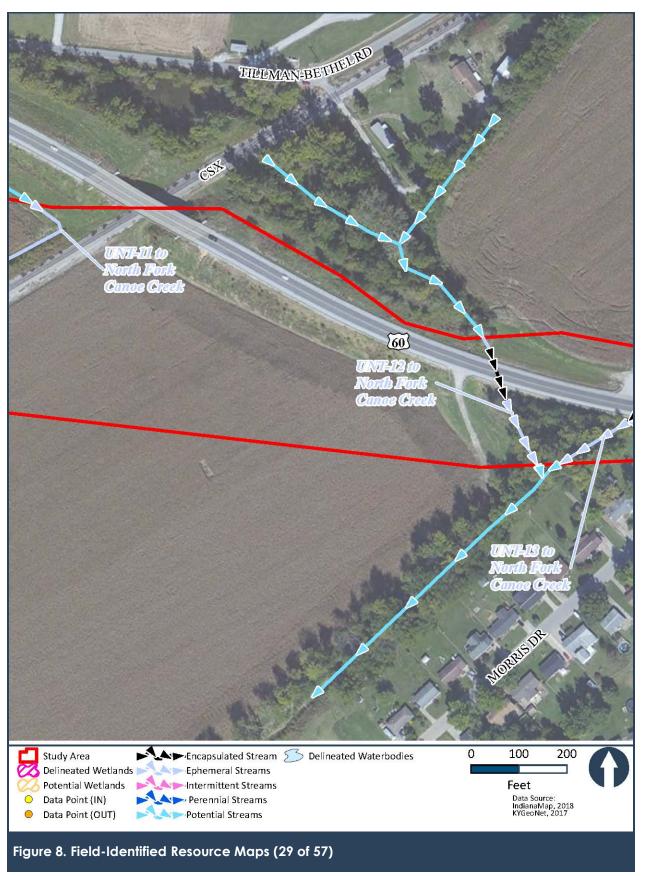




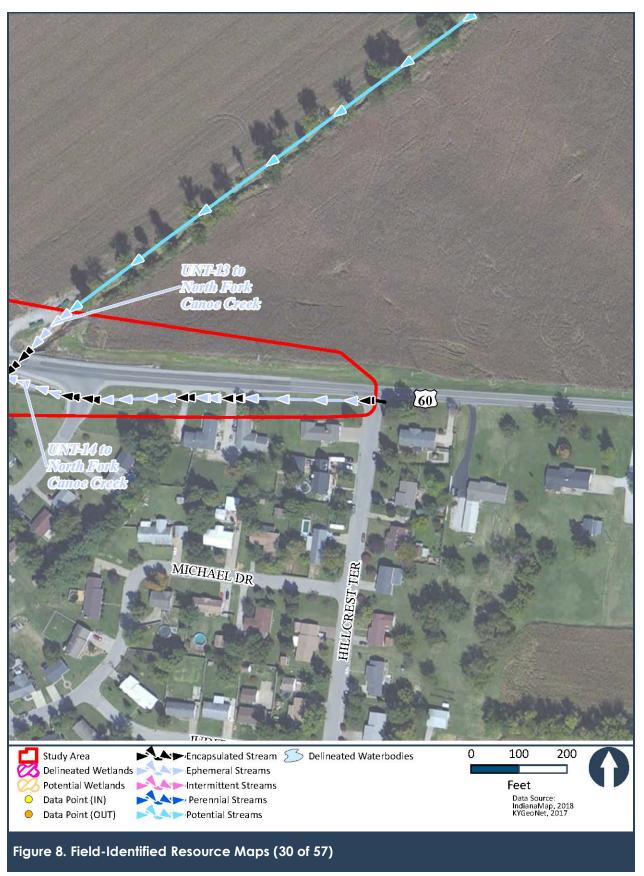




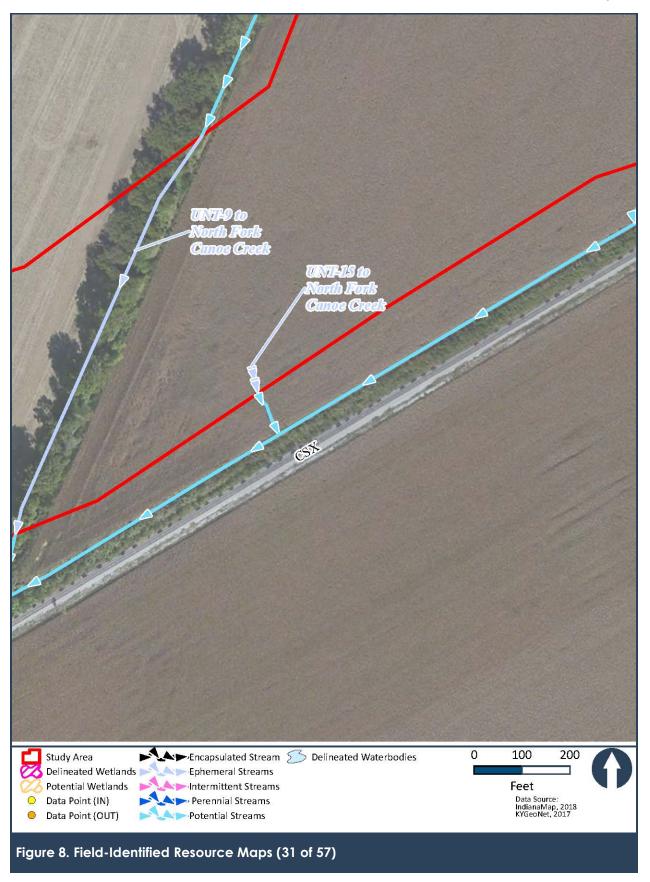








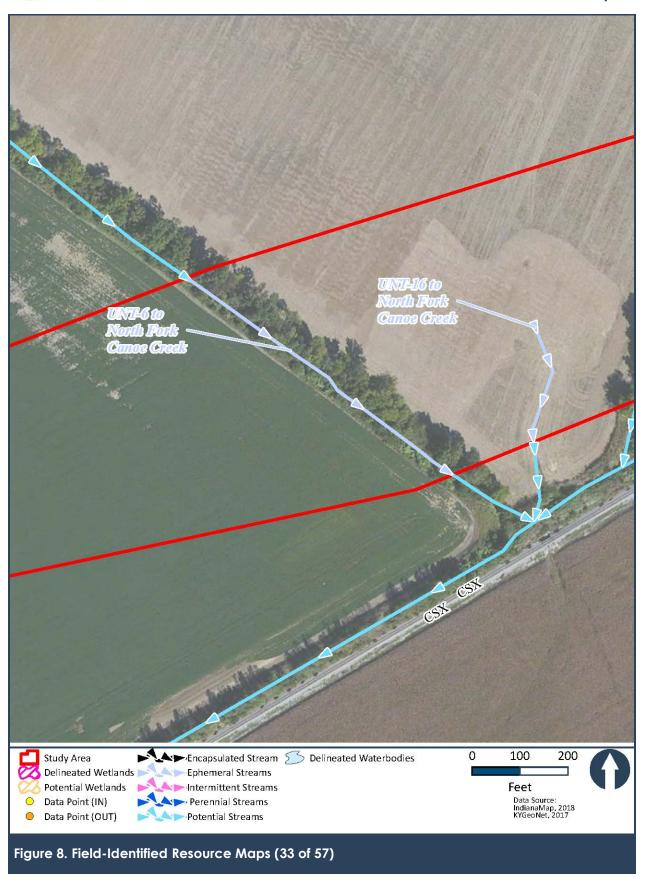












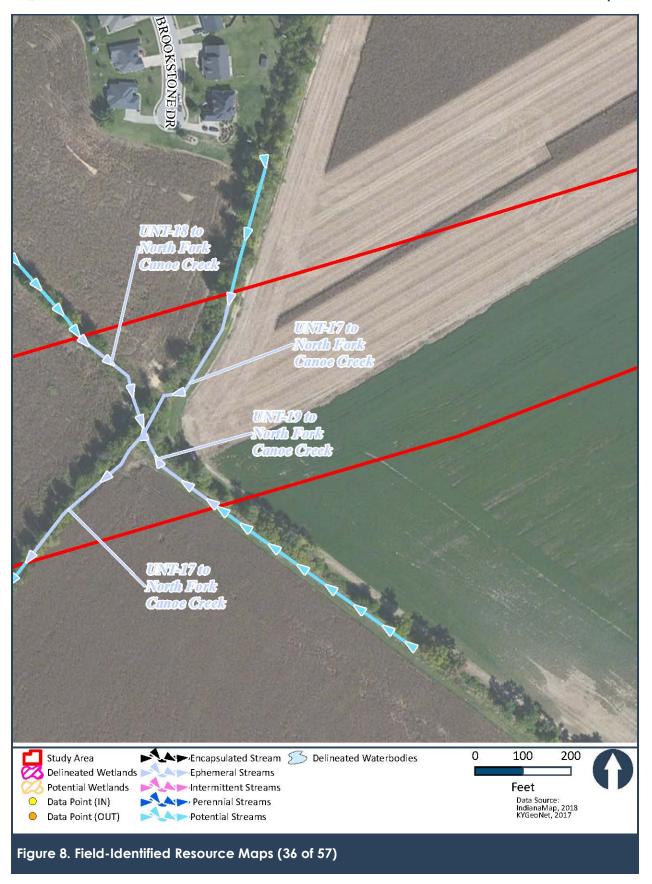
















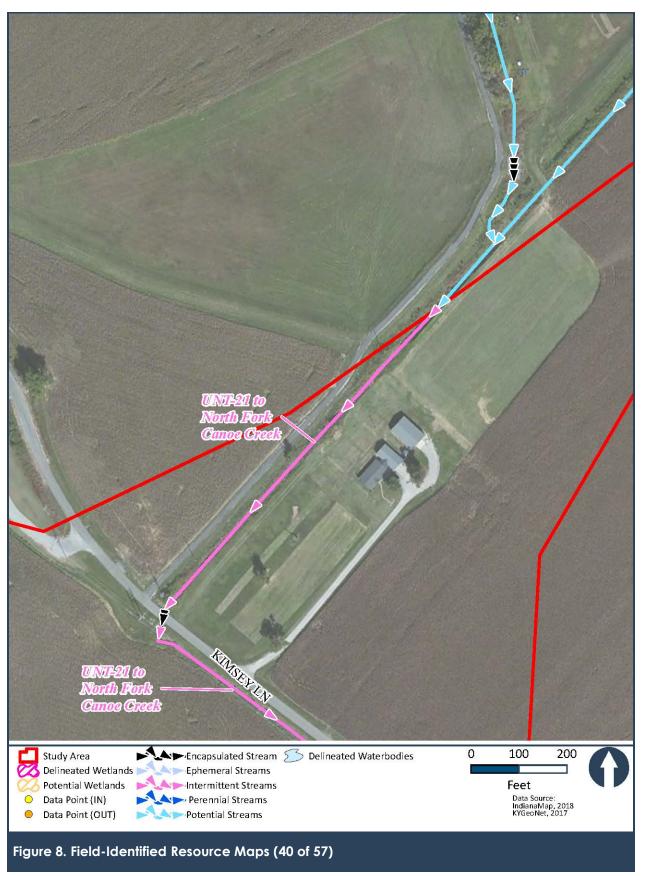




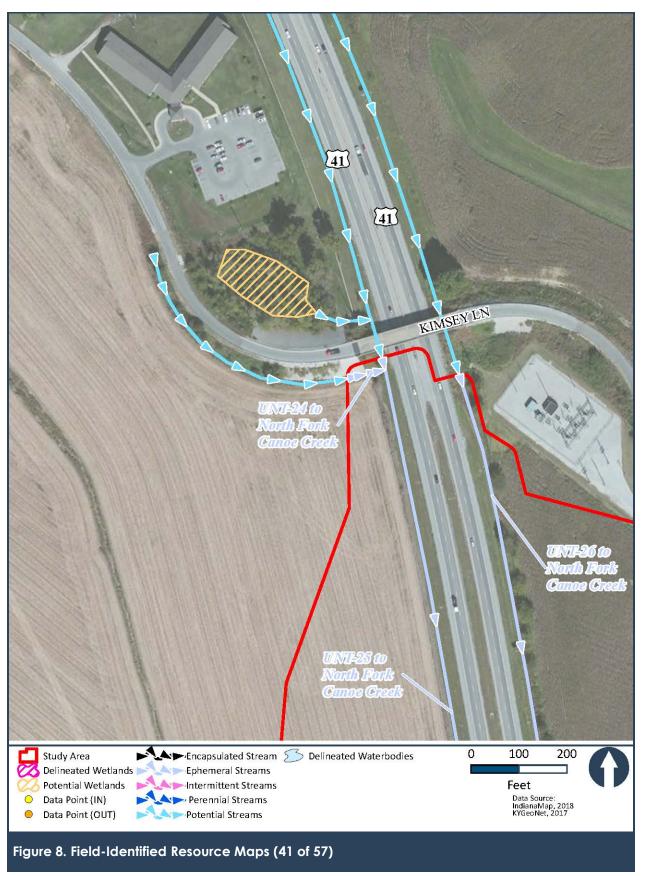




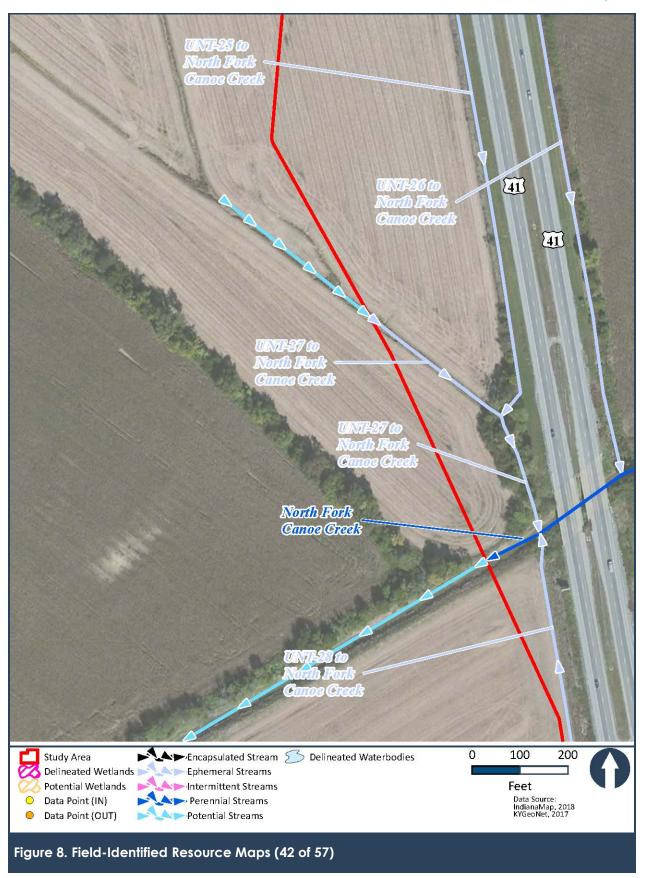




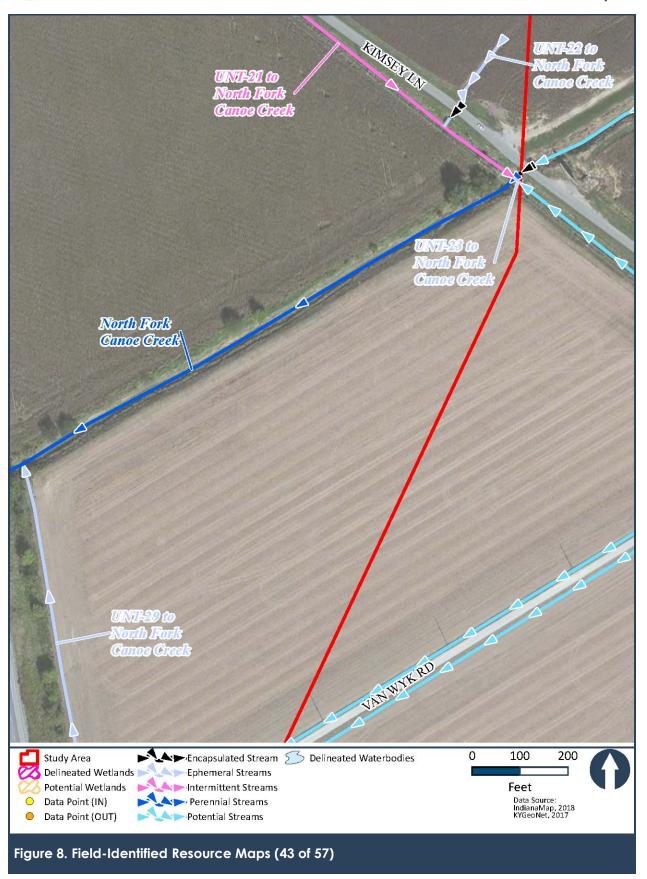




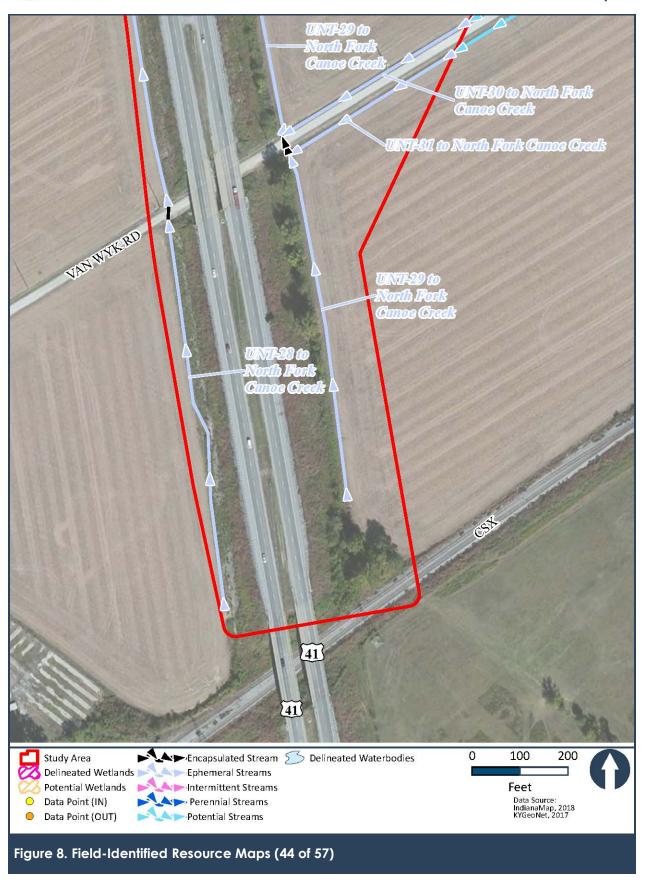








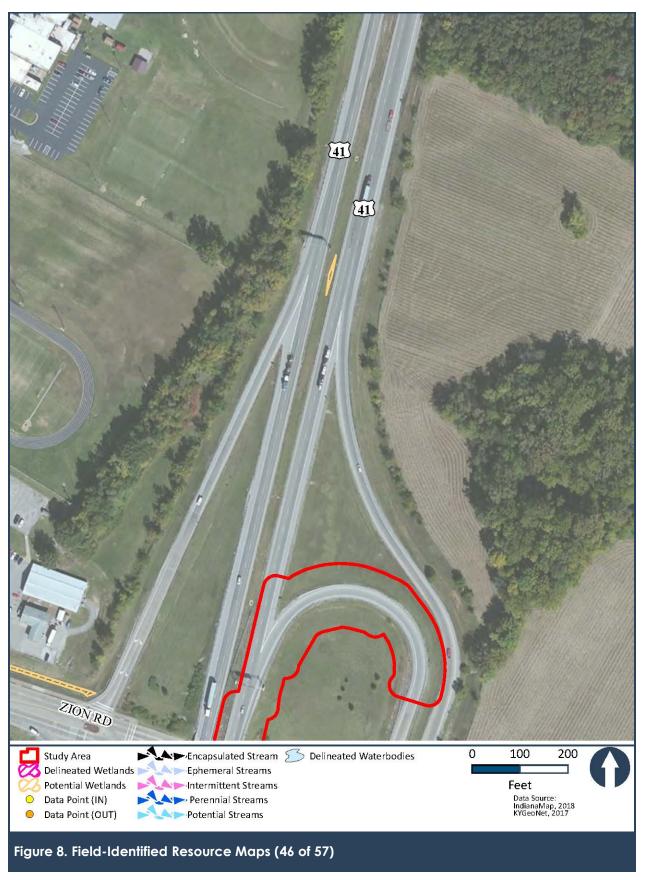




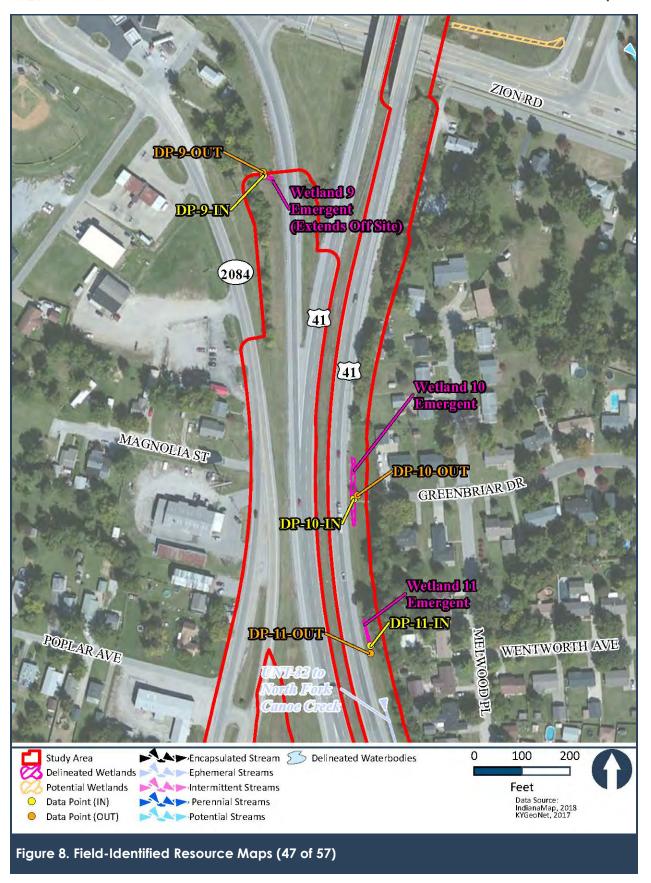




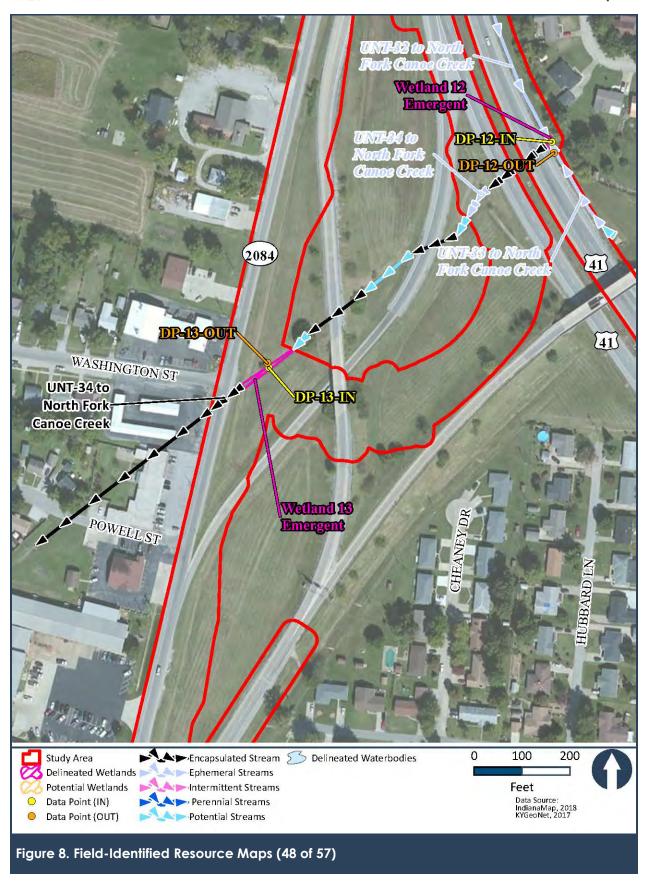




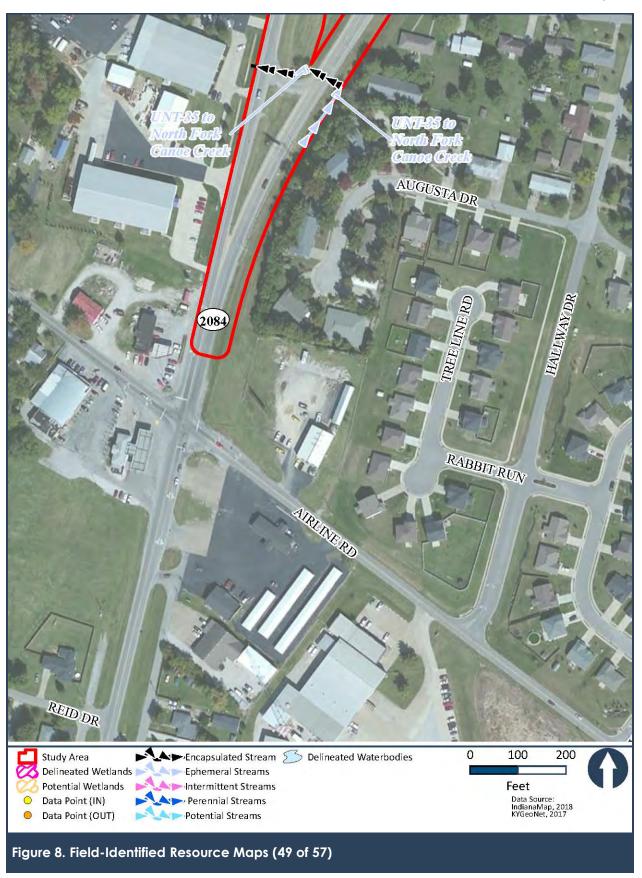




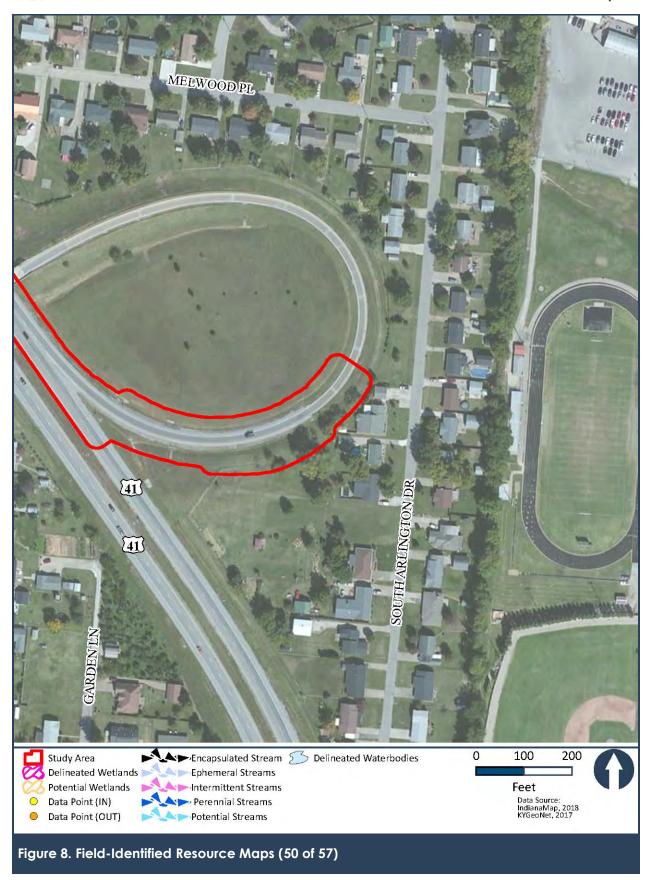








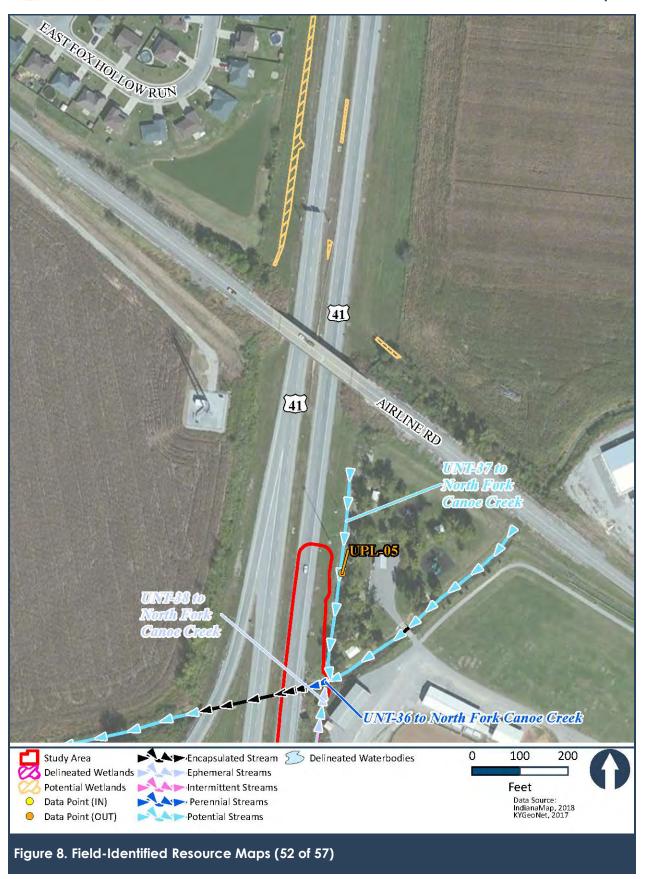




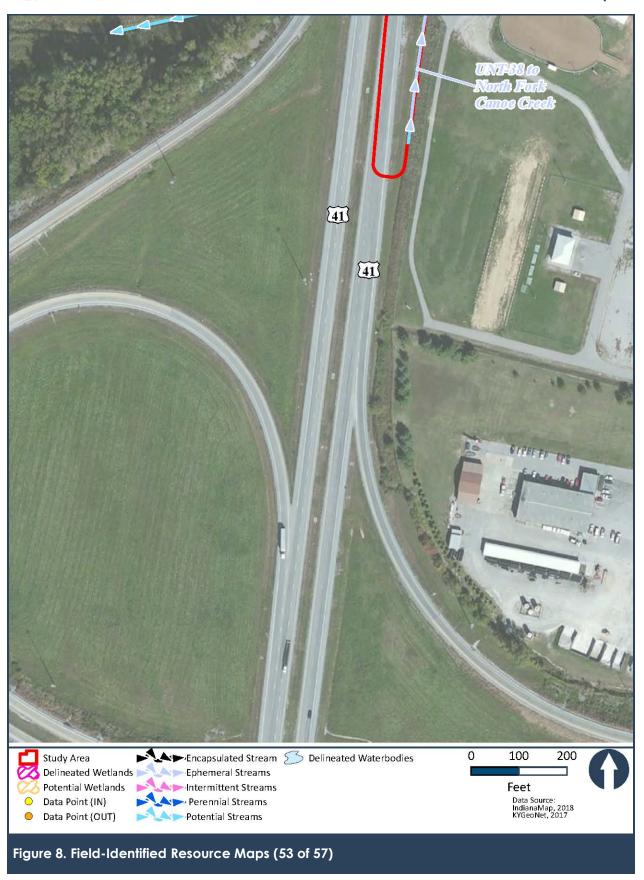












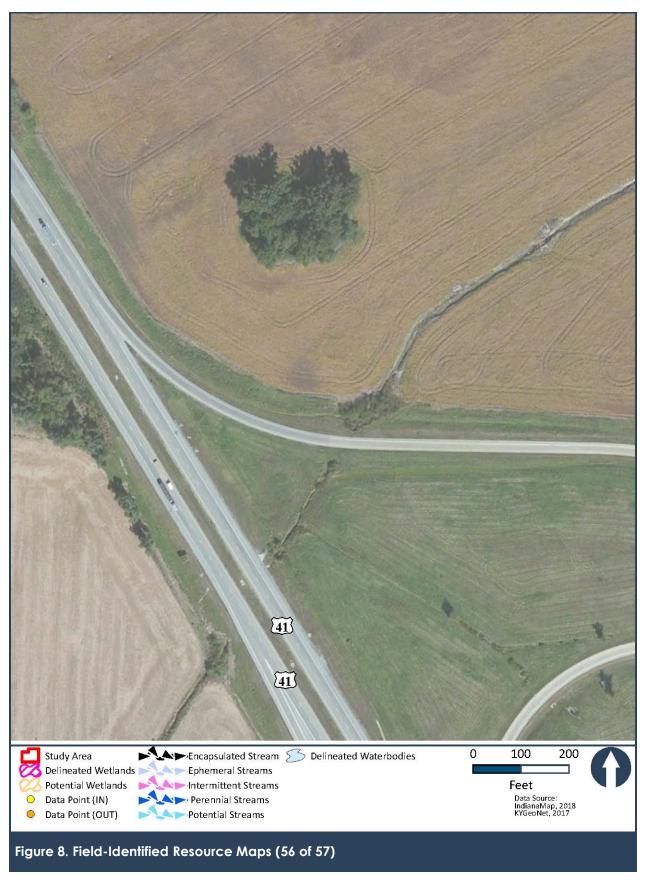








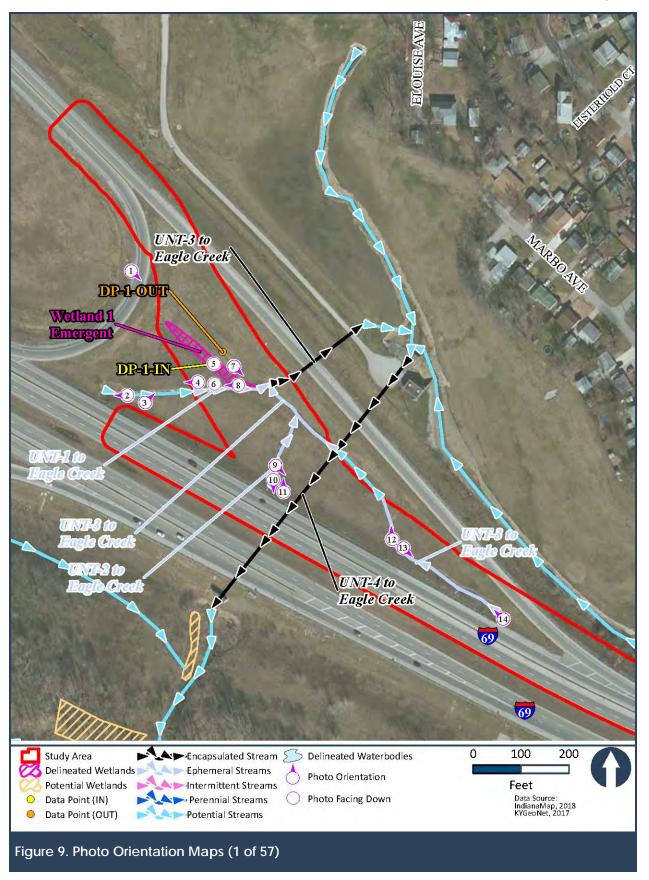








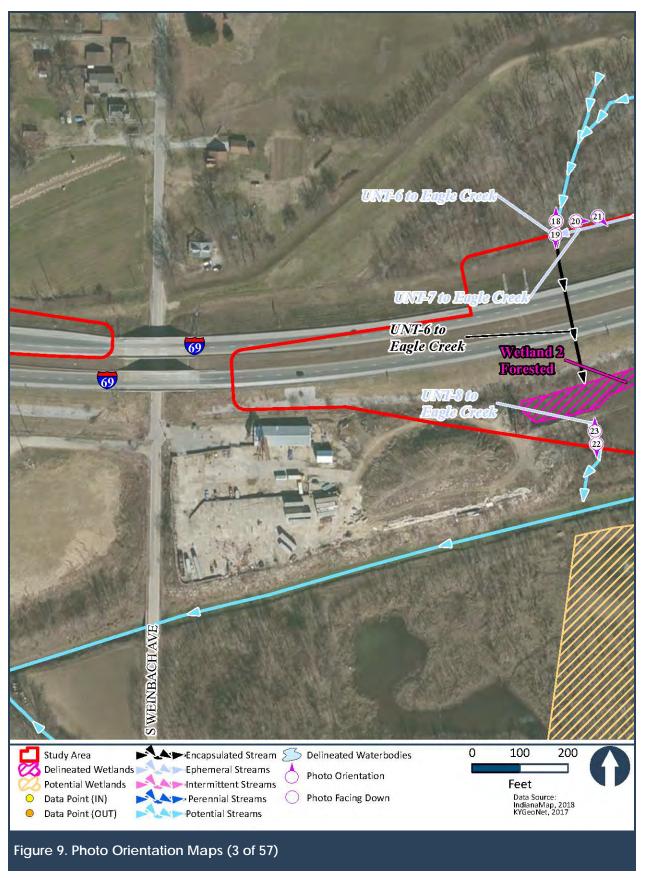




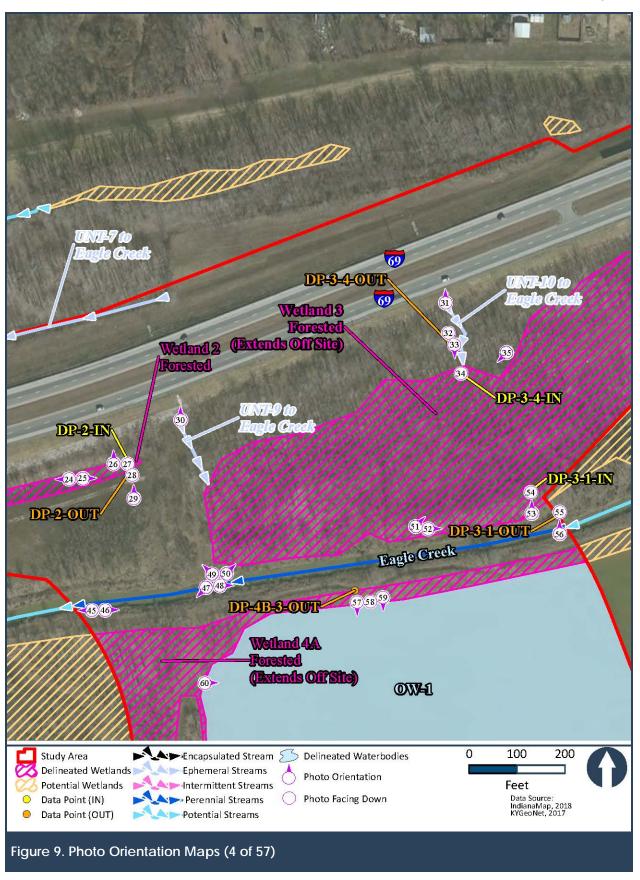




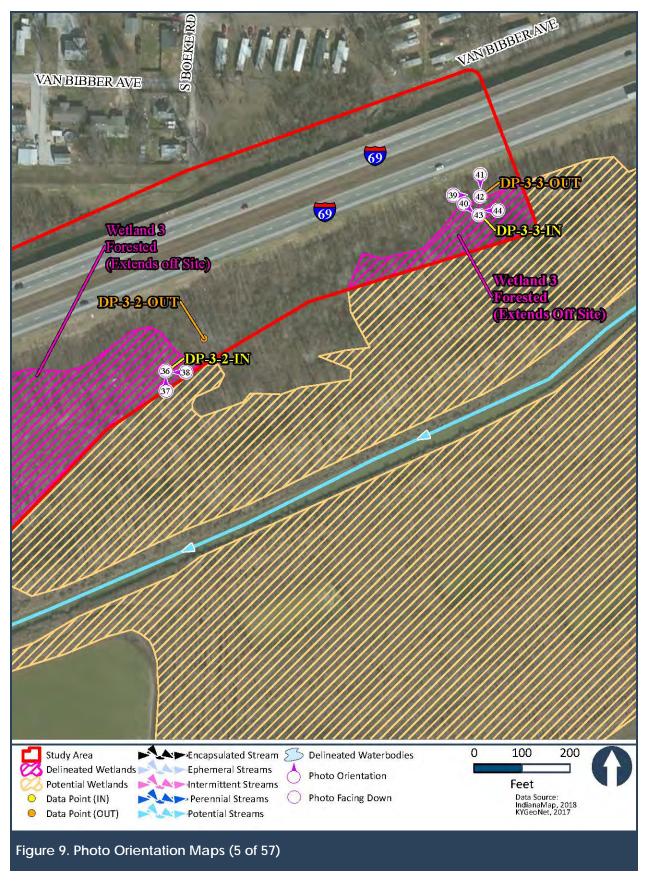




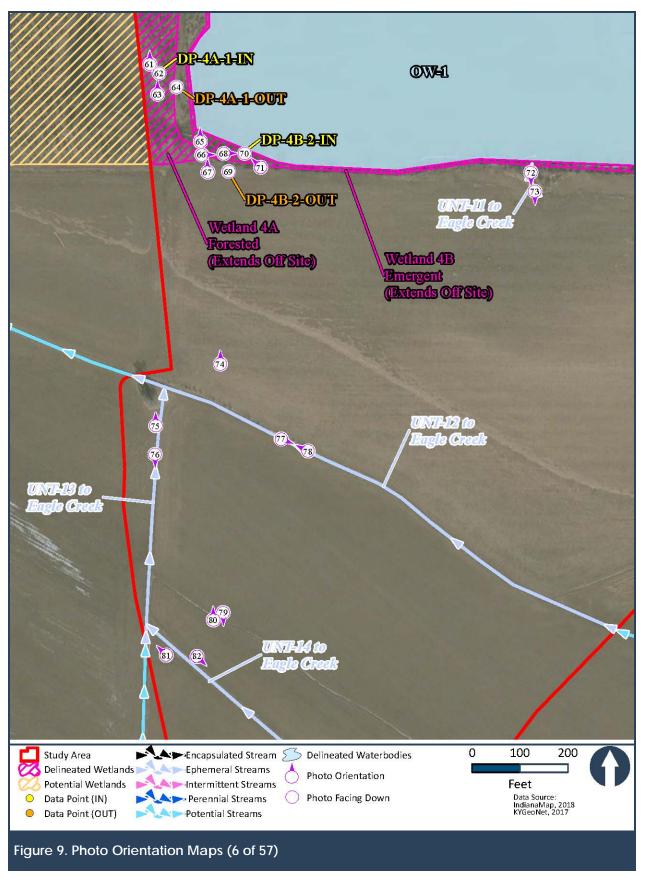




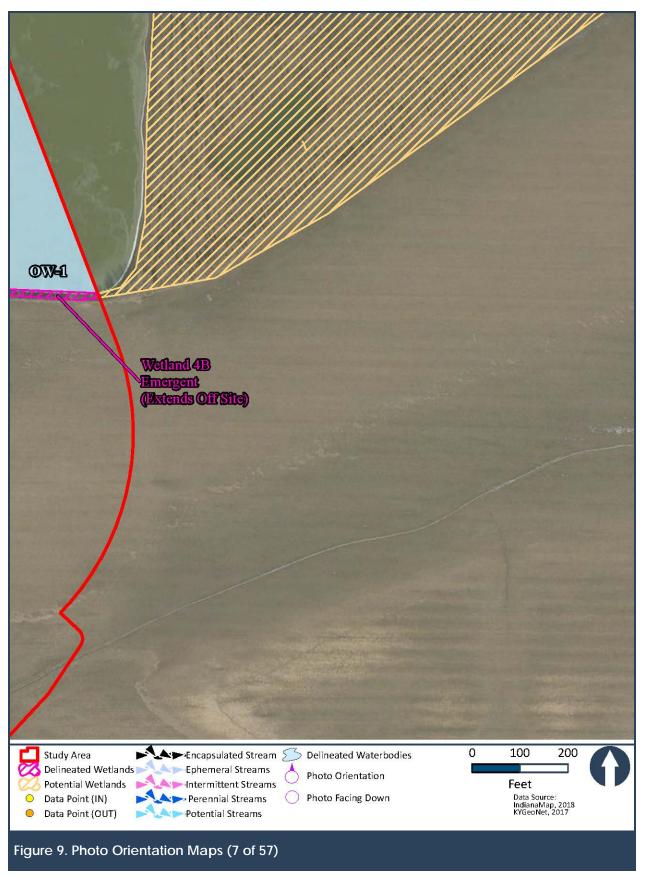
















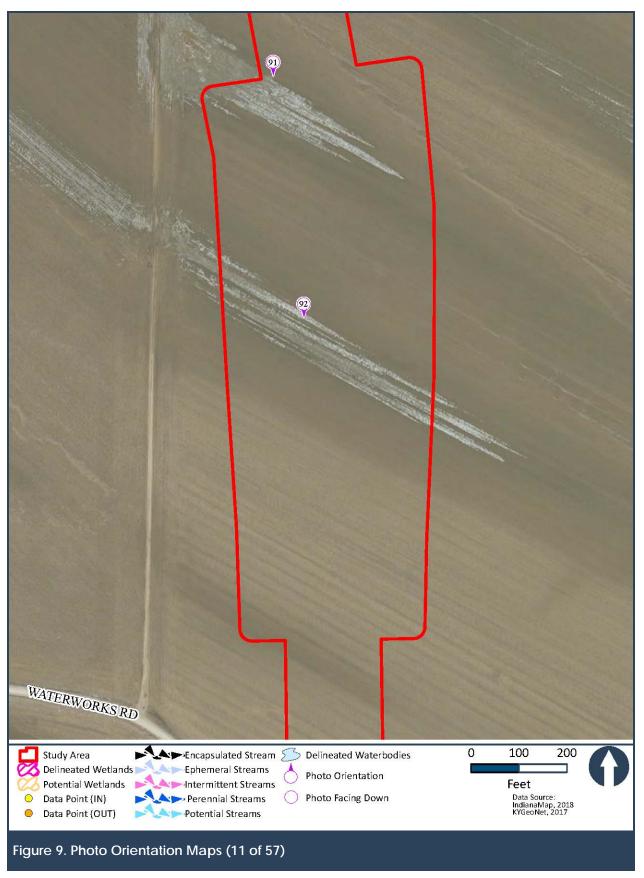




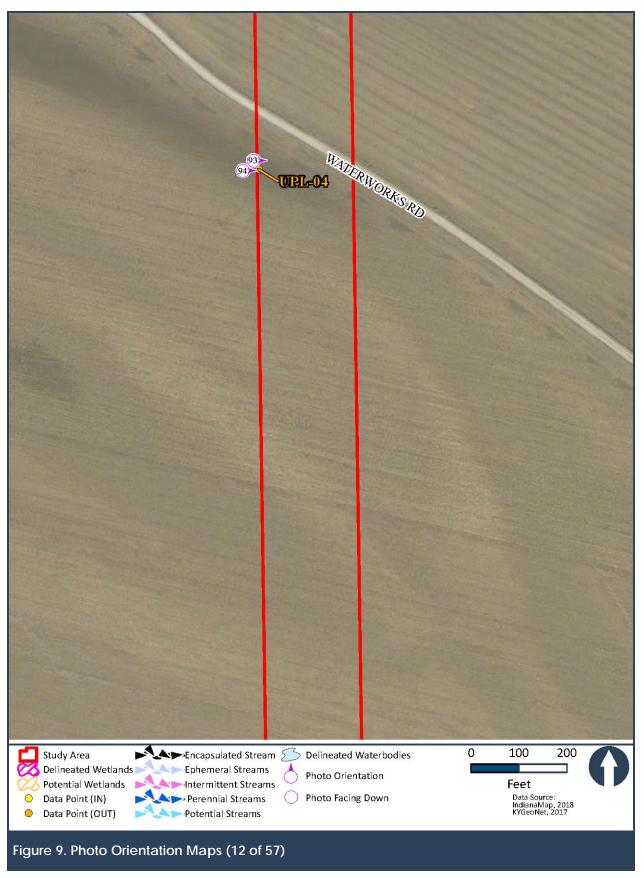




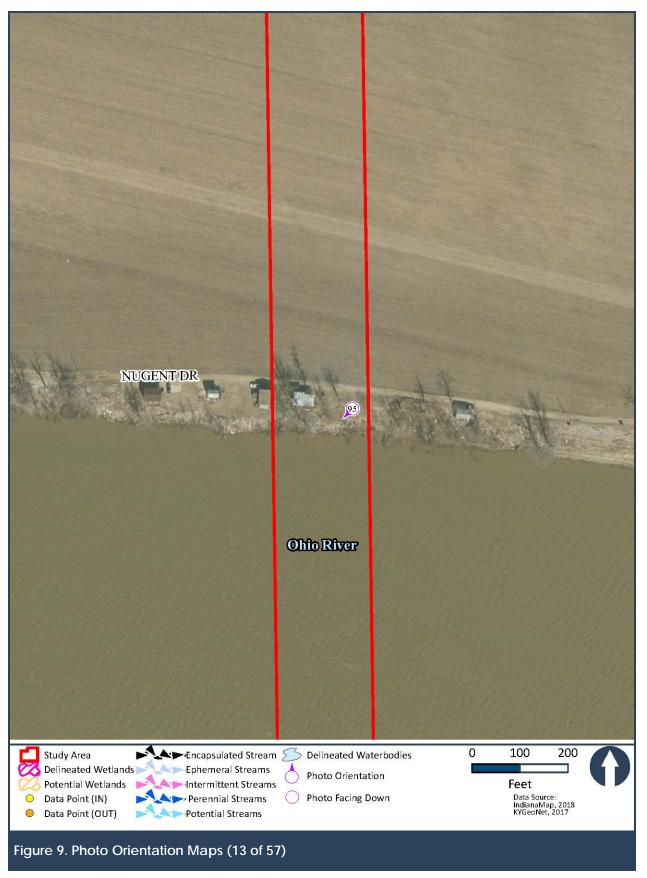




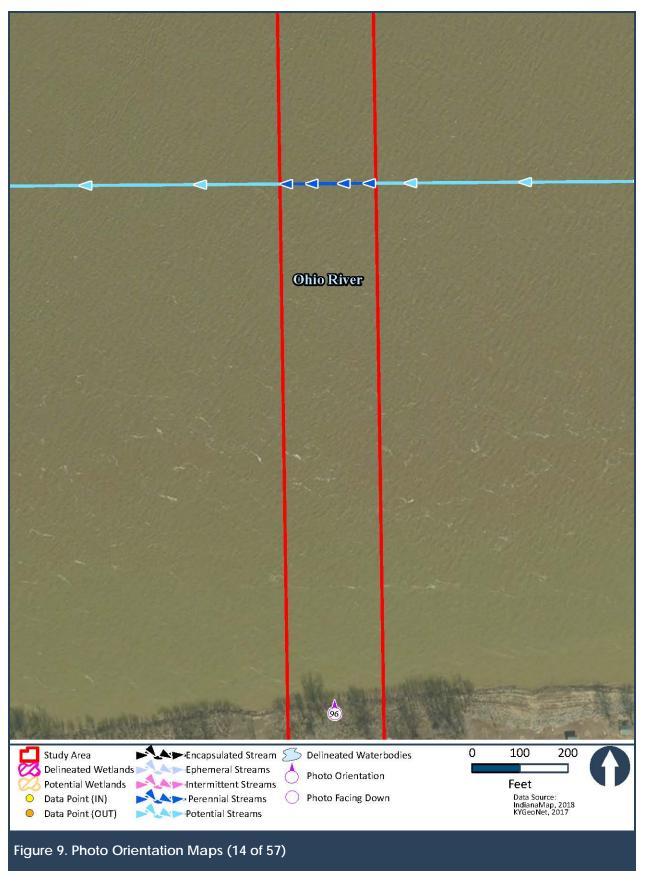




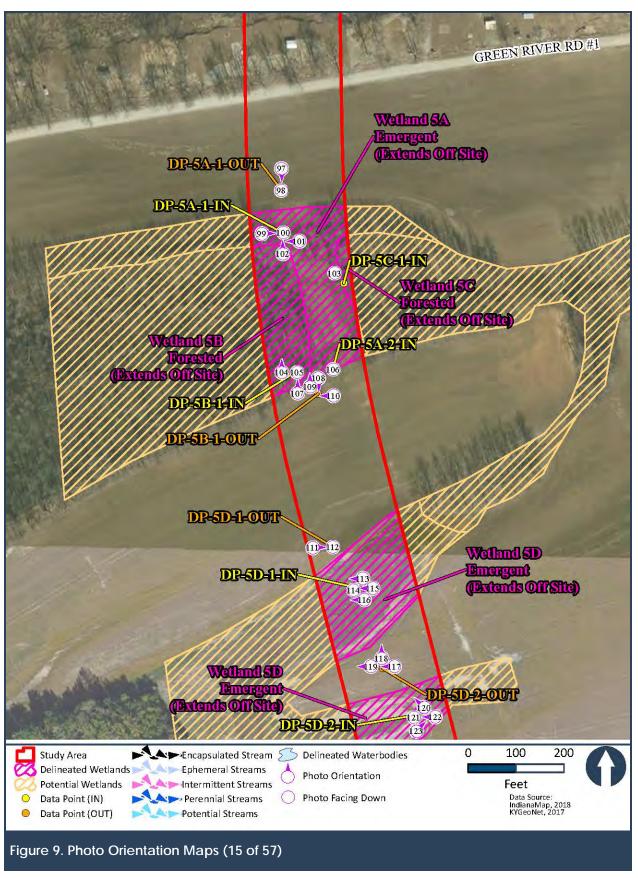




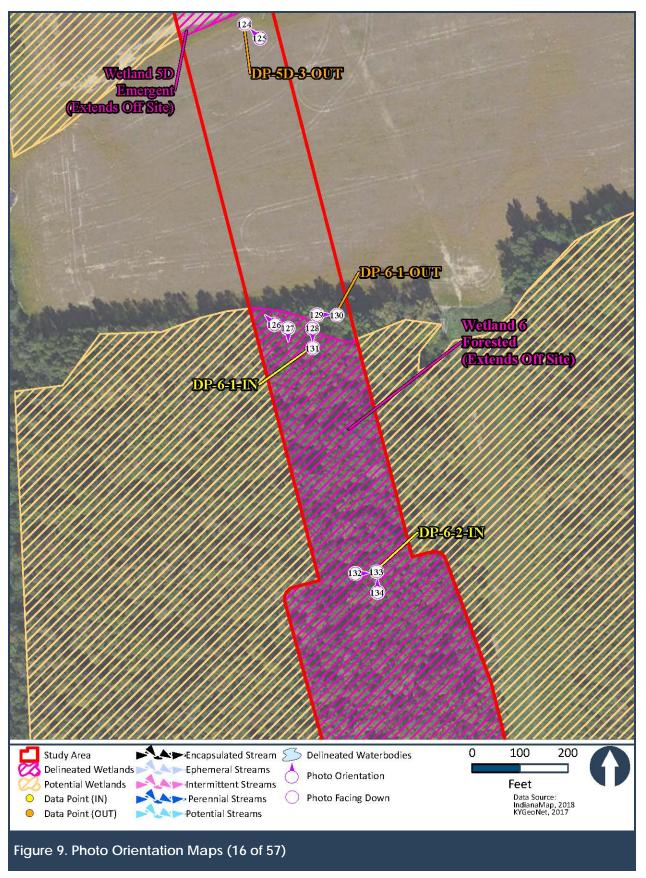




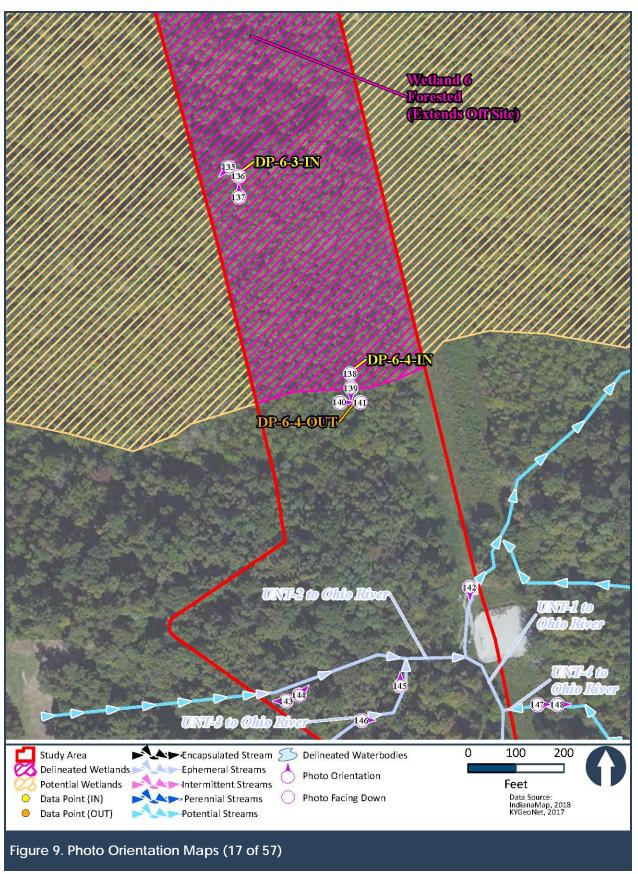




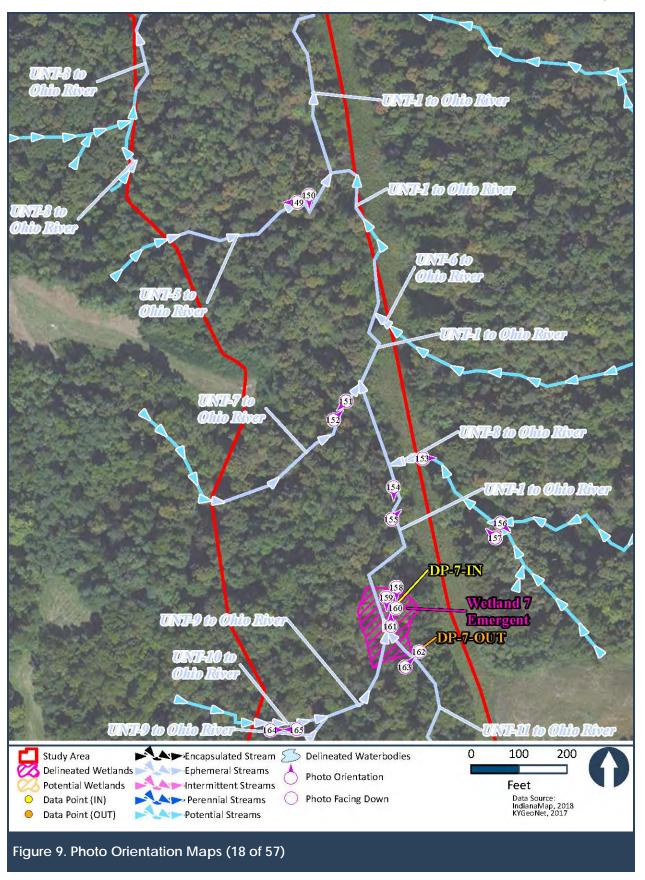




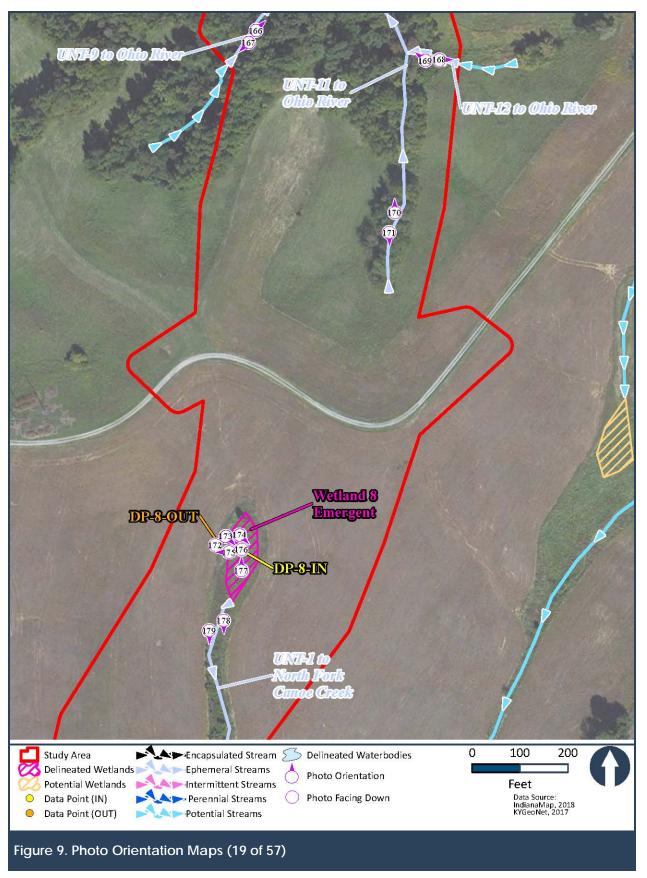












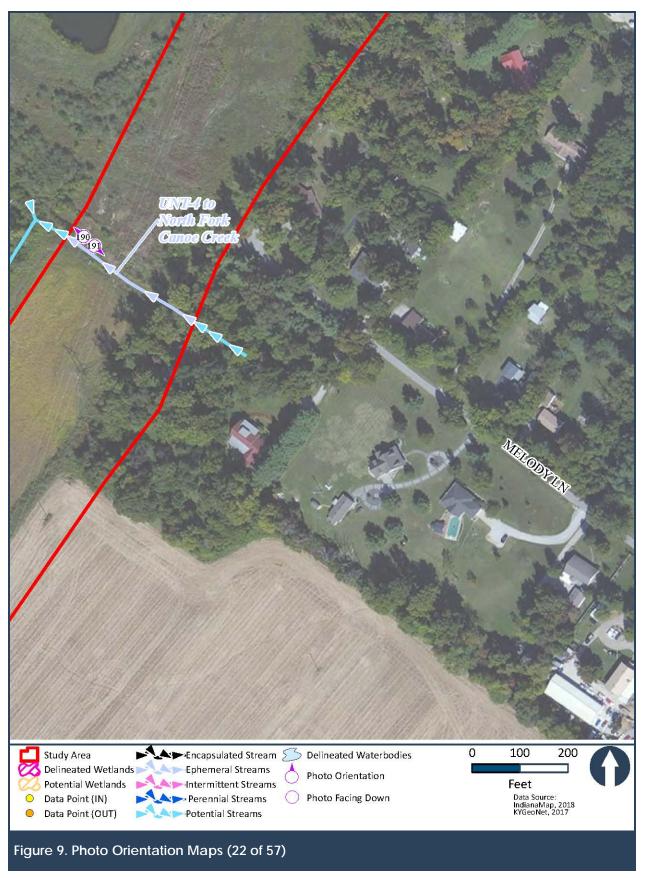




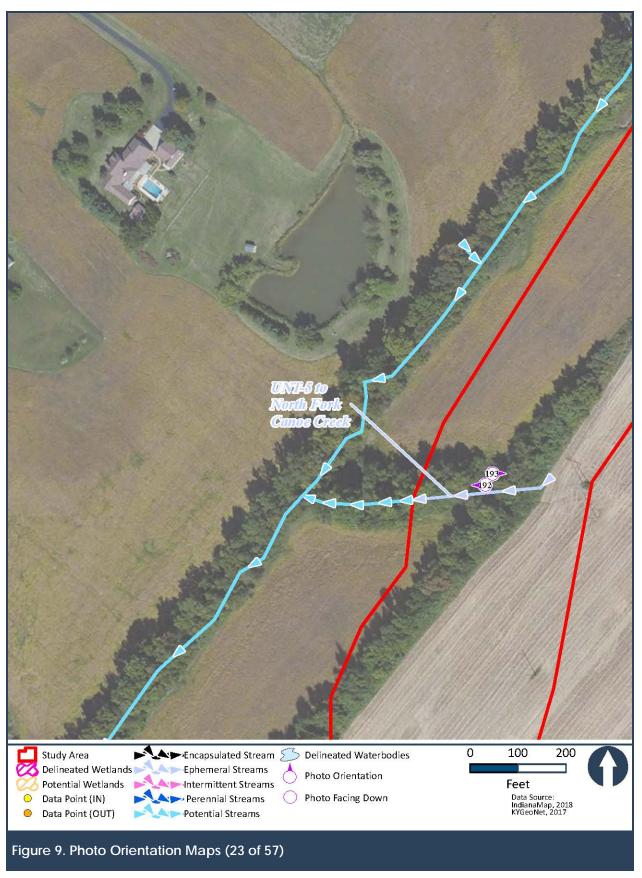








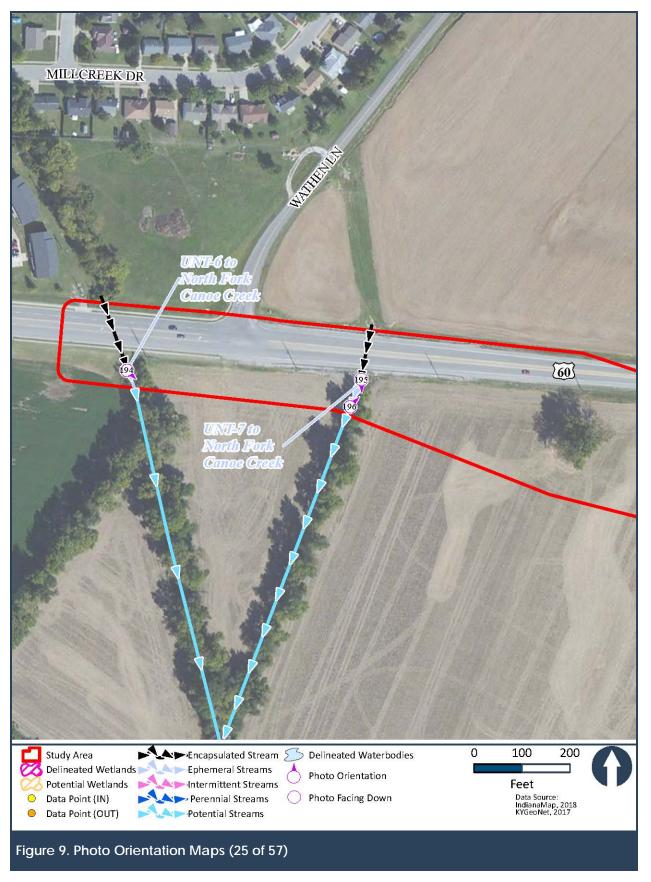




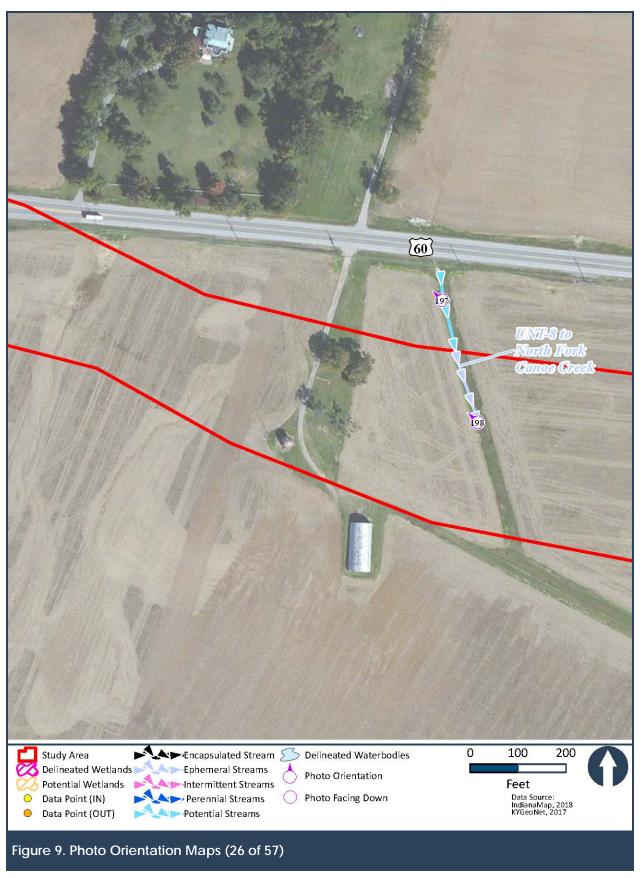




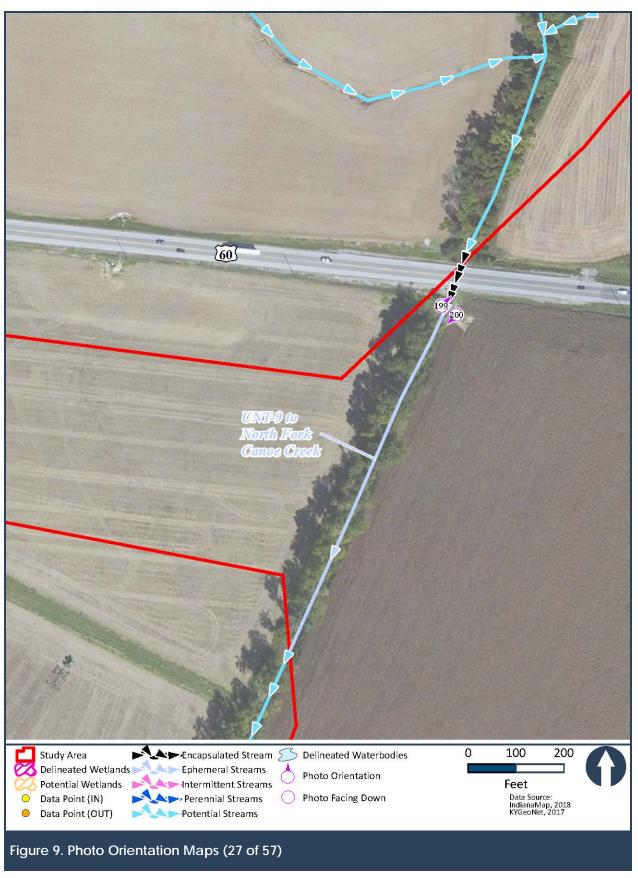




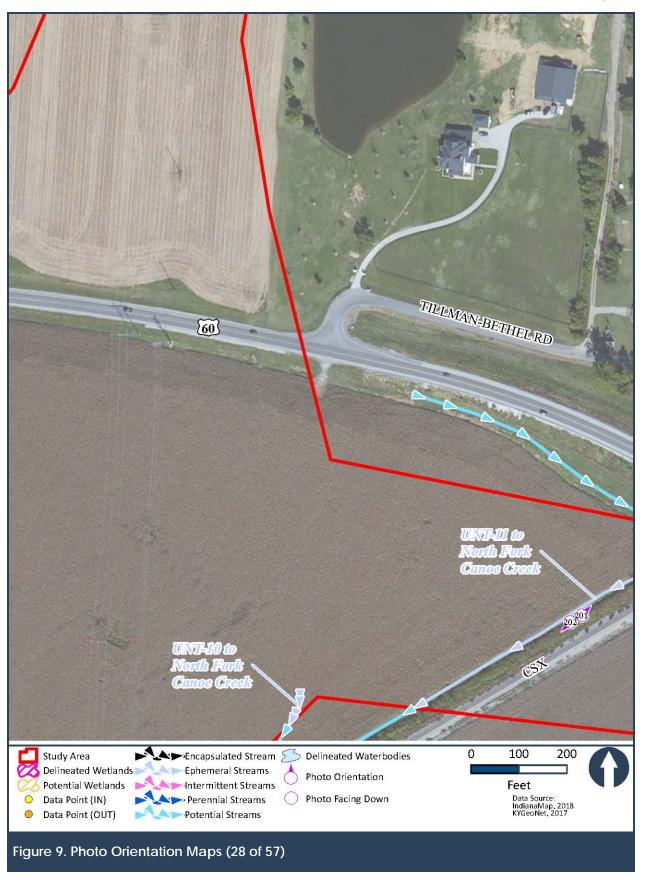




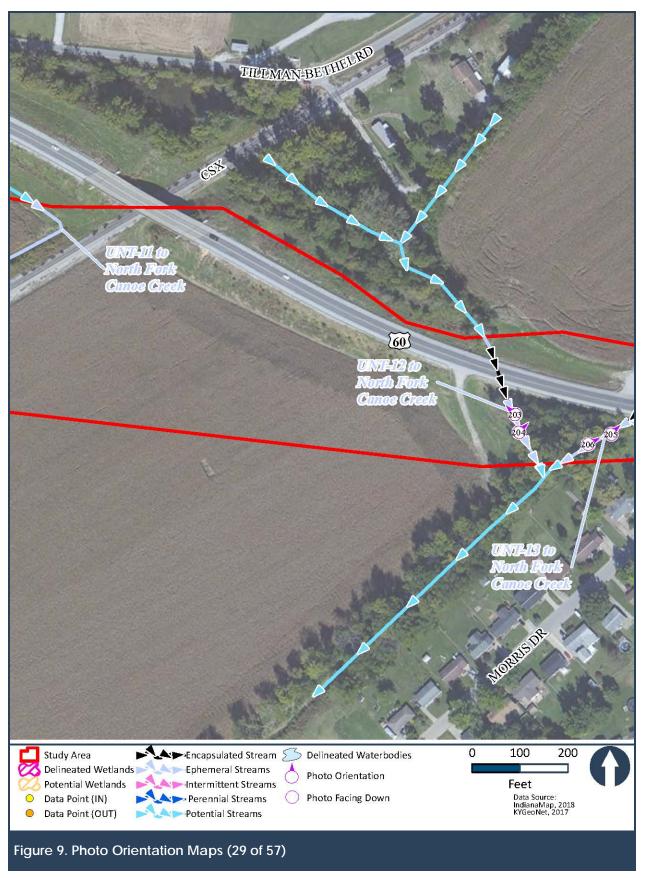




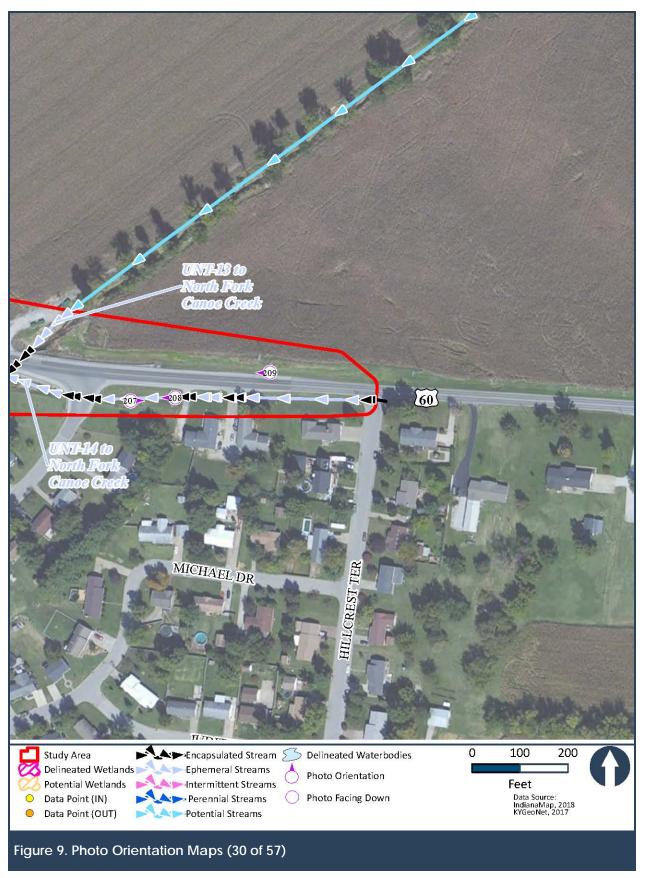




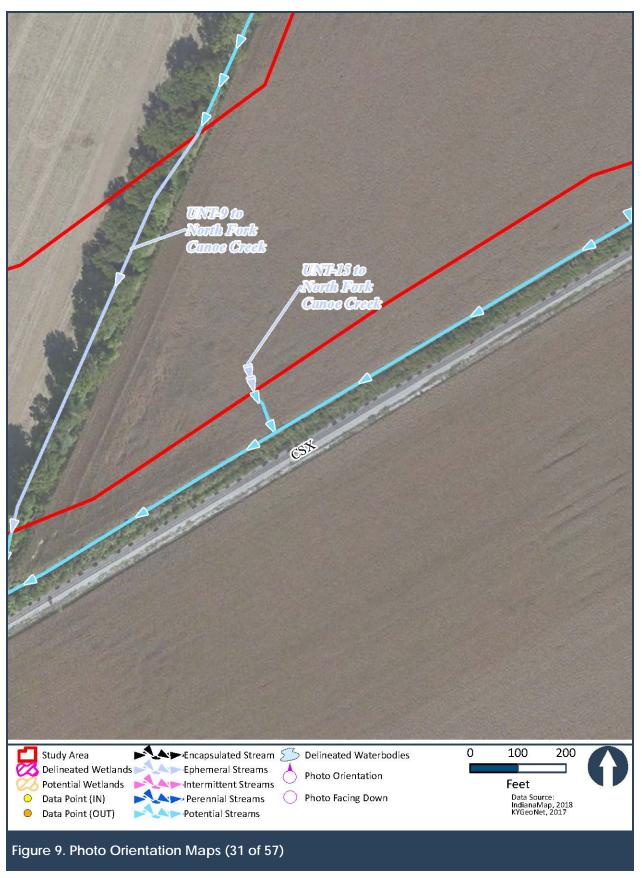




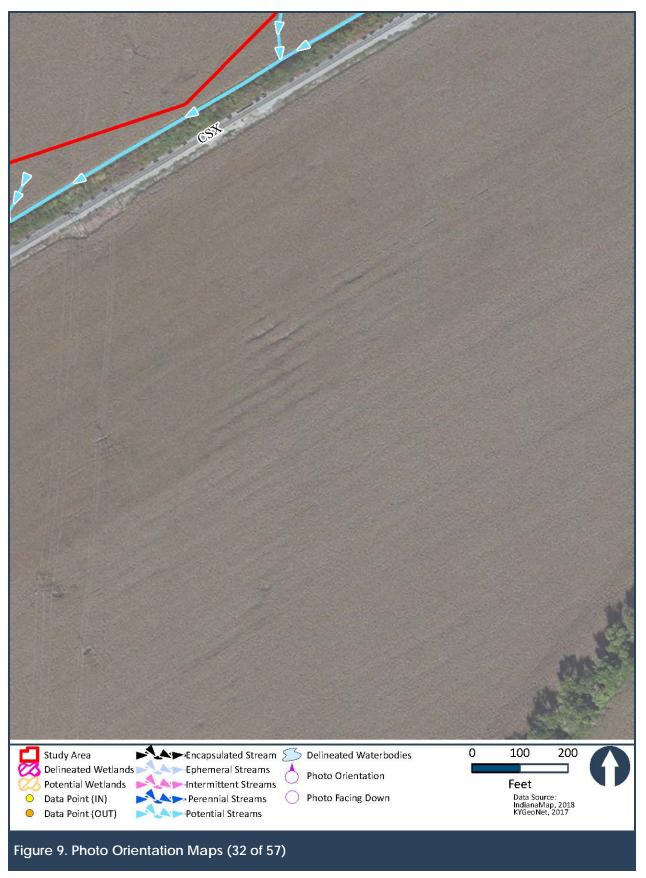




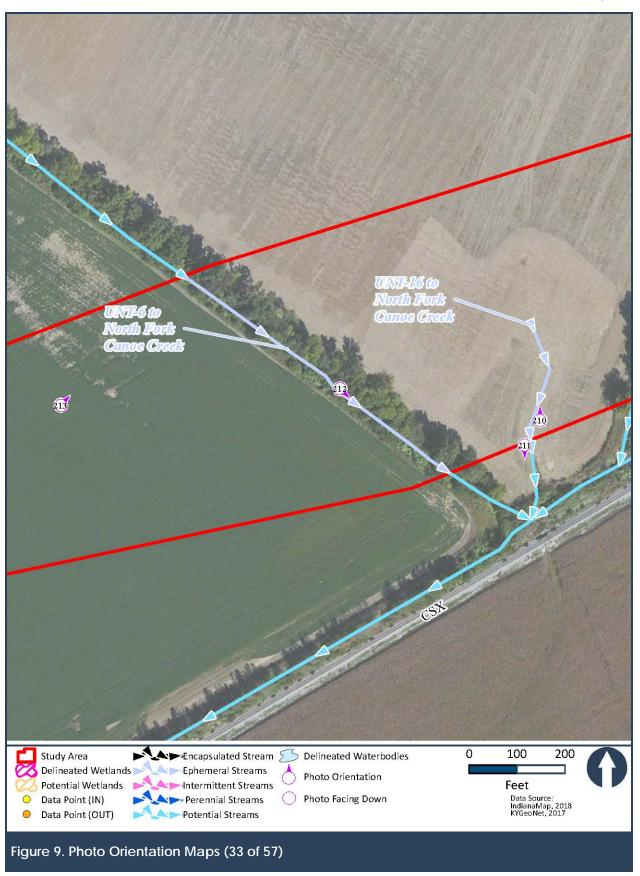












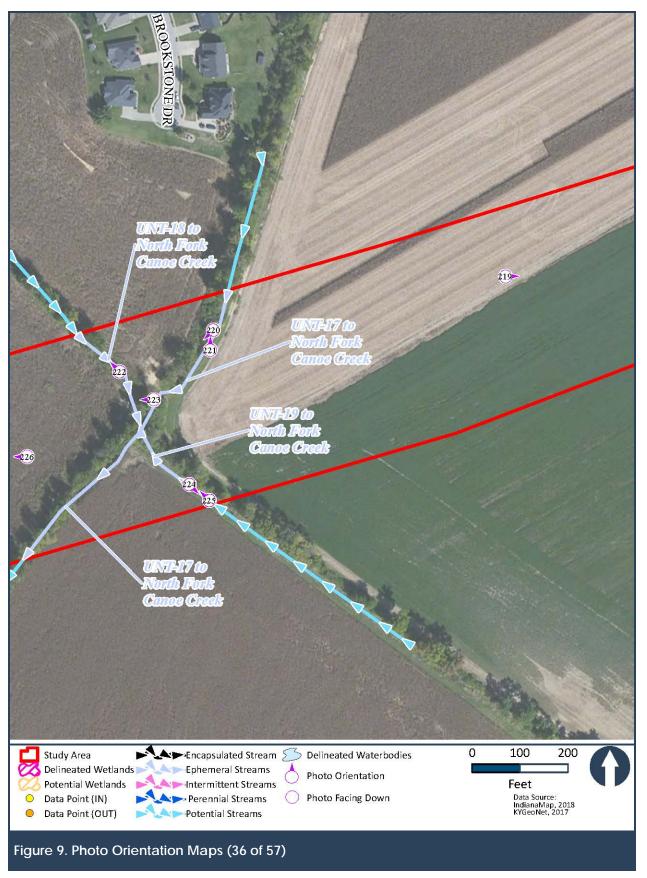
















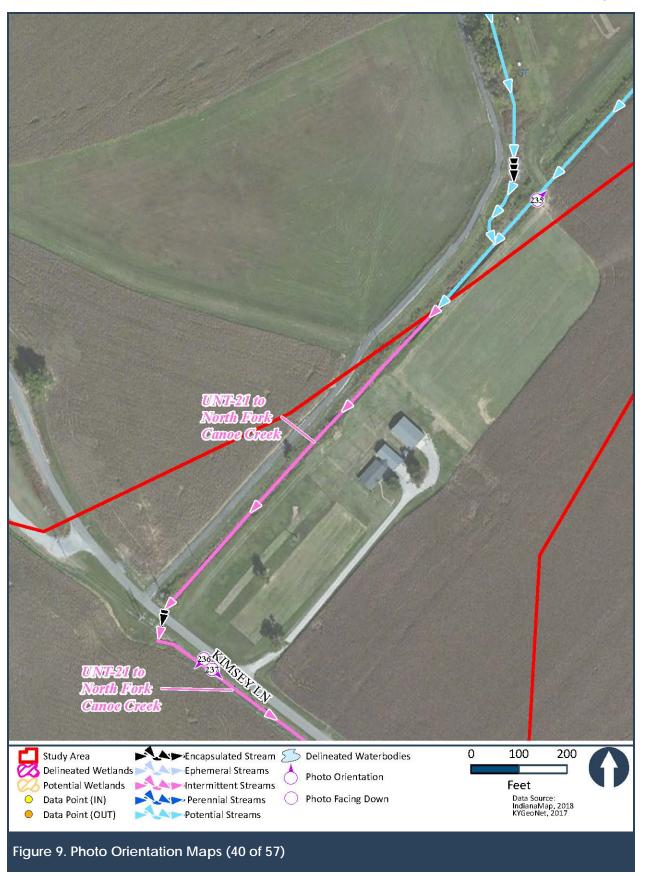




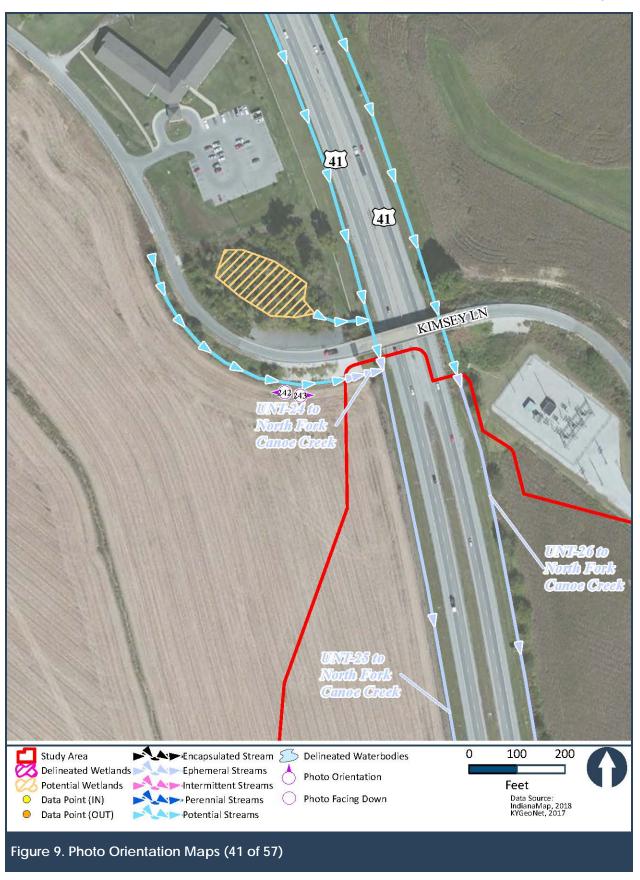




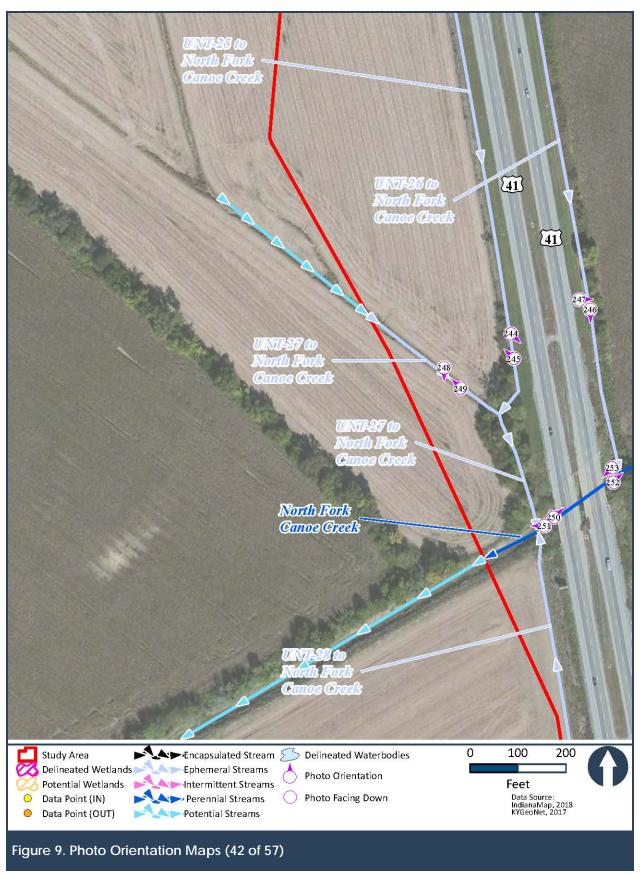




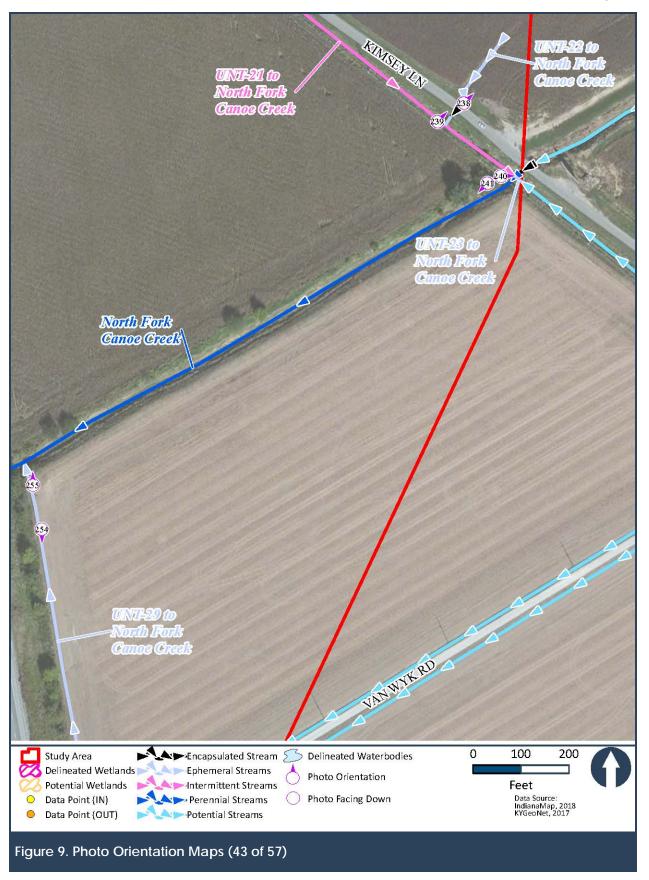




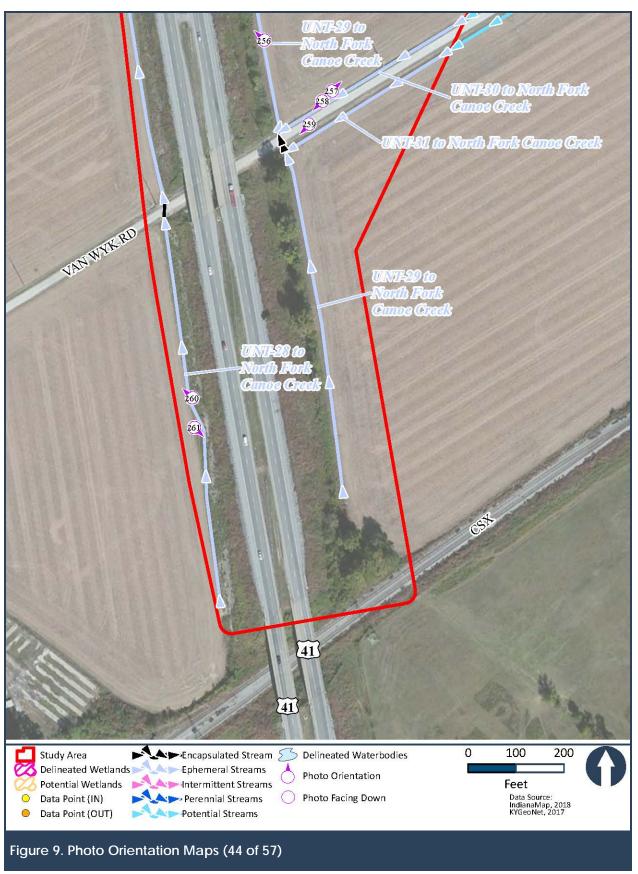








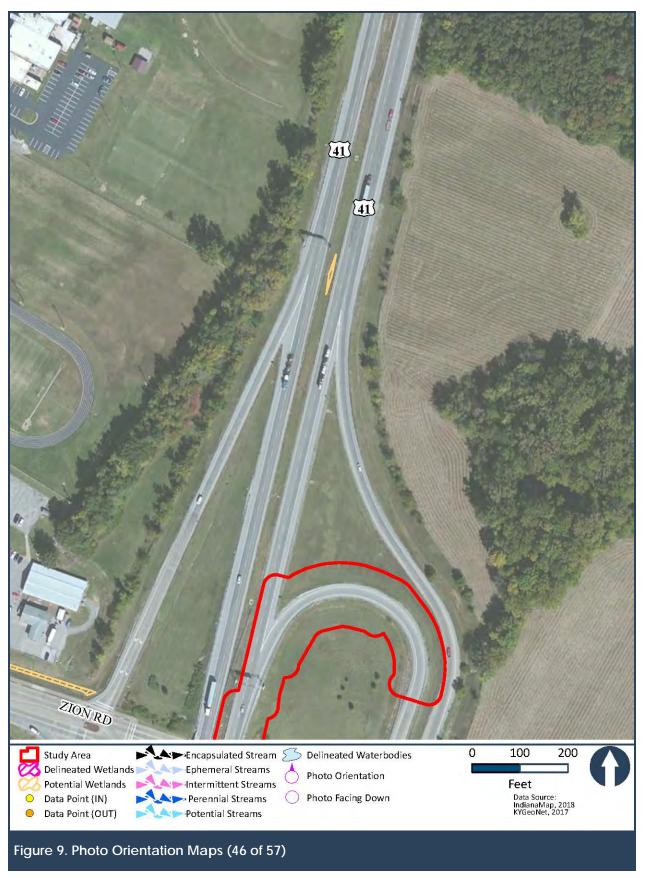




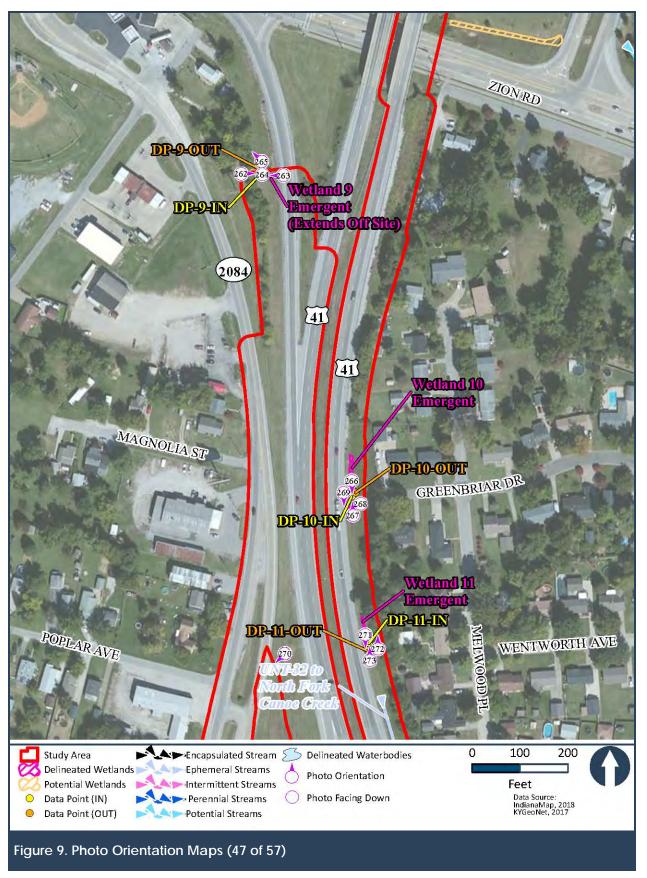




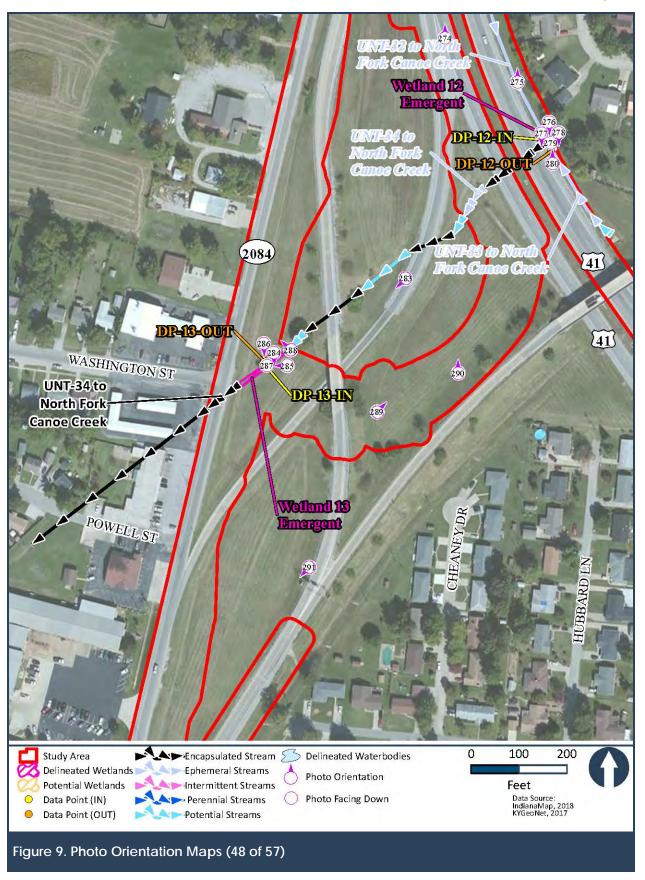




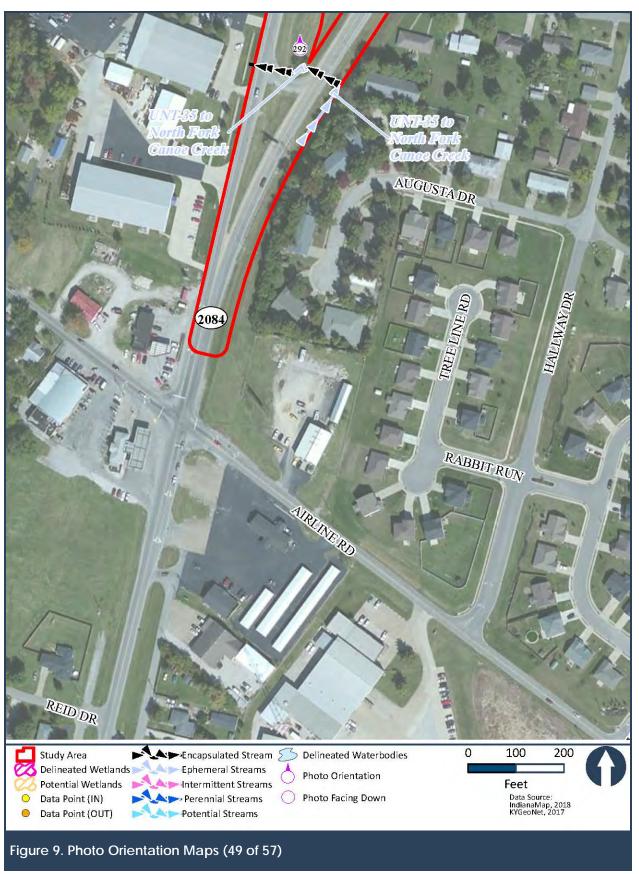












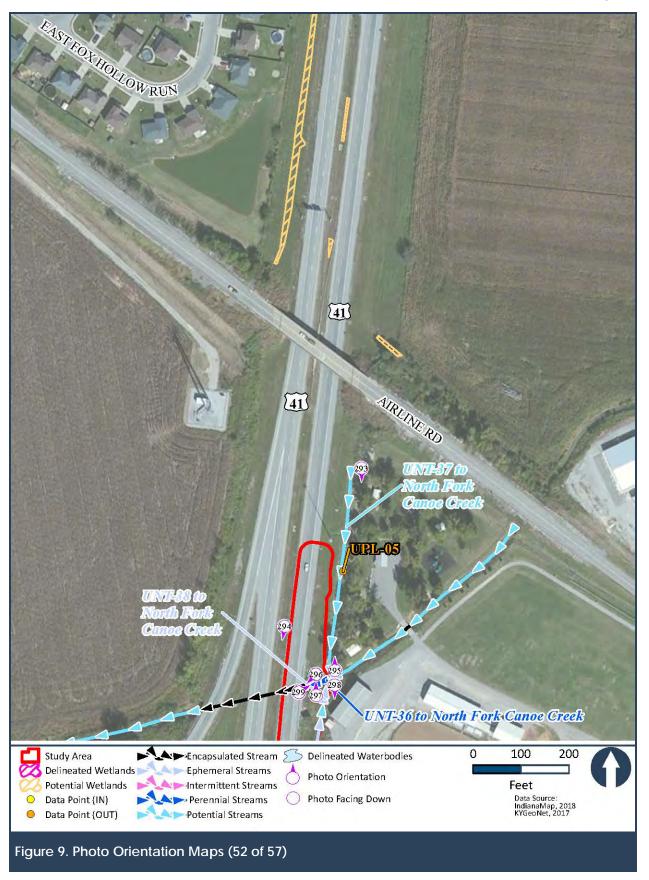




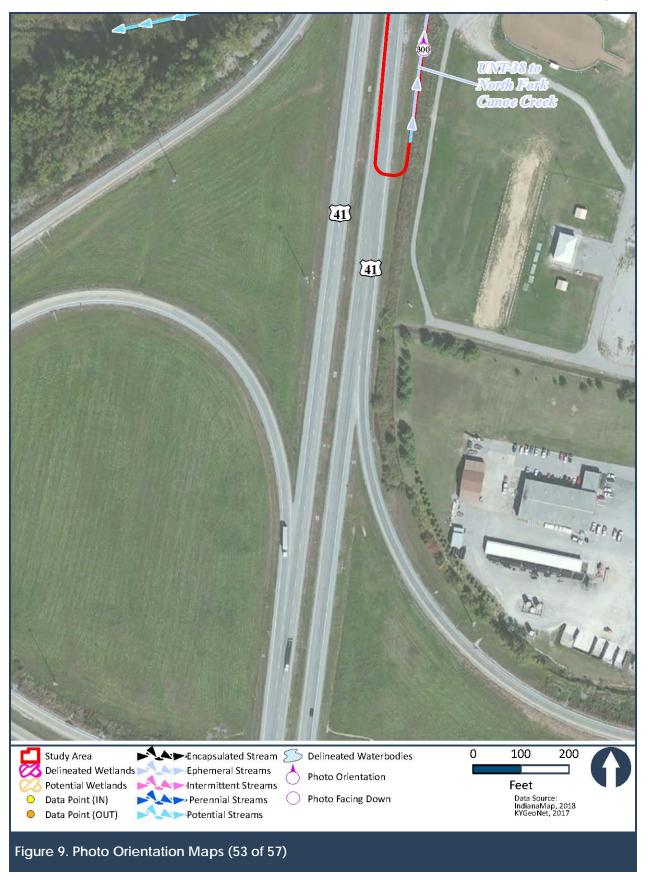












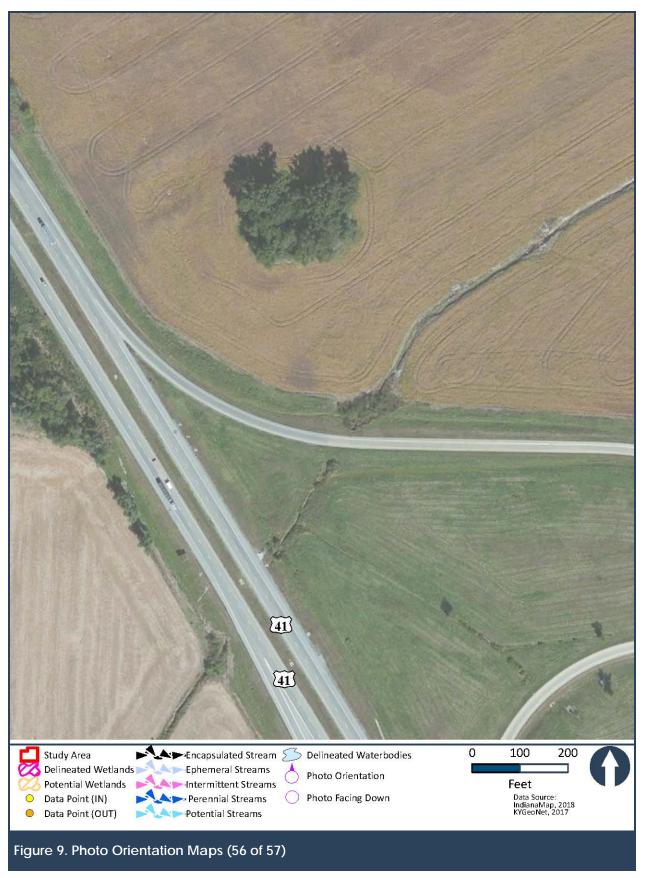


















APPENDIX C

Project Area Photographs



Photo 1: Overview of northwest end of project area showing Wetland 1 in foreground facing southeast (04/24/19).



Photo 2: View of the culvert upstream of UNT-1 to Eagle Creek facing west (08/15/17).



Note the concrete-lined channel (08/17/18).



Photo 3: View of UNT-1 to Eagle Creek facing northeast. Photo 4: View of UNT-1 to Eagle Creek facing west. Note the concrete-lined channel (08/17/18).



Photo 5: View of the soil profile observed at Wetland 1 (DP- Photo 6: View of Wetland 1 (DP-1-IN) facing north. This 1-IN). This location met the depleted matrix (F3) indicator location met all three wetland criteria (07/25/18). (07/25/18).







Photo 7: View of Wetland 1 facing southeast (07/25/18).



Photo 8: View of Wetland 1 facing west (07/25/18).



Photo 9: View of highly eroded channel of UNT-2 to Eagle Creek facing south (08/17/18).



Photo 10: View of culvert (arrow) upstream of UNT-2 to Eagle Creek facing south (08/15/17).



portion of this channel is lined with riprap. The channel is (08/17/18). deeply eroded/incised north of the riprap (08/17/18).



Photo 11: View of UNT-2 to Eagle Creek facing north. A Photo 12: View of UNT-3 to Eagle Creek facing northwest





(08/17/18).



Photo 13: View of UNT-3 to Eagle Creek facing southeast Photo 14: View of culvert and riprap upstream of UNT-3 to Eagle Creek facing northwest (08/15/17).



Photo 15: View of a dry stormwater culvert connected to Photo 16: UNT-5 to Eagle Creek facing west (07/06/17) UNT-5 to Eagle Creek facing north. The origin of this culvert is unknown (07/06/17).





UNT-5 to Eagle Creek facing north. The origin of this culvert (07/06/17). is unknown (07/06/17).



Photo 17: View of a moist stormwater culvert connected to Photo 18: View of UNT-6 to Eagle Creek facing north





Photo 19: Downstream view of the UNT-6 to Eagle Creek Photo 20: View of UNT-7 to Eagle Creek facing east culvert under I-69 near the confluence of UNT-6 to Eagle Creek and UNT-7 to Eagle Creek facing south (07/25/18).



(07/25/18).



Photo 21: View of UNT-7 to Eagle Creek facing southeast (07/25/18).



Photo 22: View of UNT-8 to Eagle Creek facing south just south of an access road (08/17/18).



the culvert under the access road between Wetland 2 and of surface water (06/27/17). UNT-6 (08/17/18).



Photo 23: View of UNT-8 to Eagle Creek facing north. Note Photo 24: View of Wetland 2 facing west. Note the presence





Photo 25: View of Wetland 2 facing east. Note the presence of surface water (06/27/17).



Photo 26: View of Wetland 2 (DP-2-IN) facing north. Note the water table at a depth of six inches (07/24/18).



Photo 27: View of the soil profile observed at Wetland 2 (DP-2-IN). This location met the depleted matrix (F3) and the depleted below dark surface (A11) indicators (07/24



Photo 28: View of the soil profile observed at DP-2-OUT. This location did not meet any of the hydric soil indicators (07/24/18).



Photo 29: View of DP-2-OUT facing north (07/24/18).



Photo 30: View of culvert upstream of UNT-9 to Eagle Creek facing north (06/27/17).





Photo 31: View of culvert upstream of UNT-10 to Eagle Creek facing north (06/27/17).



Photo 32: View of the soil profile observed at DP-3-4-OUT. This location did not meet any of the hydric soil indicators (07/24/18)



Photo 33: View of UNT-10 to Eagle Creek facing south. Note Photo 34: View of the soil profile observed at Wetland 3 (DPthat the channels braid into Wetland 3 and disappear 3-4-IN). This location met the depleted matrix (F3) indicator. (06/27/17).





Photo 35: View of Wetland 3 (DP-3-4-IN) facing southwest (05/17/19).



Photo 36: View of the soil profile observed at Wetland 3 (DP-3-2-IN). This location met the depleted matrix (F3) indicator (07/24/18).





Photo 37: View of Wetland 3 (DP-3-2-IN) facing north Photo 38: View of Wetland 3 (DP-3-2-IN) facing west (07/24/18).



(07/24/18).



Photo 39: View of DP-3-3-OUT facing east (07/24/18).



Photo 40: View of Wetland 3 facing southeast (07/24/18).



Photo 41: View of DP-3-1-IN facing south (07/24/18).



Photo 42: View of the soil profile observed at DP-3-3-OUT (07/24/18). No hydric soil indicators were observed.





Photo 43: View of the soil profile observed at Wetland 3 (DP- Photo 44: View of Wetland 3 facing west (07/24/18). 3-1-IN). This location met the depleted matrix (F3) indicator (07/24/18).





Photo 45: View of Eagle Creek facing downstream (west). Photo 46: View of Eagle Creek facing upstream (east). Note Note the maintained left descending bank (08/01/18).



the maintained left descending bank (08/01/18).



Photo 47: View of Eagle Creek facing southwest (08/01/18). Note the concrete debris.



Photo 48: View of Eagle Creek facing upstream (east). Note the maintained left descending bank (08/01/18).





(northwest) (05/16/19).



Photo 49: View of Eagle Creek facing downstream Photo 50: View of Eagle Creek facing upstream (northeast) (05/16/19).



Photo 51: View of Wetland 3 facing northeast (07/24/18).



Photo 52: View of Wetland 3 facing east near Eagle Creek (07/24/18).



Photo 53: View of Wetland 3 (DP-3-1-IN) facing north (07/24/18).



Photo 54: View of the soil profile observed at Wetland 3 (DP-3-1-IN). This location met the depleted matrix (F3) and depleted below dark surface (A11) indicators. Note the crayfish burrow, a wetland hydrology indicator (07/24/18).





Photo 55: View of the soil profile observed at DP-3-1-OUT (07/24/18). No hydric soil indicators were observed.



Photo 56: View of DP-3-1-OUT facing north. The data point was located on an Eagle Creek spoil pile that was well drained (07/24/18)



Photo 57: View of DP-4B-3-OUT with OW-1, a borrow pit, in Photo 58: View of the soil profile at DP-4B-3-OUT north of the background, facing south (05/16/19).



OW-1. No hydric soil indicators were observed (05/16/19).



(07/25/18).



Photo 59: View of OW-1, a borrow pit, facing south Photo 60: View of OW-1, a borrow pit, facing east (08/01/18).





Photo 61: View of Wetland 4A facing north (07/25/18).



Photo 63: View of Wetland 4A (DP-4A-1-IN) facing north (07/25/18).



Photo 65: View of OW-1, a borrow pit, facing north (08/01/18).



Photo 62: View of the soil profile observed at Wetland 4A (DP-4A-1-IN). This location met the depleted matrix (F3) indicator. Note the surface soil cracks (07/25/18).



Photo 64: View of the soil profile observed at DP-4A-1-OUT. No hydric soil indicators were observed.



Photo 66: View of OW-1, a borrow pit, facing east near the outlet that drains through Wetland 4 to Eagle Creek. Taken near herbaceous fringe Wetland 4B (DP-4B-2-IN) (08/01/18).





Photo 67: View of DP-4B-2-OUT facing north. Notice OW-1 in background of photograph (07/25/18).



Photo 68: View of Wetland 4 (DP-4B-2-IN) with OW-1 on the left facing east (07/25/18).



Photo 69: View of the soil profile for DP-4B-2-OUT. This location met the depleted matrix (F3) indicator (07/25/18).



Photo 70: View of the soil profile for Wetland 4B (DP-4B-2-IN). This location met the depleted matrix (F3) indicator (07/25/18)



Photo 71: View of Wetland 4B (DP-4B-2-IN) facing northwest Photo 72: View of UNT-11 to Eagle Creek facing south (07/25/18). This location met all three wetland criteria.



(07/25/18).





Photo 73: View of UNT-11 to Eagle Creek facing south Photo 74: View of well-drained agricultural field facing (07/25/18).



north (05/16/19).



Photo 75: View of UNT-13 to Eagle Creek facing north. The Photo 76: View of UNT-13 to Eagle Creek facing south OHWM is obscured by vegetation (08/01/18).



(08/01/18).



(08/01/18).



Photo 77: View of UNT-12 to Eagle Creek facing southeast Photo 78: View of UNT-12 to Eagle Creek facing northwest (08/01/18).





(05/16/19).



Photo 79: View of fields, facing south. No features present Photo 80: View of fields, facing north. No features present (05/16/19).



Photo 81: View of UNT-14 to Eagle Creek facing northwest. The OHWM is obscured by vegetation (08/01/18).



Photo 82: View of UNT-14 to Eagle Creek facing southeast. The OHWM is obscured by vegetation (08/01/18).



(05/16/19).



Photo 83: View of field, facing south. No features present Photo 84: View of field, facing north. No features present (05/16/19).





Photo 85: View of field, facing south. No features present (05/16/19).



Photo 86: View of a non-wet swale (UPL-01), facing north (05/16/19).



Photo 87: View of Upland 2 (UPL-02) facing east after an Photo 88: View of Upland 2 (UPL-02) facing west (07/25/18). Ohio River flood. Notice soybean stubble from 2017 This area only met the hydrophytic vegetation criterion. (07/25/18).





east (05/16/19).



Photo 89: View of soil pit at a non-wet swale (UPL-03), facing Photo 90: View of a non-wet swale (UPL-03), facing south (05/16/19).





Photo 91: View of well-drained agricultural swale, facing Photo 92: View of well-drained agricultural swale facing south. (05/16/19).



south (05/16/19).



Photo 93: View of agricultural swale (UPL-04) facing east (07/25/18). None of the three wetland criteria were met.



Photo 94: View of agricultural swale (UPL-04) facing east (07/25/18).



Photo 95: View of the Ohio River facing southwest (07/12/17). Photo 96: View of the Ohio River facing north (01/23/19).







Photo 97: View of DP-5A-1-OUT facing south. This location Photo 98: View of the soil profile observed at DP-5A-1-OUT was well drained (07/26/18).



(07/26/18). No hydric soil indicators were observed.



Photo 99: View of Wetland 5A (DP-5A-1-IN) facing east. This location is near a pipeline ROW and failed to meet all three wetland criteria (07/26/18).



Photo 100: View of the soil profile observed at Wetland 5A (DP-5A-1-IN). This location met the depleted matrix (F3) indicator (07/26/18).



Photo 101: View of Wetland 5A near DP-5A-1-IN facing west. (07/26/18)



Photo 102: View of Wetland 5A (DP-5A-1-IN) facing north (07/26/18).





Photo 103: View of soil profile observed at Wetland 5C (DP- Photo 104: View of Wetland 5B facing north (07/26/18). 5C-1-IN). This location met the depleted matrix (F3) indicator. (05/17/19).





Photo 105: View of the soil profile observed at Wetland 5B (DP-5B-1-IN). This location met the depleted matrix (F3) and the depleted below dark matrix (A11) indicators (07/26/18).



Photo 106: View of soil profile at Wetland 5A (DP-5A-2-IN)-This location met the depleted matrix (F3) indicator (05/17/19).



Photo 107: View of Wetland 5B (DP-5B-1-IN) facing north (07/26/18)



Photo 108: View of an upland area near DP-5B-1-OUT facing south (07/26/18).





Photo 109: View of Wetland 5A near DP-5A-2-IN facing north (05/17/19).



Photo 110: View of DP-5B-1-OUT facing west. This location was well drained (07/26/18).



Photo 111: View of DP-5D-1-OUT in a corn field facing east. Photo 112: View of the soil profile observed at DP-5D-1-OUT This location did not meet all three wetland criteria (07/26/18). No hydric soil indicators were observed. (07/26/18).





Photo 113: View of Wetland 5D (DP-5D-1-IN) facing west (07/26/18). This location met all three wetland criteria



Photo 114: View of the soil profile observed at Wetland 5D (DP-5D-1-IN). This location met the depleted matrix (F3) indicator (07/26/18).





Photo 115: View of Wetland 5D facing west (07/26/18).



Photo 116: View of Wetland 5D (DP-5D-1-IN) facing west (07/26/18).



Photo 117: View of upland ridge at DP-5D-2-OUT between swales of Wetland 5D, facing west (05/17/19).



Photo 118: View of at DP-5D-2-OUT soil profile along upland ridge between swales of Wetland 5D (05/17/19).



swales of Wetland 5D, facing west (05/17/19).



Photo 119: View of upland ridge at DP-5D-2-OUT between Photo 120: View of Wetland 5D facing northwest. Note surface soil cracks and herbicide impact on vegetation (07/26/18).





Photo 121: View of the soil profile observed at Wetland 5D Photo 122: View of Wetland 5D (DP-5D-2-IN) facing west. (DP-5D-2-IN). This location met the depleted matrix (F3) This location met all three wetland criteria (07/26/18). indicator (07/26/18).





Photo 123: View of Wetland 5D facing northeast (07/26/18).



Photo 124: View of the soil profile observed at DP-5D-2-OUT (07/26/18).



location did not meet all three wetland criteria (07/26/18).



Photo 125: View of DP-5D-2-OUT facing northwest. This Photo 126: View of Wetland 6 facing northwest (07/26/18).





Photo 127: View of Wetland 6 facing south (07/26/18).



Photo 128: View of Wetland 6 (DP-6-1-IN) facing south. This location met all three wetland criteria (07/26/18).



Photo 129: View of DP-6-1-OUT facing east. This location was well-drained and did not have hydric soils (07/26/18).



Photo 130: View of the soil profile observed at DP-6-1-OUT (07/26/18).



Photo 131: View of the soil profile observed at Wetland 6 Photo 132: View of Wetland 6 (DP-6-2-IN) facing east (DP-6-1-IN). This location met the depleted matrix (F3) (07/26/18). This location met all three wetland criteria. indicator (07/26/18).







Photo 133: View of the soil profile observed at Wetland 6 (DP-6-2-IN). This location met the depleted matrix (F3) and the depleted below dark surface (A11) indicators (07/26/18).





Photo 135: View of Wetland 6 facing southwest (07/26/18).



Photo 136: View of the soil profile observed at Wetland 6 (DP-6-3-IN). This location met the depleted matrix (F3) and depleted below dark surface (A11) indicator (07/26/18).



Photo 137: View of Wetland 6 (DP-6-3-IN) facing north. This location met all three wetland criteria (07/26/18).



Photo 138: View of the soil profile observed at Wetland 6 (DP-6-4-IN). This location met the depleted matrix (F3) indicator (07/26/18).





location met all three wetland criteria (07/26/18).



Photo 139: View of Wetland 6 (DP-6-4-IN) facing south. This Photo 140: View of DP-6-4-OUT facing east (07/26/18). Only the hydric soil criterion was met at this location.



Photo 141: View of the soil profile observed at DP-6-4-OUT. Photo 142: View of UNT-1 to Ohio River facing south This location met the depleted matrix (F3) indicator (08/02/18). (07/26/18).





(08/02/18).



Photo 143: View of UNT-2 to Ohio River facing west Photo 144: View of UNT-2 to Ohio River facing northeast (08/02/18).





(08/02/18).



Photo 145: View of UNT-3 to Ohio River facing north Photo 146: View of UNT-3 to Ohio River facing east (08/02/18).



Photo 147: View of a culvert and riprap along UNT-4 to Ohio Photo 148: View of UNT-4 to Ohio River facing east River facing east (07/19/17).



(07/19/17).



(08/02/18).

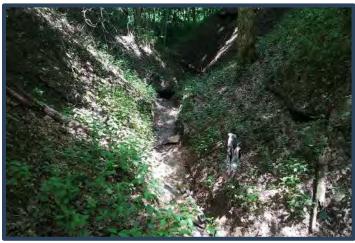


Photo 149: View of UNT-5 to Ohio River facing west Photo 150: View of UNT-5 to Ohio River facing south (08/02/18).





Photo 151: View of UNT-7 to Ohio River facing southwest Photo 152: View of UNT-7 to Ohio River facing northeast (08/02/18).



(08/02/18).



Photo 153: View of UNT-8 to Ohio River facing east (08/02/18).



Photo 154: View of UNT-1 to Ohio River facing south (08/02/18).



(08/02/18).



Photo 155: View of UNT-1 to Ohio River facing northeast Photo 156: View of culvert on UNT-8 to Ohio River facing southeast. Note the culvert goes under an access road to the utility right-of-way (07/19/17).





Photo 157: View of UNT-8 to Ohio River facing northwest Photo 158: View of Wetland 7 (DP-7-IN) facing south. This (07/19/17).



location met all three wetland criteria (07/26/18).



Photo 159: View of Wetland 7 facing south. Soil is bare in areas not dominated by rice cutgrass (Leersia oryzoides) (07/26/18).



Photo 160: View of the soil profile observed at Wetland 7 (DP-7-IN). This location met the depleted matrix (F3) indicator (07/26/18).



Photo 161: View of Wetland 7 facing north (07/26/18).



Photo 162: View of the soil profile observed at DP-7-OUT. This well-drained soil is not hydric (07/26/18).





Photo 163: View of DP-7-OUT facing northeast. This upland data point was well drained (07/26/18).



Photo 164: View of UNT-10 to Ohio River facing east (08/02/18).



Photo 165: View of UNT-10 to Ohio River facing west (08/02/18).



Photo 166: View of UNT-9 to Ohio River facing northeast (08/02/18).



Photo 167: View of UNT-9 to Ohio River facing southwest Photo 168: View of UNT-12 to Ohio River facing east (08/02/18).



(08/02/18).





(08/02/18).



Photo 169: View of UNT-12 to Ohio River facing northwest Photo 170: View of UNT-11 to Ohio River facing north (08/02/18).



Photo 171: View of UNT-11 to Ohio River facing south (08/02/18).



Photo 172: View of the soil profile observed at DP-8-OUT. This location did not meet any of the hydric soil indicators (07/26/18).



Photo 173: View of Wetland 8 facing southeast (07/26/18).



Photo 174: View of Wetland 8 (DP-8-IN) facing southeast. This location met all three wetland criteria (07/26/18).





Photo 175: View of DP-8-OUT facing west. This location did not meet all three wetland criteria (07/26/18).



Photo 176: View of the soil profile observed at Wetland 8 (DP-8-IN). This location met the depleted matrix (F3) indicator (07/26/18).



Photo 177: View of Wetland 8 (DP-8-IN) facing north (07/26/18). This area met all three wetland criteria.



Photo 178: View of UNT-1 to North Fork Canoe Creek facing south (08/02/18).



Photo 179: View of UNT-1 to North Fork Canoe Creek facing south (08/02/18).



Photo 180: View of UNT-2 to North Fork Canoe Creek facing downstream (southeast) (08/03/18).





Photo 181: View of UNT-2 to North Fork Canoe Creek facing upstream (northwest) (08/03/18).



Photo 182: View of UNT-2 to North Fork Canoe Creek facing northwest (08/03/18).



Photo 183: View of UNT-3 to North Fork Canoe Creek facing Photo 184: View of UNT-3 to North Fork Canoe Creek facing northwest. The OHWM is obscured by vegetation (08/03/18).



southeast (08/03/18).



Photo 185: View of upland forest facing north (04/24/19).



Photo 186: View of upland forest facing north (04/24/19).





Photo 187: View of upland forest facing north (04/24/19).



Photo 188: View of upland old-field habitat, facing south (04/24/19).



(04/24/19).



Photo 189: View of upland old-field habitat facing southwest Photo 190: View of UNT-4 to North Fork Canoe Creek facing northwest (08/03/18).



Photo 191: View of UNT-4 to North Fork Canoe Creek facing southeast. The OHWM is obscured by vegetation (08/03/18).



Photo 192: View of UNT-5 to North Fork Canoe Creek facing west (09/20/18).





Photo 193: View of UNT-5 to North Fork Canoe Creek facing east (09/20/18).



Photo 194: View of UNT-6 to North Fork Canoe Creek facing southeast (09/20/18).



Photo 195: View of UNT-7 to North Fork Canoe Creek facing south (09/20/18).



Photo 196: View of UNT-7 to North Fork Canoe Creek culvert under US 60 facing northeast (09/20/18).



Photo 197: View of UNT-8 to North Fork Canoe Creek with US 60 in the background facing northwest (09/20/18).



Photo 198: View of UNT-8 to North Fork Canoe Creek facing northwest. Note that this is the end of the eroded channel and OHWM (09/20/18).





US 60 in the background facing northeast (09/20/18).



Photo 199: View of UNT-9 to North Fork Canoe Creek with Photo 200: View of UNT-9 to North Fork Canoe Creek facing southwest (09/20/18).



Photo 201: View of UNT-11 to North Fork Canoe Creek Photo 202: View of UNT-11 to North Fork Canoe Creek facing northeast. Note the US 60 bridge over a railroad in the facing southwest (08/03/18). background (08/03/18).





Photo 203: View of UNT-12 to North Fork Canoe Creek with US 60 in the background facing northwest (09/20/18).



Photo 204: View of UNT-12 to North Fork Canoe Creek facing northeast (09/20/18).





Photo 205: View of UNT-13 to North Fork Canoe Creek with US 60 in the background facing northeast (08/03/18).



Photo 206: View of UNT-13 to North Fork Canoe Creek facing northeast (8/03/18).



Photo 207: View of UNT-14 to North Fork Canoe Creek Photo 208: View of UNT-14 to North Fork Canoe Creek with facing east. The OHWM is obscured by vegetation (10/02/17). US 60 in the background facing west (10/02/17).





Photo 209: View of US 60 road ditch swale facing west (04/23/19). Notice that there is no OHWM or channel.



Photo 210: View of UNT-16 to North Fork Canoe Creek facing north (09/20/18).





facing south (09/20/18).



Photo 211: View of UNT-16 to North Fork Canoe Creek Photo 212: View of UNT-6 to North Fork Canoe Creek facing southeast (10/02/17).



Photo 213: View of well-drained agricultural field facing northeast (04/24/19).



Photo 214: View of well-drained agricultural field facing east (04/24/19).



Photo 215: View of well-drained agricultural field facing west (04/24/19).



Photo 216: View of depression with agricultural drain facing northeast (04/24/19).





Photo 217: View of well-drained agricultural field facing southwest (04/24/19).



Photo 218: Broken agricultural drainage tiles present in fields near North Fork Canoe Creek (04/24/19).



Photo 219: View of well-drained agricultural field facing east (04/24/19).



Photo 220: View of UNT-17 to North Fork Canoe Creek facing southwest (09/20/18).



Photo 221: View of UNT-17 to North Fork Canoe Creek facing north (09/20/18).



Photo 222: View of UNT-18 to North Fork Canoe Creek facing northwest (09/20/18).





Photo 223: View of culvert at UNT-17 to North Fork Canoe Creek facing west (04/24/19).



Photo 224: View of UNT-19 to North Fork Canoe Creek facing southeast. The OHWM is obscured by vegetation (09/21/18).



Photo 225: View of UNT-19 to North Fork Canoe Creek Photo 226: View of well-drained agricultural field facing facing northwest (09/21/18).



west (004/24/19).



Photo 227: View of UNT-20 to North Fork Canoe Creek Photo 228: View of agricultural field swale facing northeast facing southeast (09/21/18).



(04/24/19).





field facing southwest (04/24/19).



Photo 229: View of field erosional channels in agricultural Photo 230: View of field erosional channels facing northeast (04/24/19).



(04/24/19).



Photo 231: View of well-drained agricultural field facing east Photo 232: View of field erosional channels facing east (04/24/19).



Photo 233: View of erosion channels in agricultural field Photo 234: View of well-drained agricultural field facing east facing southwest (04/24/19).



(04/24/19).





Photo 235: View of culvert at UNT-21 to North Fork Canoe Creek facing northeast (04/24/19).



Photo 236: View of UNT-21 to North Fork Canoe Creek facing southwest (08/30/18).



Photo 237: View of UNT-21 to North Fork Canoe Creek facing southeast (08/30/18).



Photo 238: View of UNT-22 to North Fork Canoe Creek facing northeast (08/30/18).



Canoe Creek under Kimsey Lane facing northeast (08/30/18). Lane facing east (08/30/18).



Photo 239: View of culverts that carry UNT-22 to North Fork Photo 240: View of North Fork Canoe Creek under Kimsey





Photo 241: View of North Fork Canoe Creek facing southwest (08/30/18).



Photo 242: View of UNT-24 to North Fork Canoe Creek facing west. The OHWM is obscured by vegetation (08/30/18).



Photo 243: View of UNT-24 to North Fork Canoe Creek facing southeast (08/30/18).



Photo 244: View of UNT-25 to North Fork Canoe Creek facing southeast (09/21/18).



Photo 245: View of the riparian corridor along UNT-25 to North Fork Canoe Creek facing northwest (08/30/18).



Photo 246: View of UNT-26 to North Fork Canoe Creek facing south (09/21/18).





Photo 247: View of UNT-26 to North Fork Canoe Creek facing east (09/21/18).



Photo 248: View of UNT-27 to North Fork Canoe Creek facing south (09/21/18).



Photo: 249: View of UNT-27 to North Fork Canoe Creek facing northwest (9/21/18).



Photo 250: View of North Fork Canoe Creek facing upstream toward US 41 bridge, facing northeast (05/16/19).



downstream, facing west (05/16/19).

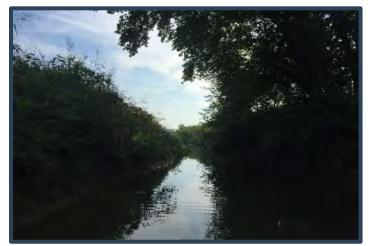


Photo 251: View of North Fork Canoe Creek facing Photo 252: View of North Fork Canoe Creek facing upstream (northeast) (09/21/18).





Photo 253: View of North Fork Canoe Creek under US 41 bridge facing downstream (southwest) (09/21/18).



Photo 254: View of UNT-29 to North Fork Canoe Creek facing south (09/21/18).



Photo 255: View of UNT-29 to North Fork Canoe Creek facing north (09/21/18).



Photo 256: View of UNT-29 to North Fork Canoe Creek facing northwest (09/21/18).



Photo 257: View of UNT-30 to North Fork Canoe Creek facing northeast with Van Wyk Road on the right (9/21/18).



Photo 258: View of UNT-30 to North Fork Canoe Creek facing southwest with Van Wyk road in the background (9/21/18).





Photo 259: View of UNT-31 to North Fork Canoe Creek facing southwest with US 40 overpass in the background and Van Wyk Road on the right (09/21/18).



Photo 260: View of UNT-28 to North Fork Canoe Creek facing northwest. The OHWM is obscured by vegetation (10/02/18).



facing southeast (10/02/18).



Photo 261: View of UNT-28 to North Fork Canoe Creek Photo 262: View Wetland 9 (DP-9-IN) facing east (10/02/18). This location met all three wetland criteria.



Photo 263: View Wetland 9 (DP-9-IN) facing west. This location met all three wetland criteria (10/02/18).



Photo 264: View of soil profile at Wetland 9 (DP-9-IN). This location met the depleted below dark surface (A11) indicator (10/02/18).





Photo 265: View at DP-9-OUT facing northwest (10/02/18).



Photo 266: View of Wetland 10 (DP-10-IN) facing south (10/02/18). This location met all three wetland criteria.



Photo 267: View of Wetland 10 facing north (10/02/18).



Photo 268: View soil profile at Wetland 10 (DP-10-IN). This location met the depleted below dark surface (A11) indicator (10/02/18).



Photo 269: View of Wetland 10 facing south (10/02/18).



Photo 270: View of well-drained US 41 infield interchange area facing southwest (04/24/19).





(DP-11-OUT) facing south (10/02/18).



Photo 271: View of Wetland 11 and adjacent upland area Photo 272: View of Wetland 11 (DP-11-IN) facing north (10/02/18). This location met all three wetland criteria.



Photo 273: View of Wetland 11 facing north (10/02/18).



Photo 274: View of US 41 median facing north (04/24/19).



facing north (10/02/18).



Photo 275: View of UNT-32 to North Fork Canoe Creek Photo 276: View of Wetland 12 and UNT-33 to North Fork Canoe Creek (arrow) facing south (10/02/18).





Photo 277: View of Wetland 12 (DP-12-IN) facing south (10/02/18). This location met all three wetland criteria.



Photo 278: View of UNT-33 to North Fork Canoe Creek facing south (10/02/18).



Photo 279: View of soil profile at Wetland 12 (DP-12-IN). Photo 280: View of Wetland 12 and UNT-32 to North Fork This location met the depleted below dark surface (A11) Canoe Creek (arrow) facing north (10/02/18). indicator (10/02/18).





US 41 facing south (04/24/19).



Photo 281: View of well-drained interchange infield area of Photo 282: View of well-drained interchange infield area of US 41 facing east (04/24/19).





Photo 283: View of UNT-34 to North Fork Canoe Creek, Photo 284: View of Wetland 13 (10/02/18) and surrounding facing southwest (04/24/19).



upland facing south.



Photo 285: View of Wetland 13 (DP-13-IN) and UNT-34 to Photo 286: View of Wetland 13 and UNT-34 to North Fork North Fork Canoe Creek facing west (10/02/18). This data Canoe Creek facing south (10/02/18). point met all three wetland criteria.





the depleted matrix (F3) and the depleted below dark surface facing northwest near Wetland 13 (10/02/18). (A11) indicators (10/02/18).



Photo 287: View of soil profile at DP-13-IN. This location met Photo 288: View of UNT-34 to North Fork Canoe Creek





Photo 289: View of US 41 interchange infield area facing northeast (04/24/19).



Photo 291: View of US 41 interchange infield area facing southwest (04/24/19).



Photo 293: View of UNT-37 to North Fork Canoe Creek facing south (04/23/19).



Photo 290: View of well-drained US 41 interchange infield area facing north (04/24/19).



Photo 292: View of US 41 interchange infield area facing north (04/24/19).



Photo 294: View of well-drained US 41 median facing south (04/23/19).





Photo 295: View of UNT-37 to North Fork Canoe Creek facing north (04/23/19)



Photo 297: View of UNT-37 to North Fork Canoe Creek at the confluence with UNT-36 to North Fork Canoe Creek (04/23/19).



Photo 299: View of UNT-36 to North Fork Canoe Creek upstream facing northeast (04/23/19).



Photo 296: View of UNT-36 to North Fork Canoe Creek, downstream, facing southwest (04/24/19).



Photo 298: View of UNT-38 to North Fork Canoe Creek, facing south (04/23/19).



Photo 300: View of UNT-38 to North Fork Canoe Creek, facing north (04/23/19).





Photo 301: View of UNT-39 to North Fork Canoe Creek facing southeast (04/23/19).



facing west (04/23/19).



Photo 303: View of well-drained upland forest facing west (04/23/19).



Photo 304: View of UNT-39 to North Fork Canoe Creek facing south (04/23/19).





APPENDIX D

Wetland Determination Data Forms

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh	
Applicant/Owner: INDOT (Des#:1601700); KYTC (KYTC#:2-1088) State: Indiana	Sampling Point: DP-1-IN
Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range:	Section 4, Township 7S, Range 10W
Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, n	none): Concave
Slope (%): 4 Lat: 37.93872 Long: -87.53858	Datum: NAD-1983
Soil Map Unit Name: Weinbach silt Ioam NWI Classificatio	on: NA
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain	ain in remarks)
Are vegetation X , soil , or hydrology significantly disturbed?	Are "normal circumstances"
Are vegetation , soil , or hydrology naturally problematic? No	present? Yes
SUMMARY OF FINDINGS (If needs	ed, explain any answers in remarks.)
Hydrophytic vegetation present? Y	
Hydric soil present? Y Is the sampled area within a	wetland? Y
Indicators of wetland hydrology present? Y If yes, optional wetland site ID	·
Remarks: (Explain alternative procedures here or in a separate report.)	
This is a palustrine emergent wetland located between I-69 and an exit ramp from I-69. This area app	pears to have been disturbed during
construction of a ramp to I-69. During rain events, the wetland likely receives runoff from I-69. WOTU	
VEGETATION Use scientific names of plants.	
Absolute Dominant Indicator Domina	ance Test Worksheet
·	of Dominant Species
that are C	OBL, FACW, or FAC:(A)
	Number of Dominant
	cies Across all Strata: 1 (B)
	of Dominant Species OBL, FACW, or FAC: 100.00% (A/B)
0 = Total Cover	(,
Sapling/Shrub stratum (Plot size: 15' diameter)	ence Index Worksheet
1 Total %	Cover of:
2 OBL spe	
3 FACW s	·
5 FAC spe	
0 = Total Cover UPL spe	·
Herb stratum (Plot size: 5' diameter) Column	
1 Leersia oryzoides 90 Y OBL Prevalei	nce Index = B/A = 1.00
2 Scirpus cyperinus 5 N OBL	
3 Hydrop	hytic Vegetation Indicators:
	oid test for hydrophytic vegetation
	ninance test is >50%
	valence index is ≤3.0*
	phological adaptations* (provide porting data in Remarks or on a
	arate sheet)
	blematic hydrophytic vegetation*
	olain)
	ors of hydric soil and wetland hydrology must be present, unless disturbed or problematic
<u> </u>	drophytic
	etation sent? Y
1	
Remarks: (Include photo numbers here or on a separate sheet) In very dry conditions, this area is probably mowed, and it is likely that it is treated with herbicides	to control woody vegetation.

SOIL Sampling Point: DP-1-IN

Profile Desc	cription: (Descri	ibe to th	e depth needed	to docu	ment the	indicat	or or confirm the a	absence of indicators.)		
Depth	<u>Matrix</u>		Red	lox Feat	<u>ures</u>					
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks		
0-12	10YR 5/2	95	10YR 7/6	5	С	М	Silt loam			
12-20	2.5Y 6/1	80	2.5Y 7/4	20	С	М	Silt clay loam			
12 20	2.01 0/1	- 00	2.01 774	20		101	One oldy loans			
*T 0 = 0	Name and the state of the state	Daniet	an DM – Dadwa	al NA maturis	N 10 - 1	1 l d O		anation: DL — Dona Lining M — Matrix		
		= Depleti	on, RM = Reduce	ed Matrix	, MS = N	lasked S		_ocation: PL = Pore Lining, M = Matrix		
_	il Indicators:		0	d Ola	! N ! £!	(04)		Problematic Hydric Soils:		
	isol (A1)				ed Matrix	(54)		irie Redox (A16) (LRR K, L, R)		
	ic Epipedon (A2)			dy Redo	. ,			ace (S7) (LRR K, L) anese Masses (F12) (LRR K, L, R)		
	ck Histic (A3)	1)		oped Ma	. ,	N /E4\		, , , , , , , , , , , , , , , , , , , ,		
	rogen Sulfide (A4			-	ky Minera	. ,		ow Dark Surface (TF12)		
	tified Layers (A5))			ed Matrix		Other (exp	olain in remarks)		
	n Muck (A10) lleted Below Dark	Curtoos			atrix (F3) Surface					
	ck Dark Surface (` ′		irk Surfa	` '	*ll'	Charles de Carra de Carra de destada d		
	dy Mucky Minera	,			essions (. ,		of hydrophytic vegetation and wetland		
	n Mucky Peat or I	` '		юх Берг	essions ((го)	nydrology	must be present, unless disturbed or problematic		
		`)					problematic		
	Layer (if observe	ed):								
	one				•		Hydric soil p	present? Y		
Depth (inche	es): N/A									
Remarks:										
This location	on met the deplet	ted matri	x (F3) indicator. C	Clay cont	ent incre	ases at a	a depth below 12 in	ches.		
			(', ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	,						
HYDROLO	OGY									
Wetland Hv	drology Indicate	ors:								
_			required; check a	all that a	nnly)		Second	ary Indicators (minimum of two required)		
	Water (A1)	01 0110 10	required, oricon t		Fauna (B	13)		urface Soil Cracks (B6)		
	ter Table (A2)				uatic Plar			rainage Patterns (B10)		
Saturation	` ,					Odor (C1		ry-Season Water Table (C2)		
	arks (B1)							rayfish Burrows (C8)		
	t Deposits (B2)			(C3)	·			aturation Visible on Aerial Imagery (C9)		
Drift Dep	osits (B3)			Presenc	e of Redu	iced Iron	(C4) St	tunted or Stressed Plants (D1)		
Algal Ma	t or Crust (B4)			Recent I	ron Redu	ction in T	illed Soils X G	eomorphic Position (D2)		
	osits (B5)			(C6)			XF	AC-Neutral Test (D5)		
	on Visible on Aeria		· · ·		ck Surfac					
	Vegetated Conca		ce (B8)	_	r Well Da					
X Water-St	ained Leaves (B9)		Other (E	xplain in	Remarks)			
Field Obser										
Surface water		Yes	No	X	Depth (i					
Water table		Yes	No	X	Depth (i		>20	Indicators of wetland		
Saturation p		Yes	No	Х	Depth (i	ncnes):	>20	hydrology present? Y		
	oillary fringe)				_					
Describe rec	orded data (strea	am gauge	e, monitoring well	, aerial p	hotos, p	revious ir	nspections), if availa	able:		
Domarka:										
Remarks:	nad laguas dams	rooto le:	u biina oroso :::b	ro water	io rotol-	od d::=::= =	, atarm avanta			
vvaler-star	neu leaves dema	rcate 10V	v-lying areas whe	ie water	is retain	eu uuring	j Storiii events.			
1										

Project/Site: I-69 Ohio River Crossing	Citv/	County: Ev	vansville/Van	derburgh Sampling Date:	7/25/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC (#2		State:	India		
Investigator(s): Luke Eggering; Lindsey Postaski	,		on, Township	Range: Section 4, Tow	
Landform (hillslope, terrace, etc.): Hillslope			-	, convex, none):	Convex
Slope (%): 2 Lat: 37.93879		Long:	-87.5385	· · · · · · · · · · · · · · · · · · ·	NAD-1983
Soil Map Unit Name: Weinbach silt loam		· J		lassification:	NA
Are climatic/hydrologic conditions of the site typical for the	his time of	the year?		If no, explain in remarks)	
Are vegetation , soil X , or hydrolo		significantly		Are "normal circ	umstances"
Are vegetation , soil , or hydrolo			oblematic? N		present? Yes
SUMMARY OF FINDINGS			_	(If needed, explain any a	answers in remarks.)
Hydrophytic vegetation present? N					
Hydric soil present? N		Is the	sampled are	a within a wetland?	N
Indicators of wetland hydrology present? N		If yes,	optional wetla	and site ID	
Remarks: (Explain alternative procedures here or in a se	eparate re	port.)			
This is an upland area located between I-69 and an exit		,	area annears	to have been disturbed du	ring construction of a
ramp to I-69. WOTUS 2018 ID: NA	ramp non	11 00. 11110	arca appears	to have been distarbed de	ring construction or a
VEGETATION Use scientific names of plants.					
	Absolute	Dominant	Indicator	Dominance Test Work	sheet
<u>Tree Stratum</u> (Plot size: _ 30' diameter _)	% Cover	Species	Status	Number of Dominant Spe	cies
1				that are OBL, FACW, or F	AC: 0 (A)
				Total Number of Domin	
3				Species Across all Str	``
5				Percent of Dominant Spe that are OBL, FACW, or F	
	0	= Total Cove	er	that are ODE, I ACW, OF I	AC. 0.00 / (A/B)
Sapling/Shrub stratum (Plot size: 15' diameter)		. ota. oor	.	Prevalence Index Worl	ksheet
1				Total % Cover of:	
2				OBL species 0	x 1 = 0
3				' <u></u>	x 2 = 0
				FAC species 0	x 3 = 0
5	0	= Total Cove			x 4 = 420 x 5 = 0
Herb stratum (Plot size: 5' diameter)		- Total Cove	51	Column totals 105	(A) 420 (B)
1 Cynodon dactylon	90	Y	FACU	Prevalence Index = B/A	.` '` ' '
2 Schedonorus arundinaceus	10	N	FACU	Trovalorios indox Birt	
3 Sorghum halepense	5	N	FACU	Hydrophytic Vegetatio	n Indicators:
4				Rapid test for hydro	phytic vegetation
5				Dominance test is >	
6				Prevalence index is	
- 8				Morphological adap	
9				supporting data in R separate sheet)	emarks or on a
10				Problematic hydropl	nytic vegetation*
-	105	= Total Cove	er	(explain)	.yaa ragatata
Woody vine stratum (Plot size: 30' diameter)				*Indicators of hydric soil and	d wetland hydrology must be
1				present, unless distu	urbed or problematic
2				Hydrophytic	
	0	= Total Cove	er	vegetation present?	N
Remarks: (Include photo numbers here or on a separate	sheet)				_
The upland area is infrequently maintained. Chicory	-	m intybus) a	and bull thistle	e (Cirsium vulgare) are pre	sent in the upland
outside of this datapoint.	,	, , -		, Jan 1, 1 3 pro	į. ·

SOIL Sampling Point: DP-1-OUT

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the al	bsence of indicators.)
Depth	Matrix			dox Feat				· ·
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	10YR 6/3	100					Silt loam	
12-20	10YR 5/3	80	10YR 6/2	20	С	М	Silt loam	
12-20	10113/3	80	1011012	20	C	IVI	SIILIOAIII	
		= Deplet	on, RM = Reduce	ed Matrix	c, MS = N	/lasked S		ocation: PL = Pore Lining, M = Matrix
Hydric Sc	il Indicators:							Problematic Hydric Soils:
Hist	isol (A1)		Sar	idy Gleye	ed Matrix	(S4)	Coast Prair	ie Redox (A16) (LRR K, L, R)
Hist	ic Epipedon (A2)		Sar	idy Redo	ox (S5)			ce (S7) (LRR K, L)
Blac	ck Histic (A3)		Stri	pped Ma	trix (S6)		Iron-Manga	inese Masses (F12) (LRR K, L, R)
Hyc	lrogen Sulfide (A	1)	Loa	my Mucl	ky Minera	al (F1)	Very Shallo	w Dark Surface (TF12)
Stra	tified Layers (A5)	Loa	my Gley	ed Matrix	k (F2)	Other (expl	ain in remarks)
2 cr	n Muck (A10)		Dep	leted Ma	atrix (F3)			
Dep	leted Below Dark	Surface	(A11) Red	lox Dark	Surface	(F6)		
Thic	ck Dark Surface (A12)	Dep	leted Da	ark Surfa	ce (F7)	*Indicators of	f hydrophytic vegetation and wetland
Sar	dy Mucky Minera	ıl (S1)	Red	lox Depr	essions	(F8)		nust be present, unless disturbed or
5 cr	n Mucky Peat or	Peat (S3		·		,	, 0,	problematic
Postriotivo	Layer (if observ	٠ .	,			I		
	one	eu).					Hydric soil p	resent? N
Depth (inche					-		riyuric son pi	———
Deptil (iliche	55). <u>IN/A</u>				-			
Remarks:								
Soils are v	vell drained.							
HYDROLO	OGY							
Wetland Hy	drology Indicate	ors:						
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Seconda	ry Indicators (minimum of two required)
	Water (A1)				Fauna (B	13)		rface Soil Cracks (B6)
High Wa	ter Table (A2)				uatic Plar	,		ainage Patterns (B10)
Saturation						Odor (C1		/-Season Water Table (C2)
	arks (B1)						· ·	ayfish Burrows (C8)
Sedimer	nt Deposits (B2)			(C3)	·			turation Visible on Aerial Imagery (C9)
Drift Dep	osits (B3)				e of Redu	uced Iron	(C4) Stu	inted or Stressed Plants (D1)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils Geomorphic Position (D2)							omorphic Position (D2)	
Iron Dep	osits (B5)			(C6)			 FA	C-Neutral Test (D5)
Inundation	on Visible on Aeria	I Imager	/ (B7)	Thin Mu	ck Surfac	e (C7)		
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	or Well Da	ata (D9)		
Water-S	tained Leaves (B9)		Other (E	xplain in	Remarks)	
Field Obser	vations:							
Surface wat	er present?	Yes	No	Х	Depth (i	nches):		
Water table		Yes	No	X	Depth (i		>20	Indicators of wetland
Saturation p		Yes	No	X	Depth (i	-	>20	hydrology present? N
(includes ca	pillary fringe)							
Describe red	corded data (strea	am gaug	e, monitoring well	, aerial c	hotos, p	revious ir	nspections), if availal	ble:
	•	0 0			•		, ,,	
Remarks:								
The uplan	d datapoint is we	ll drained	l.					

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.:	Wetland 1	Project/Site:	I-69 Ohio River Crossing

Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	2	During rain events, the wetland likely receives runoff from I-69. Small wetland size limits this function.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	1	Small wetland size limits this function.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	1	Small wetland size limits this function.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	1	The location of this wetland between I-69 and an entrance ramp to I-69 limits use by terrestrial wildlife. The wetland does not exhibit a high degree of plant diversity to support a variety of species.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	1	There is little pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	0	The visual quality/aesthetics of this wetland is low as it is located in an I-69 interchange. Highway noise and traffic diminish the aesthetics of the wetland.

Total Score 6

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River Crossing	City/	County:	Evansville/Var	nderburgh Sampling Date:	7/24/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC	(KYTC#:2-10	088) State	e: India	ana Sampling Point:	DP-2-IN
Investigator(s): Luke Eggering; Lindsey Postaski	<u></u>	Sec	ction, Township	p, Range: Section 3, Tow	nship 7S, Range 10W
Landform (hillslope, terrace, etc.): Toe of	slope	Local	relief (concave	e, convex, none):	Concave
Slope (%): 2 Lat: 37.9359	6	Long:	-87.525	557 Datum:	NAD-1983
Soil Map Unit Name: Borrow pits			NWI (Classification:	NA
Are climatic/hydrologic conditions of the site typical for	r this time of	the year?	Y	(If no, explain in remarks)	
Are vegetation , soil , or hydro	ology	significan	tly disturbed? I	No Are "normal circu	ımstances"
Are vegetation , soil , or hydro	ology	naturally	problematic?	_	present? Yes
SUMMARY OF FINDINGS			_	(If needed, explain any a	nswers in remarks.)
Hydrophytic vegetation present? Y					
Hydric soil present?		Is th	e sampled are	ea within a wetland?	Υ
Indicators of wetland hydrology present?		If yes	s, optional wetl	land site ID	
Remarks: (Explain alternative procedures here or in a This is a bottomland hardwood forest swale located s runoff from I-69 and overflow flooding from Eagle Crewetland in the past. WOTUS 2018 ID: WTL-04 VEGETATION Use scientific names of plan	outh of I-69 a	and north			
	Absolute	Dominar	nt Indicator	Dominance Test Works	heet
<u>Tree Stratum</u> (Plot size: 30' diameter)	% Cover	Species		Number of Dominant Spec	ies
1 Salix interior	75	Y	FACW	that are OBL, FACW, or FA	AC: (A)
2				Total Number of Domina	
3				Species Across all Stra	``
5				Percent of Dominant Spec that are OBL, FACW, or FA	
3	75	= Total Co	over	lilat are ODL, i ACVV, or i A	(A/B)
Sapling/Shrub stratum (Plot size: 15' diameter		10141.00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Prevalence Index Work	sheet
1 Cephalanthus occidentalis	30	Υ	OBL	Total % Cover of:	
2 Acer rubrum	20	Υ	FAC	OBL species 30	x 1 = 30
3				· —	x 2 = 160
4				·	x 3 = 75
5		T-1-10			x 4 = 0
Herb stratum (Plot size: 5' diameter	50	= Total Co	over	· —	x 5 = 0 (A) 265 (B)
	_ ⁾ 5	Y	FACW	Prevalence Index = B/A =	
1 Laportea canadensis 2 Acer rubrum	5		FAC	Prevalence index – b/A -	- 1.90
3	- <u> </u>			Hydrophytic Vegetation	Indicators:
4	- —			Rapid test for hydrop	
5				X Dominance test is >5	50%
6				X Prevalence index is	≦3.0*
7				Morphological adapta	ations* (provide
8				supporting data in Re	emarks or on a
9				separate sheet)	
10	10	= Total Co		Problematic hydroph (explain)	ytic vegetation [*]
Woody vine stratum (Plot size: 30' diameter		- Total CC	ovei	 ` · · ·	
1	<u>.</u> ′			*Indicators of hydric soil and present, unless distur	
2	- —			Hydrophytic	<u> </u>
	0	= Total Co	over	vegetation	
				present? Y	
Remarks: (Include photo numbers here or on a separ The forest floor is covered with leaf litter and tree	-				

SOIL Sampling Point: DP-2-IN

Profile Desc	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the abse	nce of indicators.)	
Depth	<u>Matrix</u>		Red	dox Feat	<u>ures</u>				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks	
0-4	2.5Y 3/1	100					Silt loam		
4-10	10YR 5/2	80	2.5Y 6/1	20	С	М	Silt loam		
10-20	10YR 5/4	80	2.5Y 4/1	20	С	М	Silt loam		
10-20	10110 3/4	- 00	2.51 4/1	20		IVI	Siit ioairi	+	
*T. (20) C = (Concentration D	- Donloti	on DM - Doduce	ad Matrix	. MC = N	Applied C	land Crains **I ass	tion: DL — Doro Lining M — Motrix	
	bil Indicators:	= Depleti	on, RM = Reduce	ed Matrix	i, IVIS = IV	lasked S		tion: PL = Pore Lining, M = Matrix blematic Hydric Soils:	
_			Son	dy Clay	ad Matrix	(04)		Redox (A16) (LRR K, L, R)	
	isol (A1)			idy Gleye idy Redo	ed Matrix	(34)	Dark Surface (
	ic Epipedon (A2)			oped Ma	. ,			se Masses (F12) (LRR K, L, R)	
	ck Histic (A3) Irogen Sulfide (A4	1)		•	uix (36) ky Minera	ol (E4)		Park Surface (TF12)	
	atified Layers (A5)			-	ed Matrix		Other (explain	, ,	
	n Muck (A10))			eu Main atrix (F3)		Other (explain	in remarks)	
	oleted Below Dark	Surface			Surface				
	ck Dark Surface (irk Surfa	. ,	*Indicators of by	drank, tie vegetetien and wetland	
	idy Mucky Minera	,			essions (. ,		drophytic vegetation and wetland be present, unless disturbed or	
	n Mucky Peat or			iox Depi	E5510115 ((ГО)	nyurology musi	problematic	
)					problematic	
	Layer (if observ	ed):							
	one						Hydric soil pres	ent? Y	
Depth (inche	es): N/A								
Remarks:									
There is a	thin laver of leaf	litter on t	op of the soil's su	ırface. S	oils are s	aturated	at this point. This location	on met the depleted matrix (F3) and	
								(,, , ,	
	the depleted below dark surface (A11) indicators.								
HYDROLO	OGY								
	drology Indicate	ors:							
	•		required; check	all that a	nnly)		Socondary	adicators (minimum of two required)	
	Water (A1)	or one is	required, check		<u>рргу)</u> Fauna (В	12)	· · · · · · · · · · · · · · · · · · ·	ndicators (minimum of two required) e Soil Cracks (B6)	
	ter Table (A2)				uatic Plar			ge Patterns (B10)	
X Saturation	, ,					Odor (C1		eason Water Table (C2)	
	arks (B1)						Living Roots X Crayfis		
	nt Deposits (B2)			(C3)	оор			tion Visible on Aerial Imagery (C9)	
X Drift Dep					e of Redu	ced Iron		d or Stressed Plants (D1)	
	it or Crust (B4)			•				orphic Position (D2)	
Iron Dep	osits (B5)			(C6)				eutral Test (D5)	
Inundation	on Visible on Aeria	l Imager	/ (B7)	Thin Mu	ck Surfac	e (C7)			
Sparsely	Vegetated Conca	ive Surfa	ce (B8)	Gauge o	r Well Da	ata (D9)			
X Water-S	tained Leaves (B9)		Other (E	xplain in	Remarks)		
Field Obser	vations:								
Surface water	er present?	Yes	No	Χ	Depth (i				
Water table	present?	Yes	X No		Depth (i	nches):	6" I	ndicators of wetland	
Saturation p		Yes	X No		Depth (i	nches):	0"	hydrology present? Y	
(includes ca	pillary fringe)								
Describe rec	corded data (strea	am gaug	e, monitoring well	, aerial p	hotos, p	revious ir	nspections), if available:		
Remarks:		_		_					
								narcate low-lying areas where	
								ent deposits (thin coatings of silt)	
are visible	on tree trunk bas	ses. A cu	ivert connecting t	o an eph	iemeral o	channel is	s located on the souther	n eage of the wetland.	

Project/Site: I-69 Ohio River Crossing	City	County:	Evansville/Van	derburgh S	ampling Date:	7/24/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC ((#2-1088)	State	e: India	ina S	ampling Point:	DP-2-OUT
Investigator(s): Luke Eggering; Lindsey Postaski	<u>, </u>	Sec	ction, Township	o, Range:	Section 3, Town	ship 7S, Range 10W
Landform (hillslope, terrace, etc.): Hillslo	ре		relief (concave	_		Convex
Slope (%): 2 Lat: 37.93590)	Long:	-87.525		atum:	NAD-1983
Soil Map Unit Name: Borrow pits		·		Classification	:	NA
Are climatic/hydrologic conditions of the site typical for	r this time of	f the year?	Y ((If no, explair	n in remarks)	
Are vegetation , soil , or hydro			tly disturbed? N		re "normal circur	metances"
Are vegetation , soil , or hydro		• -	oroblematic? N		ic noma onoa	present? Yes
SUMMARY OF FINDINGS			_		d, explain any an	swers in remarks.)
Hydrophytic vegetation present? Y				•		,
Hydric soil present? N		ls th	e sampled are	ea within a v	vetland?	N
Indicators of wetland hydrology present?	_		s, optional wetla		_	
	congrate re	•		_		
Remarks: (Explain alternative procedures here or in a	separate re	port.)				
This datapoint is located between I-69 and Eagle Cree	ek. WOTUS	2018 ID: \	NTL-04			
VEGETATION Use scientific names of plant				I B	T()A/1 -1	
<u>Tree Stratum</u> (Plot size: 30' diameter)	Absolute % Cover	Dominar			ce Test Worksh	
<u>Tree Stratum</u> (Plot size: <u>30' diameter</u>) 1 Acer rubrum	% Cover	Species Y	FAC		f Dominant Specie BL, FACW, or FA	
2		· — ·			umber of Domina	``
3					es Across all Strat	
4				Percent of	Dominant Specie	
5				that are Of	BL, FACW, or FA	C: 60.00% (A/B)
	10	= Total Co	over			
Sapling/Shrub stratum (Plot size: 15' diameter)				ce Index Works	heet
1 Acer rubrum	10	Y	FAC FAC	Total % C		1 - 0
2				OBL spec		1 = 0 $2 = 0$
4				FAC spec		3 = 165
5				FACU spe		4 = 160
	10	= Total Co	over	UPL spec		5 = 0
Herb stratum (Plot size: 5' diameter)			Column to	otals 95 (A	A) 325 (B)
1 Toxicodendron radicans	30	Υ	FAC	Prevalend	$ext{lindex} = B/A =$	3.42
2 Sorghum halepense	20	Υ	FACU			
3 Schedonorus arundinacea	20	Y	FACU		ytic Vegetation	
4 Plantago major	5	N	FAC	l ——	I test for hydroph	, ,
5 Convolvulus arvensis	5	N	NI		nance test is >50 alence index is ≤	
6						
8					hological adapta orting data in Rei	
9					ate sheet)	marke of on a
10				Probl	ematic hydrophy	tic vegetation*
	80	= Total Co	over	(expla	ain)	
Woody vine stratum (Plot size: 30' diameter 1)				s of hydric soil and w esent, unless disturb	vetland hydrology must be ned or problematic
2					ophytic	
	0	= Total Co	over	vege	tation ent? Y	
Domarko: (Includo photo numbero hara ar an a caraci	ato choct\			P. 030		
Remarks: (Include photo numbers here or on a separa	ate sneet)					

SOIL Sampling Point: DP-2-OUT

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm th	e absence of	indicators.)
Depth	Matrix			dox Feat					<u> </u>
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	:	Remarks
0-4	10YR 5/3	98	10YR 6/6	2	С	М	Silt loam		
4-20	7.5YR 5/6	100	10111070	_			Silt loam		
4-20	7.51R 5/0	100					Siit ioairi		
*Type: C = 0	Concentration, D	= Deplet	ion, RM = Reduce	ed Matrix	c, MS = N	/lasked S			= Pore Lining, M = Matrix
Hydric Sc	oil Indicators:						Indicators f	for Problemati	c Hydric Soils:
Hist	tisol (A1)		Sar	dy Gleye	ed Matrix	(S4)	Coast P	Prairie Redox (A	A16) (LRR K, L, R)
Hist	tic Epipedon (A2)		Sar	dy Redo	x (S5)		Dark Su	urface (S7) (LR	R K, L)
	ck Histic (A3)		—— Stri	pped Ma	trix (S6)		Iron-Ma	nganese Mass	es (F12) (LRR K, L, R)
	drogen Sulfide (A	4)			ky Minera	al (F1)	Very Sh	nallow Dark Sui	rface (TF12)
	atified Layers (A5			-	ed Matrix			explain in rema	
	m Muck (A10)	,			atrix (F3)			, , , , , , , , , , , , , , , , , , ,	
	oleted Below Dark	Surface			Surface				
	ck Dark Surface (ark Surfa	. ,	*Indicator	re of hydrophyt	ic vegetation and wetland
	ndy Mucky Minera	,			essions	` ,			sent, unless disturbed or
	n Mucky Peat or	. ,		юх Бері	CSSIONS	(10)	riyarolog		ematic
	-	`	')					ргоог	ematic
	Layer (if observe	ed):							
Type: N	one						Hydric so	il present?	N
Depth (inche	es): N/A								
Remarks:					_				
	بامضا اممضما المنا	:							
Soils are v	vell drained. Inclu	isions of	tree roots were p	resent tr	irougnou	it the soil	core.		
HYDROLO									
Wetland Hy	drology Indicate	ors:							
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Seco	ndary Indicator	s (minimum of two required)
Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface Soil C	
High Wa	iter Table (A2)			True Aq	uatic Plar	nts (B14)		Drainage Patte	erns (B10)
Saturation						Odor (C	1)	Dry-Season W	ater Table (C2)
	larks (B1)						Living Roots	Crayfish Burro	
Sedimer	nt Deposits (B2)			(C3)	·				ble on Aerial Imagery (C9)
Drift Dep	posits (B3)				e of Redu	uced Iron	(C4)		essed Plants (D1)
Algal Ma	at or Crust (B4)			•)			illed Soils	Geomorphic P	
	osits (B5)			(C6)				FAC-Neutral T	est (D5)
	on Visible on Aeria	al Imager	y (B7)		ck Surfac	e (C7)		-	,
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	or Well Da	ata (D9)			
	tained Leaves (B9		. ,			Remarks)		
Field Obser	vations	•			•		,		
Surface wat		Yes	No	X	Depth (i	nches)		1	
Water table		Yes	No	$\frac{\lambda}{X}$	Depth (i	,	>20	Indicato	ers of wetland
Saturation p		Yes	No	$\frac{\lambda}{X}$	Depth (i		>20		ogy present? N
	pillary fringe)	. 00			(I				- 11
			o monitoring well	ooriol r	hotoo n	rovious i	noncotiona) if av	oilabla:	
Describe rec	corded data (strea	am gaug	e, monitoring wei	, aenai p	motos, p	revious ii	rispections), ii av	aliable.	
Remarks:									
i verriarks.									

WETLAND FUNCTIONS & VALUES FORM

	Wetland I.D.:	Wetland 2	Project/Site:	I-69 Ohio River Crossing
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Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	2	Ponded/pooled water is present within the wetland. During rain events, the wetland likely receives runoff from I-69.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	1	Small wetland size limits this function.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	1	Small wetland size limits this function.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	1	Animal signs were observed within the wetland (tracks, scat, burrows). Raccoon tracks were visible along the edge of ponded water. The narrow size of the wetland may result in minimized habitat potential for large mammals.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	2	Ponded/pooled water is present within the wetland. Tadpoles were observed within ponded areas.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	2	The visual quality/aesthetics of this wetland is low as it is located south of I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland.

Total Score 9

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River Crossing	City/	ty/County: Evansville/Vanderburgh Sampling Date: 7/24/2018				
Applicant/Owner: INDOT (Des#:1601700); KYTC (K	YTC#:2-10	088) State	na Sampling Point: DP-3-1-IN			
Investigator(s): Luke Eggering; Lindsey Postaski		Se	ction, Township	, Range: Section 3, Township 7S, Range 10W		
Landform (hillslope, terrace, etc.):		Local	relief (concave	, convex, none): None		
Slope (%): 0 Lat: 37.93583		Long: -87.52266 Datum: NAD-1983				
Soil Map Unit Name: Newark silty clay loam		_	NWI C	classification: NA		
Are climatic/hydrologic conditions of the site typical for $% \left(1\right) =\left(1\right) \left(1\right) $	this time of	the year?	? <u>Y</u> (lf no, explain in remarks)		
Are vegetation, soil, or hydrol	ogy	significan	tly disturbed? N	No Are "normal circumstances"		
Are vegetation, soil, or hydrol	ogy	naturally	problematic? N	lo present? Yes		
SUMMARY OF FINDINGS				(If needed, explain any answers in remarks.)		
Hydrophytic vegetation present? Y	_					
Hydric soil present? Y	_	ls th	e sampled are	a within a wetland?		
Indicators of wetland hydrology present? Y	_	If ye	s, optional wetla	and site ID		
Remarks: (Explain alternative procedures here or in a s	separate re	port.)				
This is a bottomland hardwood forest located south of I	I-69 and no	orth of Eag	le Creek. Durin	g rain events, the wetland likely receives runoff		
from I-69 and overflow flooding from Eagle Creek. WO	TUS 2018 I	D: WTL-0)1	•		
VEGETATION Use scientific names of plants	S.					
	Absolute	Domina	nt Indicator	Dominance Test Worksheet		
<u>Tree Stratum</u> (Plot size: <u>30' diameter</u>)	% Cover	Species		Number of Dominant Species		
1 Acer rubrum	85	Y	FAC FAC	that are OBL, FACW, or FAC:3 (A)		
2		· 		Total Number of Dominant Species Across all Strata: 4 (B)		
4				Percent of Dominant Species		
5		-		that are OBL, FACW, or FAC: 75.00% (A/B)		
	85	= Total Co	over			
Sapling/Shrub stratum (Plot size: 15' diameter)	,			Prevalence Index Worksheet		
1				Total % Cover of:		
2				OBL species 0 x 1 = 0 FACW species 7 x 2 = 14		
4				FAC species 85 x 3 = 255		
5		-		FACU species 2 x 4 = 8		
	0	= Total Co	over	UPL species 0 x 5 = 0		
Herb stratum (Plot size: 5' diameter))			Column totals 94 (A) 277 (B)		
1 Fraxinus pennsylvanica	5	Y	FACW	Prevalence Index = B/A = 2.95		
2 Campsis radicans	2	<u> </u>	FACU			
3 Laportea canadensis	2	. <u> </u>	FACW	Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation		
5		-		X Dominance test is >50%		
6		-		X Prevalence index is ≤3.0*		
7				Morphological adaptations* (provide		
8				supporting data in Remarks or on a		
9				separate sheet)		
10	9	= Total Co		Problematic hydrophytic vegetation*		
Woody vine stratum (Plot size: 30' diameter)	<u> </u>	= Total Co	over	(explain)		
1				*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
2		-		Hydrophytic		
	0	= Total Co	over	vegetation		
				present? Y		
Remarks: (Include photo numbers here or on a separat	-					
The forest floor is covered with leaf litter and tree d	ebris.					

SOIL Sampling Point: DP-3-1-IN

Profile Des	cription: (Descr	ibe to th				e indicat	tor or confirm th	e absence of indi	cators.)
Depth	<u>Matrix</u>			Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture		Remarks
0-4	2.5Y 3/1	100					Silt loam		
4-10	10YR 5/2	80	2.5Y 6/1	20	С	М	Silt loam		
10-20	10YR 5/4	80	2.5Y 4/1	20	С	М	Silt loam		
.0 _0	101110/1	- 55			<u> </u>		0		
*Type: C = (Concentration, D	= Denlet	ion RM = Reduc	ed Matrix	/ MS = N	Jacked S	Sand Grains	**Location: PL = P	ore Lining, M = Matrix
	oil Indicators:	- Depict	ion, raw – racado	ca main	k, IVIO – I	viasitea e		or Problematic Hy	
_	tisol (A1)		Sar	ndy Glevi	ed Matrix	((\$4)		rairie Redox (A16)	
	tic Epipedon (A2)			ndy Redo		(04)		rface (S7) (LRR K	
	ck Histic (A3)			pped Ma	. ,				=12) (LRR K, L, R)
	drogen Sulfide (A	1)			ky Miner	al (F1)		allow Dark Surface	, ,
	atified Layers (A5				ed Matri			explain in remarks)	(11 12)
	m Muck (A10)	,			atrix (F3)	. ,		Apiairi ii remaiks)	
	oleted Below Dark	Surface			Surface				
	ck Dark Surface (` ' —		ark Surfa	. ,	*Indicator	o of budrophytic vo	actation and watland
	ndy Mucky Minera	,			essions	. ,			getation and wetland unless disturbed or
	n Mucky Peat or	` '		ox Debi	C3310113	(10)	Hydrolog	problema problema	
	,	` `	')			•		problema	
	Layer (if observ	ed):							
	one				_		Hydric so	il present? Y	
Depth (inch	es): N/A				_				
depleted t	oelow dark surfac	C (/ (1 1 / 1	naidatoro.						
HYDROL	OGY								
Wetland Hy	drology Indicate	ors:							
-	cators (minimum		required: check	all that a	(vlaa		Seco	ndary Indicators (m	inimum of two required
	Water (A1)	0. 0			Fauna (B	(13)	<u>00001</u>	Surface Soil Cracks	•
	iter Table (A2)				uatic Plar			Drainage Patterns	• •
X Saturation	` '					Odor (C	1)	Dry-Season Water	
	larks (B1)						Living Roots	Crayfish Burrows (0	, ,
Sedime	nt Deposits (B2)			(C3)				. '	n Aerial Imagery (C9)
X Drift De	posits (B3)			Presenc	e of Red	uced Iron	(C4)	Stunted or Stressed	d Plants (D1)
	at or Crust (B4)			Recent	Iron Redu	uction in 1	Filled Soils	Geomorphic Position	on (D2)
Iron Dep	osits (B5)			(C6)			X	FAC-Neutral Test (D5)
	on Visible on Aeria		· · · · · · · · · · · · · · · · · · ·	_	ck Surfac			•	
	Vegetated Conca		ce (B8)	_	or Well Da				
X Water-S	tained Leaves (B9))		Other (E	Explain in	Remarks	5)		
Field Obse	vations:								
Surface wat		Yes	No	X	Depth (
Water table		Yes	X No		Depth (,	6"	Indicators o	
Saturation p		Yes	X No		Depth (i	inches):	0"	hydrology	oresent? Y
(includes ca	pillary fringe)								
Describe red	corded data (strea	am gaug	e, monitoring wel	l, aerial p	ohotos, p	revious i	nspections), if ava	ailable:	
Remarks:		_							
-	-			outside of	f this data	a point. V	Vater-stained leav	ves demarcate low-	lying areas where
water is re	tained during rain	n/flood e	vents.						

Project/Site: I-69 Ohio River Crossing	Citv/	County: E	vansville/Van	derburgh Sampling Date:	7/24/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC (State:			DP-3-1-OUT
Investigator(s): Luke Eggering; Lindsey Postaski	<u> </u>			, Range: Section 3, Tow	nship 7S, Range 10W
Landform (hillslope, terrace, etc.):	t	Local re	elief (concave	, convex, none):	None
Slope (%): 0 Lat: 37.93578	3	Long:	-87.5225	14 Datum:	NAD-1983
Soil Map Unit Name: Newark silty clay loam		. <u> </u>	NWI C	lassification:	NA
Are climatic/hydrologic conditions of the site typical for	r this time of	f the year?	<u> </u>	If no, explain in remarks)	
Are vegetation , soil , or hydro	ology	significantly	disturbed? N	No Are "normal circ	umstances"
Are vegetation , soil , or hydro	ology	naturally pr	oblematic? N		present? Yes
SUMMARY OF FINDINGS		•	_	(If needed, explain any a	nswers in remarks.)
Hydrophytic vegetation present? Y					
Hydric soil present? N	<u> </u>	Is the	sampled are	a within a wetland?	N
Indicators of wetland hydrology present?	<u> </u>	If yes,	optional wetla	and site ID	
Remarks: (Explain alternative procedures here or in a	separate re	port.)		_	
	•				
This is an upland area located south of I-69 and north	of Eagle Cr	eek. WOTU	S 2018 ID: W	TL-01	
VEGETATION Use scientific names of plant	 ts.				
·	Absolute	Dominant	Indicator	Dominance Test Works	sheet
<u>Tree Stratum</u> (Plot size: 30' diameter)	% Cover	Species	Status	Number of Dominant Spec	cies
1 Acer saccharinum	30	Y	FACW	that are OBL, FACW, or FA	AC: 2 (A)
2				Total Number of Domir	
3				Species Across all Stra	``
5				Percent of Dominant Specthat are OBL, FACW, or FA	
	30	= Total Cov	er	that are obe, interv, or in	(7.0.2)
Sapling/Shrub stratum (Plot size: 15' diameter)	•		Prevalence Index Work	sheet
1			<u></u> .	Total % Cover of:	
2				' <u> </u>	x 1 =0
3				' <u> </u>	x 2 = 64
4				' <u> </u>	x 3 = 186
5	0	= Total Cov	er	· —	x 4 = <u>8</u> x 5 = 0
Herb stratum (Plot size: 5' diameter)	- Total Gov	OI .	· —	(A) 258 (B)
1 Toxicodendron radicans	60	Y	FAC	Prevalence Index = B/A	· · · — · · ·
2 Convolvulus arvensis	30	Y	NI		
3 Laportea canadensis	2	N	FACW	Hydrophytic Vegetation	n Indicators:
4 Campsis radicans	2	N	FACU	Rapid test for hydror	ohytic vegetation
5 Ampelopsis cordata	2	N	FAC	X Dominance test is >	
6				X Prevalence index is:	≤3.0*
				Morphological adapt	
8				supporting data in R separate sheet)	emarks or on a
10				Problematic hydroph	nytic vegetation*
-	96	= Total Cov	er	(explain)	iyaa ragataaan
Woody vine stratum (Plot size: 30' diameter)	•		*Indicators of hydric soil and	wetland hydrology must be
1				present, unless distu	
2				Hydrophytic	
	0	= Total Cov	er	vegetation present?	,
Pomarke: (Include photo numbers here or on a congr	ato choot)				
Remarks: (Include photo numbers here or on a separa The silver maples (<i>Acer saccharinum</i>) are rooted		nd This dat	a noint is nroy	rimal to a huttonhush (Cent	halanthus occidentalis)
fringe along Eagle Creek.	in the wetter	na. mo dat	a point to prov	amario a battoribaon (Copi	ididinindo ocoidornano)

 SOIL
 Sampling Point:
 DP-3-1-OUT

Profile Desc	cription: (Descr	ibe to th	e depth needed	to docu	ment the	indicat	or or confirm the a	bsence of indicators.)	
Depth	Matrix		Redox Features						
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks	
0-4	2.5Y 5/2	100					Silt loam		
4-16	10YR 5/3	95	2.5Y 6/1	5	С	М	Silt loam		
16-20	2.5Y 6/1	80	2.5 6/1	20	С	M			
16-20	2.51 0/1	80	2.5 6/ 1	20	C	IVI	Silt clay loam		
#T 0 0							10 : 441		
*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix									
Hydric Soil Indicators: Indicators for Problematic Hydric Soils: Histisol (A1) Sandy Gleyed Matrix (S4) Coast Prairie Redox (A16) (LRR K, L, R)									
	isol (A1)					(S4)		rie Redox (A16) (LRR K, L, R)	
	ic Epipedon (A2)			dy Redo	. ,			ce (S7) (LRR K, L)	
	ck Histic (A3)			•	trix (S6)			anese Masses (F12) (LRR K, L, R)	
	rogen Sulfide (A			-	ky Minera			ow Dark Surface (TF12)	
	tified Layers (A5))			ed Matrix		Other (exp	ain in remarks)	
	n Muck (A10)				atrix (F3)				
	leted Below Dark		· · · —		Surface	. ,			
	ck Dark Surface (,			ark Surfa	. ,		f hydrophytic vegetation and wetland	
	dy Mucky Minera	. ,		lox Depr	essions ((F8)	hydrology n	nust be present, unless disturbed or	
5 cr	n Mucky Peat or	Peat (S3)					problematic	
Restrictive	Layer (if observe	ed):							
Type: N	one						Hydric soil p	resent? N	
Depth (inche	es): N/A				•				
Remarks:					•				
ixemarks.									
LIVEROLO	201								
HYDROLO									
1	drology Indicate								
		of one is	required; check					ry Indicators (minimum of two required)	
	Water (A1)				Fauna (B	•		rface Soil Cracks (B6)	
	ter Table (A2)				uatic Plar			ainage Patterns (B10)	
Saturation						Odor (C1		y-Season Water Table (C2)	
	arks (B1)				l Rhizosp	heres on		ayfish Burrows (C8)	
	t Deposits (B2)			(C3)				turation Visible on Aerial Imagery (C9)	
	osits (B3)					iced Iron		unted or Stressed Plants (D1)	
	t or Crust (B4)				ron Redu	ction in T		eomorphic Position (D2)	
	osits (B5)			(C6)			<u>X</u> FA	C-Neutral Test (D5)	
	on Visible on Aeria				ck Surfac				
	Vegetated Conca		ce (B8)		or Well Da	` ,			
Water-S	tained Leaves (B9)		Other (E	xplain in	Remarks)		
Field Obser									
Surface water		Yes	No No	Х	Depth (i				
Water table		Yes	No	X	Depth (i		>20	Indicators of wetland	
Saturation p		Yes	No	Х	Depth (i	nches):	>20	hydrology present? N	
	pillary fringe)								
Describe red	orded data (strea	am gaug	e, monitoring well	, aerial p	hotos, p	revious ir	nspections), if availa	ble:	
Remarks:									
This area	does not appear	to remair	n saturated for lor	ig duration	ons. The	area rec	eives infrequent ove	erflow flooding from Eagle Creek.	

Project/Site: I-69 Ohio River Crossing	City/	ty/County: Evansville/Vanderburgh Sampling Date: 7/24/2018				
Applicant/Owner: INDOT (Des#:1601700); KYTC (K	YTC#:2-10	088) State: Indiana Sampling Point: DP				DP-3-2-IN
Investigator(s): Luke Eggering; Lindsey Postaski		Se	ction, Township	o, Range:	Section 3, Towns	ship 7S, Range 10W
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none): None				
Slope (%): 0 Lat: 37.93726		Long: -87.52086 Datum: NAD-1983				
Soil Map Unit Name: Newark silty clay loam		_	NWI (Classificatio	on:	NA
Are climatic/hydrologic conditions of the site typical for	this time of	the year	? <u>Y</u> ((If no, expla	ain in remarks)	
Are vegetation, soil, or hydrole	ogy	significar	ntly disturbed? I	No	Are "normal circur	nstances"
Are vegetation, soil, or hydrole	ogy	naturally	problematic? I	No		present? Yes
SUMMARY OF FINDINGS		1		(If need	ed, explain any an	swers in remarks.)
Hydrophytic vegetation present? Y	_					
Hydric soil present? Y	_	ls th	ne sampled are	ea within a	wetland?	<u>Y</u>
Indicators of wetland hydrology present? Y	-	If ye	es, optional wetl	land site ID		
Remarks: (Explain alternative procedures here or in a s	eparate re	port.)				
This is a bottomland hardwood forest swale located sou	uth of I-69 a	and north	of Eagle Creek	c. During ra	in events, the wetl	and likely receives
runoff from I-69 and overflow flooding from Eagle Creel	k. WOTUS	2018 ID:	WTL-01	_		-
VEGETATION Use scientific names of plants	 3.					
	Absolute	Domina	nt Indicator	Domina	ance Test Worksh	ieet
<u>Tree Stratum</u> (Plot size: <u>30' diameter</u>)	% Cover	Specie			of Dominant Specie	
1 Acer negundo	70	- <u>Y</u>	FAC		OBL, FACW, or FAC	``´
2 Acer rubrum 3	10	N	FAC		Number of Domina cies Across all Strate	
4		-			of Dominant Specie	
5		· 				C: 100.00% (A/B)
	80	= Total C	over			
Sapling/Shrub stratum (Plot size: 15' diameter)		•			ence Index Works	heet
1					Cover of:	4
2 3				OBL sp		1 = 0 0
4		-		FAC sp		3 = 240
5			_	FACU s		4 = 0
	0	= Total C	over	UPL sp	ecies 0 x	5 = 0
Herb stratum (Plot size: 5' diameter)				Column	totals 80 (A	A) 240 (B)
1				Prevale	nce Index = B/A =	3.00
2						
3					hytic Vegetation oid test for hydroph	
5					minance test is >50	-
6					valence index is ≤3	
7				— Mor	rphological adaptat	tions* (provide
8					porting data in Rei	
9					arate sheet)	
10		T-1-10			blematic hydrophy	tic vegetation*
Woody vine stratum (Plot size: 30' diameter)	0	= Total C	over		plain)	
1					ors of hydric soil and w present, unless disturb	vetland hydrology must be
2					drophytic	- Ca or problemate
	0	= Total C	over	_	jetation	
				pre	sent? Y	_
Remarks: (Include photo numbers here or on a separat				_		
The forest floor is covered with leaf litter and tree de	ebris. The I	herb strat	um is sparsely	vegetated.		

SOIL Sampling Point: DP-3-2-IN

Profile Des	cription: (Descr	ibe to th	-			e indicat	or or confirm th	<u>ne absence</u> o	f indicators.)
Depth	<u>Matrix</u>		Red	dox Feat	tures				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture		Remarks
0-4	10YR 4/1	95	10YR 5/6	5	С	М	Silt clay loam		
4-12	10YR 5/3	50	10YR 6/1	50	С	М	Silt clay loam		
12-20	7.5YR 5/4	60	7.5YR 4/2	40	С	М	Silt clay loam		
12-20	7.511(5/4	- 00	7.511(4/2	70	-	IVI	Ont day loan		
*Type: C = (Concentration, D :	= Deplet	ion, RM = Reduc	ed Matrix	x, MS = N	Masked S	and Grains.	**Location: P	L = Pore Lining, M = Matrix
	oil Indicators:		,		, -				tic Hydric Soils:
_	tisol (A1)		Sar	ndy Gley	ed Matrix	(S4)			(A16) (LRR K, L, R)
	tic Epipedon (A2)			ndy Redo		. ,	Dark Sı	urface (S7) (L	RR K, L)
Bla	ck Histic (A3)		Stri	pped Ma	atrix (S6)		Iron-Ma	anganese Mas	sses (F12) (LRR K, L, R)
Hyd	drogen Sulfide (A4	4)	Loa	my Muc	ky Minera	al (F1)	Very Sh	nallow Dark S	urface (TF12)
Stra	atified Layers (A5))	Loa	my Gley	ed Matrix	x (F2)	Other (explain in rem	arks)
2 cr	m Muck (A10)		X Dep	oleted Ma	atrix (F3)	1			
Dep	oleted Below Dark	Surface	e (A11)Red	dox Dark	Surface	(F6)			
	ck Dark Surface (,	Dep	oleted Da	ark Surfa	ce (F7)			ytic vegetation and wetland
Sar	ndy Mucky Minera	ıl (S1)	Red	dox Depr	ressions	(F8)	hydrolog	gy must be pr	esent, unless disturbed or
5 cr	m Mucky Peat or	Peat (S3	<u> </u>					prol	olematic
Restrictive	Layer (if observe	ed):							
	one	•					Hydric so	il present?	Υ
Depth (inche	es): N/A				_		-	-	
Remarks:					_	ļ			
	thin lawar of loof	littar an i	ton of the saille av	urface T	'hia laaati	an mat th	a danlated mate	iv (E2) indicat	•
THEIE IS A	thin layer of leaf	iillei oii i	top of the soils st	illace. I	ilis locali	on met u	ie depieted mati	ix (F3) illulcat	oi.
HYDROLO	nev .								
-	drology Indicate		and the state of the state of	-11 414 -					
	cators (minimum	of one is	required; check			40)		-	ors (minimum of two required)
	Water (A1)				Fauna (B	,	<u> X</u>	Surface Soil	` '
	iter Table (A2)				uatic Plar			Drainage Pat	
Saturation	on (A3) larks (B1)					Odor (C	Living Roots X		Water Table (C2)
	nt Deposits (B2)			(C3)	u Kilizosp	nieres on	Living Roots X		sible on Aerial Imagery (C9)
X Drift Dep					e of Redi	uced Iron	(C4) —		ressed Plants (D1)
	at or Crust (B4)						illed Soils	Geomorphic	
	oosits (B5)			(C6)	non reac	200011 111 1		FAC-Neutral	
	on Visible on Aeria	ıl Imager	v (B7)	• ' '	ick Surfac	e (C7)			. 551 (2-5)
	Vegetated Conca				or Well Da				
	tained Leaves (B9		` '	_ ~		Remarks)		
Field Obser	vations:	-		•					
Surface wat		Yes	No	X	Depth (i	inches):			
Water table		Yes	No	X	Depth (i		>20	Indicat	ors of wetland
Saturation p		Yes	No	Х	Depth (i		>20	hydro	logy present? Y
(includes ca	pillary fringe)				_				
Describe red	corded data (strea	am gaug	e, monitoring wel	l, aerial p	ohotos, p	revious ii	nspections), if av	ailable:	
	`	0 0					,		
Remarks:									
Surface so	oil cracks are pres	sent thro	ughout the wetlar	nd. Tree	debris ar	nd trash a	are present in the	e wetland, like	ly from overflow flooding from
							•		
Eagle Cre	ek and the Ohio F	River.					·		

Project/Site: I-69 Ohio River Crossing	City/0	County: Ev	ansville/Vand	derburgh	Sampling Date:	7/24/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC (#2-	1088)	State:	Indiar	na	Sampling Point:	DP-3-2-OUT
Investigator(s): Luke Eggering; Lindsey Postaski		Section	on, Township	, Range:	Section 3, Town	ship 7S, Range 10W
Landform (hillslope, terrace, etc.):		Local re	lief (concave,	, convex, r	none):	None
Slope (%): 2 Lat: 37.93745		Long:	-87.5205	59	Datum:	NAD-1983
Soil Map Unit Name: Borrow pits			NWI C	lassificatio	on:	NA
Are climatic/hydrologic conditions of the site typical for this	s time of	the year?	<u>Y</u> (I	If no, expla	ain in remarks)	
Are vegetation, soil, or hydrolog	y:	significantly	disturbed? N	<u>lo</u>	Are "normal circu	mstances"
Are vegetation , soil , or hydrolog	у	naturally pro	oblematic? N	lo		present? Yes
SUMMARY OF FINDINGS				(If need	ed, explain any ar	nswers in remarks.)
Hydrophytic vegetation present? N						
Hydric soil present? Y		Is the	sampled area	a within a	wetland?	N
Indicators of wetland hydrology present? N		If yes,	optional wetla	and site ID		
Remarks: (Explain alternative procedures here or in a sep	parate rep	oort.)				
			2 0040 ID 14	-		
This is an upland area located south of I-69 and north of E	Eagle Cre	eek. WOTUS	5 2018 ID: W	I L-01		
VEGETATION Use scientific names of plants.						
A	bsolute	Dominant	Indicator	Domina	ance Test Worksl	neet
(11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 Cover	Species	Status		of Dominant Speci	
1 Populus deltoides	70	Y	FAC		OBL, FACW, or FA	``
					Number of Domina cies Across all Strat	
4					of Dominant Speci	
5					OBL, FACW, or FA	
	70	= Total Cove	er			` '
Sapling/Shrub stratum (Plot size: 15' diameter)	-			Prevale	ence Index Works	sheet
1 Robinia pseudoacacia	40	Y	FACU		Cover of:	
2 Maclura pomifera	30	Y	FACU	OBL sp		1 = 0
3				FACW	· —	2 = 0
5				FAC sp		4 = 280
	70	= Total Cove	er er	UPL spe		5 = 0
Herb stratum (Plot size: 5' diameter)				Column		A) 505 (B)
1 Toxicodendron radicans	5	Υ	FAC	Prevale	nce Index = B/A =	3.48
2						
3					hytic Vegetation	
4				I ——	oid test for hydropl	
5					ninance test is >5 valence index is ≤	
7					phological adapta	
8					porting data in Re	**
9					arate sheet)	
10				Pro	blematic hydrophy	tic vegetation*
	5 :	= Total Cove	er	(ext	olain)	
Woody vine stratum (Plot size: 30' diameter)					•	vetland hydrology must be
					present, unless disturb drophytic	ped or problematic
	0 :	= Total Cove	er	-	jetation	
	5	101010000	. .		sent? N	
Remarks: (Include photo numbers here or on a separate s	sheet)			•		
Ther herb stratum is minimally vegetated due to shad	ing from	the overstor	y. The vegeta	ation at thi	is location is prima	arily >6ft tall.

SOIL Sampling Point: DP-3-2-OUT

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the absen	ce of indicators.)
Depth Matrix Redox Features						,		
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
0-4	10YR 5/2	98	10YR 6/6	2	С	М	Silt loam	
4-20	7.5YR 5/6	100	-		 		Silt loam	
7 20	7.0110.0	100		 	 		Oilt IOaili	
				ļ!	├ ──			
		<u> </u>			<u> </u>			
*T C = (Danleti	: - DM - Doduce	! Matrix	140 - N	1kad C	Year of Oresina **Location	Di - Dara Lining M = Motrix
		= Depieu	ion, RM = Reduce	30 Manix	(, IVIS = IV	/laskeu c		on: PL = Pore Lining, M = Matrix
_	oil Indicators:		Son	-by Claye	- d Matrix	- (04)		ematic Hydric Soils:
	tisol (A1)				ed Matrix	((54)		dox (A16) (LRR K, L, R)
	tic Epipedon (A2)			ndy Redo	. ,		Dark Surface (S	/) (LRR K, L) Masses (F12) (LRR K, L, R)
	ck Histic (A3)	4)			itrix (S6) kv. Minor			
	drogen Sulfide (A	•		-	ky Minera		Other (explain in	rk Surface (TF12)
	atified Layers (A5))			ed Matrix		Other (explain ii	remarks)
	m Muck (A10) oleted Below Dark	Surface			atrix (F3) Surface			
	ck Dark Surface (· · · · · · · · · · · · · · · · · · ·		ark Surfa	, ,	*I	
	ndy Mucky Minera	•			essions (. ,		rophytic vegetation and wetland be present, unless disturbed or
	n Mucky Minera			10x Debi	essions ((Fo)	Hydrology must i	problematic
			·)					рговетнанс
	Layer (if observe	ed):					·	
- · · · · · · · · · · · · · · · · · · ·	one				_		Hydric soil preser	nt? <u>Y</u>
Depth (inche	es): N/A				=			
Remarks:								
	well drained at this	s location	n.					
HYDROLO	OGY							
	drology Indicate	ors:						
-			required; check	all that a	nnlv)		Secondary Inc	dicators (minimum of two required)
	Water (A1)	OI OIIC IS	required, crice		Fauna (B	13)	· · · · · · · · · · · · · · · · · · ·	Soil Cracks (B6)
	iter Table (A2)				uatic Plar			e Patterns (B10)
Saturation	` '				en Sulfide			son Water Table (C2)
	larks (B1)							Burrows (C8)
Sedimer	nt Deposits (B2)			(C3)				on Visible on Aerial Imagery (C9)
	posits (B3)				e of Redu	uced Iron		or Stressed Plants (D1)
Algal Ma	at or Crust (B4)			Recent I	ron Redu	iction in T	illed Soils Geomor	phic Position (D2)
Iron Dep	oosits (B5)			(C6)			FAC-Ne	utral Test (D5)
	on Visible on Aeria		· · · · · <u> · · · · · · · · · · · ·</u>	-	ck Surfac			
	Vegetated Conca		ce (B8)	_	or Well Da			
Water-S	tained Leaves (B9)		Other (E	explain in	Remarks		
Field Obser								
Surface wat	•	Yes	No	X	Depth (i			
Water table		Yes	No		Depth (i			dicators of wetland
Saturation p		Yes	No	Х	Depth (i	nches):	>20 h	ydrology present? N
	pillary fringe)							
Describe red	corded data (strea	am gauge	e, monitoring well	, aerial p	hotos, p	revious ii	nspections), if available:	
Remarks:			_					
This data	point is moderate	ly well dr	ained.					

Project/Site: I-69 Ohio River Crossing	City/	County:	Evansville/Van	derburgh Sampling Date:	7/24/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC (KYTC#:2-1	088) State	: India	na Sampling Point:	DP-3-3-IN
Investigator(s): Luke Eggering; Lindsey Postaski		Sec	tion, Township	o, Range: Section 3, Tov	vnship 7S, Range 10W
Landform (hillslope, terrace, etc.):	t	Local	relief (concave	, convex, none):	None
Slope (%): 0 Lat: 37.93726	3	Long:	-87.5208	86 Datum:	NAD-1983
Soil Map Unit Name: Newark silty clay loam			NWI C	Classification:	NA
Are climatic/hydrologic conditions of the site typical for	r this time of	f the year?	<u> </u>	If no, explain in remarks)	
Are vegetation , soil , or hydro	ology	significant	ly disturbed? N	No Are "normal cire	cumstances"
Are vegetation , soil , or hydro	ology	naturally p	oroblematic? N		present? Yes
SUMMARY OF FINDINGS		•		(If needed, explain any	answers in remarks.)
Hydrophytic vegetation present? Y	_				
Hydric soil present?	_	Is the	e sampled are	a within a wetland?	Y
Indicators of wetland hydrology present?	<u>_</u>	If yes	s, optional wetla	and site ID	
Remarks: (Explain alternative procedures here or in a	separate re	port.)			
This is a bottomland hardwood forest swale located so			of Eagle Creek	. During rain events, the w	etland likely receives
runoff from I-69 and overflow flooding from Eagle Cree				g	
VEGETATION Use scientific names of plant	ts.				
,	Absolute	Dominan	t Indicator	Dominance Test Work	sheet
<u>Tree Stratum</u> (Plot size: 30' diameter)	% Cover	Species	Status	Number of Dominant Spe	cies
1 Acer rubrum	70	Y	FAC	that are OBL, FACW, or F	FAC: 7 (A)
2 Salix nigra	30	<u> Y</u>	OBL	Total Number of Domi	
3				Species Across all St	. ,
5				Percent of Dominant Spetthat are OBL, FACW, or F	
	100	= Total Co	ver		/\te. <u>\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \</u>
Sapling/Shrub stratum (Plot size: 15' diameter)	•		Prevalence Index Wor	ksheet
1 Fraxinus pennsylvanica	5	Y	FACW	Total % Cover of:	
2 Ulmus americana	5	Y	FACW	OBL species 30	x 1 = 30
3				FACW species 22	x 2 = 44
5				FAC species 75 FACU species 10	$\begin{array}{c} x 3 = & 225 \\ x 4 = & 40 \end{array}$
3	10	= Total Co	ver	UPL species 0	x = 5 = 0
Herb stratum (Plot size: 5' diameter)			Column totals 137	(A) 339 (B)
1 Campsis radicans	10	Υ	FACU	Prevalence Index = B/A	- · · · —— · · ·
2 Toxicodendron radicans	5	Υ	FAC		
3 Fraxinus pennsylvanica	5	Υ	FACW	Hydrophytic Vegetation	n Indicators:
4 Laportea canadensis	5	Υ	FACW	Rapid test for hydro	. , .
5 Carex grayi	2	N	FACW	X Dominance test is >	
6				X Prevalence index is	
8				Morphological adap supporting data in F	
9				separate sheet)	Cemarks or on a
10				Problematic hydrop	hytic vegetation*
	27	= Total Co	ver	(explain)	, ,
Woody vine stratum (Plot size: 30' diameter 1)	•		_	d wetland hydrology must be urbed or problematic
2				Hydrophytic	
	0	= Total Co	ver	vegetation present?	Y
Remarks: (Include photo numbers here or on a separa	ate sheet)			•	
The forest floor is covered with leaf litter and tree	debris. The	herb stratu	ım is minimally	vegetated.	

SOIL Sampling Point: DP-3-3-IN

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the	absence of indicators.)
Depth	<u>Matrix</u>		Red	dox Feat	ures			
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
0-7	10YR 4/1	95	10YR 5/6	5	С	М	Silt loam	
7-16	2.5Y 5/2	80	10YR 6/6	20	С	М	Silt loam	
			101100/0	20		IVI		
16-20	2.5Y 4/1	100					Silt loam	
*Tvpe: C = 0	Concentration, D :	= Depleti	ion. RM = Reduc	ed Matrix	k. MS = N	/lasked S	and Grains. **	*Location: PL = Pore Lining, M = Matrix
	oil Indicators:		,		, -			r Problematic Hydric Soils:
_	tisol (A1)		Sar	ndv Glev	ed Matrix	(S4)		airie Redox (A16) (LRR K, L, R)
	tic Epipedon (A2)			ndy Redo		(01)		face (S7) (LRR K, L)
	ck Histic (A3)			•	trix (S6)			ganese Masses (F12) (LRR K, L, R)
	drogen Sulfide (A4	1)			ky Minera	al (E1)		llow Dark Surface (TF12)
	atified Layers (A5)			-	ed Matri			plain in remarks)
	• , ,	,			atrix (F3)		Other (ex	DP-3-3-IN
	m Muck (A10)	Curtoss			, ,			DF-3-3-IN
	oleted Below Dark				Surface	. ,		
	ck Dark Surface (,			ark Surfa	. ,		of hydrophytic vegetation and wetland
	ndy Mucky Minera	` '		lox Depr	essions	(F8)	hydrology	must be present, unless disturbed or
5 cr	m Mucky Peat or	Peat (S3	3)					problematic
Restrictive	Layer (if observe	ed):						
	one	•					Hydric soil	present? Y
Depth (inche	es): N/A				_		-	· —
	<u> </u>				-			
Remarks:				_				
There is a	thin layer of leaf	litter on t	top of the soil's su	urface. T	his locati	on met th	ne depleted matrix	(F3) indicator.
HYDROL	OGY							
Wetland Hy	drology Indicate	ors:						
-	cators (minimum		required: check	all that a	(vlag		Second	dary Indicators (minimum of two required
	Water (A1)	0. 0			Fauna (B	(13)		Surface Soil Cracks (B6)
	iter Table (A2)			- '	uatic Plar	,		Orainage Patterns (B10)
Saturation						Odor (C1		Ory-Season Water Table (C2)
	larks (B1)							Crayfish Burrows (C8)
	nt Deposits (B2)			(C3)	a 1 (11)200p	7110100 011		Saturation Visible on Aerial Imagery (C9)
X Drift Dep					e of Redi	uced Iron		Stunted or Stressed Plants (D1)
	at or Crust (B4)						· ·	Geomorphic Position (D2)
	osits (B5)			(C6)	iioii iteat			FAC-Neutral Test (D5)
	on Visible on Aeria	l Imagen	v (B7)	- ' '	ck Surfac	e (C7)		Ao-Neutral Test (D3)
	Vegetated Conca			-	or Well Da			
	tained Leaves (B9			_		Remarks)	
	`	,					, <u> </u>	
Field Obser		Voc	No	~	Donth /	inchas).		
Surface wat Water table		Yes	No No	$\frac{X}{X}$	Depth (i Depth (i	,	>20	Indicators of wetland
Saturation p		Yes Yes	No	$\frac{\lambda}{X}$	Depth (i		>20	hydrology present?
	pillary fringe)	169			_ Debui (i		- 20	ilydrology present!
					1 .			
Describe red	corded data (strea	am gaug	e, monitoring wel	l, aerial p	photos, p	revious ir	nspections), if avail	lable:
D								
Remarks:								
			ughout the wetlar	nd. Tree	debris ar	nd trash a	are present in the v	wetland, likely from overflow flooding fror
⊨agle Cre	ek and the Ohio F	kıver.						

Project/Site: I-69 Ohio River Crossing	City/County: Ev	/ansville/Vanderb	ourgh Sampling Date:	7/24/2018							
Applicant/Owner: INDOT (Des#:1601700); KYTC (#2-1088		Indiana	Sampling Point:	DP-3-3-OUT							
Investigator(s): Luke Eggering; Lindsey Postaski		on, Township, Ra	inge: Section 3, Town	nship 7S, Range 10W							
Landform (hillslope, terrace, etc.):	Local re	lief (concave, co	nvex, none):	None							
Slope (%): 2 Lat: 37.93830	Long:	-87.51860	Datum:	NAD-1983							
Soil Map Unit Name: Borrow pits		NWI Class	sification:	NA							
Are climatic/hydrologic conditions of the site typical for this time	ne of the year?	Y (If no	, explain in remarks)								
Are vegetation, soil, or hydrology	significantly	disturbed? No	Are "normal circu	ımstances"							
Are vegetation , soil , or hydrology	naturally pro	oblematic? No		present? Yes							
SUMMARY OF FINDINGS (If needed, explain any answers in remarks.)											
Hydrophytic vegetation present? Y											
Hydric soil present? N	Is the	Is the sampled area within a wetland?									
Indicators of wetland hydrology present? N	If yes,	optional wetland	tland site ID								
Remarks: (Explain alternative procedures here or in a separat	te report.)										
	0 1 14 0 14		~.								
This is an upland area located south of I-69 and north of Eagle	e Creek. WOTUS	5 2018 ID: WIL-	U1								
VEGETATION Use scientific names of plants.											
Absol	lute Dominant	Indicator D	ominance Test Works	heet							
<u>Tree Stratum</u> (Plot size: <u>30' diameter</u>) % Co	•		umber of Dominant Spec								
1 Acer rubrum 90	<u>Y</u>	FAC the	at are OBL, FACW, or FA	`` '							
			Total Number of Domina Species Across all Stra								
4		—— I _B	ercent of Dominant Spec								
5			at are OBL, FACW, or FA								
90	= Total Cove			` ` ′							
Sapling/Shrub stratum (Plot size: 15' diameter)		P	revalence Index Work	sheet							
1			otal % Cover of:								
			· —	(1 = <u>0</u>							
			· —	<pre></pre>							
5			· —	$4 = \frac{270}{0}$							
0	= Total Cove			c 5 = 0							
Herb stratum (Plot size: 5' diameter)		С	olumn totals 135	(A) 360 (B)							
1 Laportea canadensis 40) Y	FACW P	revalence Index = B/A =	2.67							
2 Fraxinus pennsylvanica 5	N	FACW									
3		H	ydrophytic Vegetation								
			Rapid test for hydrop X Dominance test is >5	, ,							
5			X Prevalence index is ≤								
7		<u></u>	Morphological adapta								
8			supporting data in Re								
9			separate sheet)								
10			Problematic hydroph	ytic vegetation*							
45 Was devices at a town (DL) is a 20 U.	= Total Cove	er	(explain)								
Woody vine stratum (Plot size: 30' diameter)		,	*Indicators of hydric soil and								
			present, unless distur Hydrophytic	bed or problematic							
	= Total Cove		vegetation								
			present? Y								
Remarks: (Include photo numbers here or on a separate shee	,	•									
The green ash (Fraxinus pennslyvanica) is only present in	n unmowed area	s. All trees are ro	ooted within the wetland	boundary.							
				l							

 SOIL
 Sampling Point:
 DP-3-3-OUT

Profile Desc	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm th	ne absence	of indicators.)			
Depth <u>Matrix</u>		Red	Redox Features									
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	е	Remarks			
0-4	10YR 4/1	100					Sillt loam		Rock/fill inclusions			
4-12	10YR 5/4	80	10YR 5/2	20	С	М	Silt loam		Rock/fill inclusions			
	10111071		10111 0/2				One loans		1 teetu IIII II teiteeteite			
*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix												
		= Depleti	on, Rivi = Reduce	ed Matrix	t, IVIS = IV	lasked S			: PL = Pore Lining, M = Matrix			
	il Indicators:		0			(0.4)			matic Hydric Soils:			
	isol (A1)				ed Matrix	· · ·						
			dy Redox (S5) oped Matrix (S6)			Dark Surface (S7) (LRR K, L) Iron-Manganese Masses (F12) (LRR K, L, R)						
	ck Histic (A3)	1)		•	. ,	N (E4)		-				
	rogen Sulfide (A			-	ky Minera				Surface (TF12)			
	tified Layers (A5))			ed Matrix		Other (explain in re	emarks)			
	n Muck (A10)	Curtosa			atrix (F3)							
	leted Below Dark k Dark Surface (· · · · · · · · · · · · · · · · · · ·		Surface	. ,	41 11 4					
	dy Mucky Minera	,			ark Surfad essions (. ,			phytic vegetation and wetland			
	n Mucky Peat or	` '		юх Берг	essions ((6)	nyarolog		present, unless disturbed or roblematic			
		`)					ρ	Toblematic			
	Layer (if observ	ed):										
	ock/fill						Hydric so	oil present?	P <u>N</u>			
Depth (inche	es): 12"											
Remarks:												
Soils are well drained at this location. Soils are mixed. A restrictive layer of rock/fill was present at a depth of twelve inches.												
					,							
HYDROLO)GY											
Wetland Hy	drology Indicate	ors:										
1			required; check	all that a	nnlv)		Seco	ndary Indic	ators (minimum of two required)			
		01 0110 10	required, officers			13)	<u>0600</u>	-	bil Cracks (B6)			
	Surface Water (A1) Aquatic Fauna High Water Table (A2) True Aquatic Pl			•	,	-	_	Patterns (B10)				
Saturation					n Sulfide				n Water Table (C2)			
	arks (B1)		-				Living Roots		urrows (C8)			
	t Deposits (B2)			(C3)					Visible on Aerial Imagery (C9)			
	osits (B3)				e of Redu	iced Iron	(C4)	_	Stressed Plants (D1)			
Algal Ma	t or Crust (B4)			Recent I	ron Redu	ction in T	illed Soils	Geomorph	ic Position (D2)			
Iron Dep	osits (B5)			(C6)			X	FAC-Neutr	al Test (D5)			
Inundation	on Visible on Aeria	ıl Imager	/ (B7)	Thin Mu	ck Surfac	e (C7)		_				
Sparsely Vegetated Concave Surface (B8) Gauge or Well Data (D9)												
Water-St	ained Leaves (B9)		Other (E	xplain in	Remarks)					
Field Obser	vations:											
Surface water	•	Yes	No No	Х	Depth (i							
Water table		Yes	No	Х	Depth (i		>12		cators of wetland			
Saturation p		Yes	No	Х	Depth (i	nches):	>12	hyd	rology present? N			
(includes ca												
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:												
Domortics												
Remarks:	d io modet-1	والمراد	ad									
mis upian	d is moderately v	veli urain	eu.									

Project/Site: I-69 Ohio River Crossing	City/	County: E	vansville/Van	derburgh Sampling Date:	5/17/2019
Applicant/Owner: INDOT (Des#:1601700); KYTC (India		DP-3-4-IN
Investigator(s): Luke Eggering; Lindsey Postaski		Secti	on, Township	o, Range: Section 3, Tow	rnship 7S, Range 10W
Landform (hillslope, terrace, etc.):	t	Local re	elief (concave	e, convex, none):	None
Slope (%): 0 Lat: 37.93652	<u> </u>	Long:	-87.5232	29 Datum:	NAD-1983
Soil Map Unit Name: Newark silty clay loam			NWI C	Classification:	NA
Are climatic/hydrologic conditions of the site typical for	r this time of	the year?	Y (If no, explain in remarks)	
Are vegetation, soil, or hydro	ology	significantly	disturbed? N	No Are "normal circu	umstances"
Are vegetation , soil , or hydro	ology	naturally pr	oblematic? N	10	present? Yes
SUMMARY OF FINDINGS				(If needed, explain any a	answers in remarks.)
Hydrophytic vegetation present? Y					
Hydric soil present? Y		Is the	sampled are	ea within a wetland?	Υ
Indicators of wetland hydrology present? Y	_	If yes,	optional wetla	and site ID	
Remarks: (Explain alternative procedures here or in a	separate re	port.)			
This is an early-age successional bottomland hardwood	od wetland.	The area ha	s hydric soils	, hydrophytic vegetation, ar	nd the requisite
hydrology to be considered a wetland. WOTUS 2018 I	D: WTL-01				
VEGETATION Use scientific names of plant	ts.				
	Absolute	Dominant	Indicator	Dominance Test Works	sheet
<u>Tree Stratum</u> (Plot size: 30' diameter)	% Cover	Species	Status	Number of Dominant Spec	
1 Fraxinus pennsylvanica	80	<u>Y</u>	FACW	that are OBL, FACW, or FA	``
2 Populus deltoides	50 20	Y N	FAC	Total Number of Domin	
3 Acer negundo		IN		Species Across all Stra	``
5				Percent of Dominant Specthat are OBL, FACW, or FA	
	150	= Total Cov	er	, , , , ,	(**************************************
Sapling/Shrub stratum (Plot size: 15' diameter)			Prevalence Index Work	sheet
1				Total % Cover of:	
2				<u> </u>	x 1 = 0
3				· —	x 2 = 170
5				· —	x 3 = 270 x 4 = 0
	0	= Total Cov	er		x = 5 = 0
Herb stratum (Plot size: 5' diameter)			· —	(A) 440 (B)
1 Toxicodendron radicans	20	Υ	FAC	Prevalence Index = B/A	= 2.51
2 Acer negundo	20	Υ	FAC		
3 Carex intumescens	5	N	FACW	Hydrophytic Vegetation	n Indicators:
4				Rapid test for hydror	
5				X Dominance test is >5	
6		-		X Prevalence index is:	
8		-		Morphological adapt supporting data in Re	
9		-		separate sheet)	emarks of on a
10				Problematic hydroph	nytic vegetation*
	45	= Total Cov	er	(explain)	
Woody vine stratum (Plot size: 30' diameter 1)			*Indicators of hydric soil and present, unless distu	
2				Hydrophytic	
	0	= Total Cov	er	vegetation present? Y	/
				hieseiit: I	
Remarks: (Include photo numbers here or on a separa	ate sheet)				
The herb stratum is minimally vegetated.					

SOIL Sampling Point: DP-3-4-IN

Profile Desc	cription: (Descri	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm th	ne absence of i	ndicators.)
Depth	<u>Matrix</u>		Red	dox Feat	<u>ures</u>				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	9	Remarks
0-6	10YR 4/1	98	10YR 5/3	2	С	М	Silt loam		
6-20	10YR 5/2	80	2.5YR 6/6	20	С	М	Sandy loam		
	.0								
*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix									
		= Depleti	ion, RM = Reduce	ed Matrix	k, MS = N	/lasked S			= Pore Lining, M = Matrix
Hydric Soil Indicators: Indicators for Problematic Hydric Soils:									
	isol (A1)				ed Matrix	(S4)			(16) (LRR K, L, R)
	ic Epipedon (A2)			ndy Redo	` '			urface (S7) (LR	
	ck Histic (A3)			pped Ma	. ,			=	es (F12) (LRR K, L, R)
	rogen Sulfide (A4			-	ky Minera			nallow Dark Sur	
	tified Layers (A5))			ed Matrix		Other (explain in rema	
	n Muck (A10)				atrix (F3)				DP-3-3-IN
	leted Below Dark				Surface	` '			
	ck Dark Surface (,			ark Surfa	` ,	*Indicato	rs of hydrophyti	c vegetation and wetland
	dy Mucky Minera	` '		dox Depr	essions	(F8)	hydrolog	gy must be pres	sent, unless disturbed or
5 cr	n Mucky Peat or	Peat (S3						proble	ematic
Restrictive	Layer (if observe	ed):							
	one	,					Hvdric so	oil present?	Υ
Depth (inche					•		,	_	
					-				
Remarks:									
Soils were	sandy below six	inches a	ind there was wa	ter prese	nt in the	soil pit a	t eight inches.		
HYDROLO									
_	drology Indicate								
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Seco	ndary Indicator	s (minimum of two required)
Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface Soil Cr	acks (B6)
X High Wa	ter Table (A2)			True Aq	uatic Plar	nts (B14)	X	Drainage Patte	
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	1)	Dry-Season Wa	ater Table (C2)
Water M	arks (B1)			Oxidized	d Rhizosp	heres on	Living Roots X	Crayfish Burrov	ws (C8)
	t Deposits (B2)			(C3)					ole on Aerial Imagery (C9)
X Drift Dep				Presenc	e of Redu	uced Iron	(C4)	_	essed Plants (D1)
	t or Crust (B4)				ron Redu	iction in T	illed Soils	Geomorphic Po	, ,
	osits (B5)		(D-)	(C6)				FAC-Neutral Te	est (D5)
	on Visible on Aeria		· · · <u> </u>	-	ck Surfac	. ,			
	Vegetated Conca		ce (B8)	_	or Well Da				
wvater-S	tained Leaves (B9)		Other (E	xpiain in	Remarks)		
Field Obser									
Surface water		Yes	No No	X	Depth (i				
Water table		Yes	X No	X	Depth (i		8		rs of wetland
Saturation p		Yes	X No	X	Depth (i	ncnes):	0	hydrold	gy present? Y
(includes ca					_			<u> </u>	
Describe red	corded data (strea	am gaug	e, monitoring wel	l, aerial p	photos, p	revious i	nspections), if av	ailable:	
Domarka									
Remarks:	and that with a state	. ress=	t Ohio Divor over	flow floa:	dina th-	ro we de	not have been =	roundurates in th	no toot nit
แาร สรรมที	ned that without th	ie recen	COLID KIVELOVEL	HOW HOO	ang, mel	e would	not have been g	rounuwater in ti	ιο του hιτ

Project/Site: I-69 Ohio River Crossing	City/	County: E	Evansville/Van	derburgh S	ampling Date:	5/17/2019
Applicant/Owner: INDOT (Des#:1601700); KYTC (State			ampling Point:	DP-3-4-OUT
Investigator(s): Luke Eggering; Lindsey Postaski	,	Sec	tion, Township		· · · —	ship 7S, Range 10W
Landform (hillslope, terrace, etc.): Fla	t		elief (concave	_		None
Slope (%): 4 Lat: 37.93668	3	Long:	-87.5232		etum:	NAD-1983
Soil Map Unit Name: Newark silty clay loam		·		Classification	:	NA
Are climatic/hydrologic conditions of the site typical for	r this time of	the year?	<u> </u>	If no, explair	n in remarks)	
Are vegetation , soil , or hydro	ology	significant	ly disturbed? N	No A	re "normal circur	nstances"
Are vegetation , soil , or hydro			roblematic? N		are morman on our	present? Yes
SUMMARY OF FINDINGS	<u> </u>	,	_		d, explain any an	swers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present? N		Is the	sampled are	ea within a v	vetland?	N
Indicators of wetland hydrology present? N		If yes	, optional wetla	and site ID		
Remarks: (Explain alternative procedures here or in a	senarate re	nort)				
This datapoint lacked the requisite soils and hydrology	•	. ,	otland			
WOTUS 2018 ID: WTL-01	/ to be consi	ideled a we	zuanu.			
VEGETATION Use scientific names of plant	te .					
- Ose scientific flames of plant	Absolute	Dominan	t Indicator	Dominan	ce Test Worksh	eet
<u>Tree Stratum</u> (Plot size: 30' diameter)	% Cover	Species		Number of	f Dominant Specie	es
1 Maclura pomifera	70	Y	FACU		BL, FACW, or FAC	
2 Populus deltoides	30	Υ	FAC	Total N	umber of Domina	
3 Robinia pseudoacacia	20	N	FACU	Specie	es Across all Strat	a:(B)
4					Dominant Specie	
5	120	= Total Co		that are Of	BL, FACW, or FAC	C: 80.00% (A/B)
Sapling/Shrub stratum (Plot size: 15' diameter)	- Total Co	VCI	Prevalen	ce Index Works	heet
1 Acer negundo	15	Υ	FAC	Total % C		
2				OBL spec	cies 0 x	1 = 0
3				FACW sp	ecies 4 x	2 = 8
4				FAC spec		3 = 147
5	45	= Total Co		FACU spe		4 = 360
Herb stratum (Plot size: 5' diameter	15	= Total Co	ver	UPL spec		5 = 0 A) 515 (B)
·	4	Υ	FAC		ce Index = B/A =	3.60
1 Acer negundo 2 Carex intumescens	4		FACW	Fievalent	Se muex – B/A –	3.00
3		· 		Hydroph	ytic Vegetation	Indicators:
4			_		test for hydroph	
5				X Domi	nance test is >50	0%
6			_	Preva	alence index is ≤3	3.0*
7		-			hological adaptat	
8					orting data in Rer rate sheet)	marks or on a
10					ematic hydrophy	tic vegetation*
	8	= Total Co	ver	(expla		ne vegetation
Woody vine stratum (Plot size: 30' diameter)	1			,	retland hydrology must be
1					esent, unless disturb	
2				-	ophytic	
	0	= Total Co	ver	vege	tation	
Remarks: (Include photo numbers here or on a separa	ata abaat)			p. 66		_
Upland tree species become more dominant movi		from the w	etland			
Spland and opposed bosome more dominant movi	g up diope	W	. Suarra.			

SOIL Sampling Point: DP-3-4-OUT

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth	Matrix		Rec	dox Feat	<u>ures</u>			-	
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks	
0-6	10YR 5/3	100					Sillt loam		
6-16	10YR 5/4	98	10YR 6/8	2	С	М	Silt loam		
16-20	10YR 5/4	100					Sandy loam		
10-20	10111 3/4	100					Carlay Ioani		
*Tvne: C = 0	*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix								
	il Indicators:		011, 1 111	Ja 11.5	.,	140		ematic Hydric Soils:	
_	isol (A1)		San	dv Gleye	ed Matrix	(S4)		dox (A16) (LRR K, L, R)	
	ic Epipedon (A2)			dy Redo		. (5 .,	Dark Surface (S		
	ck Histic (A3)			-	trix (S6)			Masses (F12) (LRR K, L, R)	
	lrogen Sulfide (A	4)		•	ky Minera	al (F1)		irk Surface (TF12)	
	tified Layers (A5	,		-	ed Matrix		Other (explain in	, ,	
	n Muck (A10)	,			atrix (F3)			,	
	leted Below Dark	< Surface			Surface				
	ck Dark Surface (· · —		rk Surfa	` '	*Indicators of hydr	ophytic vegetation and wetland	
	dy Mucky Minera	•			essions	. ,		pe present, unless disturbed or	
	m Mucky Peat or	` '		•		,	, .,	problematic	
	Layer (if observe		<u></u>			ı		·	
Type: N		suj.					Hydric soil preser	nt? N	
Depth (inche					•		Hydrio 3011 proces.		
	107				-				
Remarks:									
Soils are r	noderately well d	rained at	this location.						
	201/								
HYDROLO									
_	drology Indicate								
		of one is	required; check a				· · · · · · · · · · · · · · · · · · ·	licators (minimum of two required)	
	Water (A1)				Fauna (B			Soil Cracks (B6)	
	ter Table (A2)				uatic Plar			Patterns (B10)	
Saturatio						Odor (C		son Water Table (C2)	
	arks (B1)				Rhizosp	heres on		Burrows (C8)	
	nt Deposits (B2)			(C3)	a of Dodu	rand Iron		on Visible on Aerial Imagery (C9)	
	oosits (B3) it or Crust (B4)			•		uced Iron	· ·	or Stressed Plants (D1) phic Position (D2)	
	osits (B5)			(C6)	ron Reud	ICUOII III I		utral Test (D5)	
	on Visible on Aeria	al Imagen			ck Surfac	• (C7)		uliai resi (Do)	
	Vegetated Conca				or Well Da				
	tained Leaves (B9					Remarks)		
Field Obser	•						, 		
Surface water		Yes	No	Χ	Depth (i	nches).			
Water table	•	Yes	No No	$\frac{\lambda}{X}$	Depth (i		>20 Inc	dicators of wetland	
Saturation p		Yes	No	$\frac{\lambda}{X}$	Depth (i			ydrology present? N	
	pillary fringe)	. =				,			
		-m gauge	monitoring well	aerial p	hotos, p	revious i	nspections), if available:		
D0001.20.23	01404 44.4 (5 2	AIII 9	, momog	, 401.5.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1000000107, 1. 0. 0. 0. 0. 0. 0.		
Remarks:									
The Ohio	River flood appro	ached th	is data point and	some flo	od debri	s was ne	arby.		
			·				•		

WETLAND FUNCTIONS & VALUES FORM

	Wetland I.D.:	Wetland 3	Project/Site:	I-69 Ohio River Crossing
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Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	3	Ponded/pooled water is present within the wetland. During rain events, the wetland likely receives runoff from I-69.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	3	Evidence of sediment on the vegetation is obvious as Ohio River floodwater receded.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	4	Although Eagle Creek is channelized, the adjacent wetland is stable because of the bottomland hardwoods.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	3	Animal signs were observed within the wetland (tracks, scat, burrows). Raccoon tracks were visible along the edge of ponded water. The noise and vehicle traffic on existing I-69 is the primary limiting factor for this function.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	2	Aquatic resource benefits are generally low except during flood events.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	2	The visual quality/aesthetics of this wetland is low as it is located south of I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland.

Total Score 17

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River Crossing	City/	County: E	vansville/Van	derburgh Sampling Date:	7/25/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC (KYTC#:2-10	088) State:	India	na Sampling Point:	DP-4A-1-IN
Investigator(s): Luke Eggering; Lindsey Postaski		Sect	ion, Township	, Range: Section 3, Tov	vnship 7S, Range 10W
Landform (hillslope, terrace, etc.):	t	Local r	elief (concave	, convex, none):	None
Slope (%): 0 Lat: 37.93405	5	Long:	-87.5253	32 Datum:	NAD-1983
Soil Map Unit Name: Water			NWI C	Classification:	NA
Are climatic/hydrologic conditions of the site typical for	this time of	f the year?	Y (If no, explain in remarks)	
Are vegetation, soil, or hydro	ology	significantly	y disturbed? N	No Are "normal circ	cumstances"
Are vegetation , soil , or hydro	ology	naturally p	roblematic?		present? Yes
SUMMARY OF FINDINGS				(If needed, explain any	answers in remarks.)
Hydrophytic vegetation present? Y	_				
Hydric soil present? Y	_	Is the	sampled are	a within a wetland?	<u>Y</u>
Indicators of wetland hydrology present? Y	_	If yes,	optional wetla	and site ID	
Remarks: (Explain alternative procedures here or in a This is a bottomland hardwood forest wetland parallel the Ohio River. This wetland has been altered by born WOTUS 2018 ID: WTL-57 VEGETATION Use scientific names of plant	to Eagle Crow pits and	eek. The ar			
,	Absolute	Dominant	Indicator	Dominance Test Work	sheet
Tree Stratum (Plot size: 30' diameter)	% Cover	Species	Status	Number of Dominant Spe	cies
1 Acer rubrum	80	Y	FAC	that are OBL, FACW, or F	AC: 4 (A)
2 Fraxinus pennsylvanica	30	<u> </u>	FACW	Total Number of Domi	
3 Salix nigra	25	N	OBL	Species Across all Str	``
5		-		Percent of Dominant Spe that are OBL, FACW, or F	
	135	= Total Cov	 /er	that are OBE, I AOVV, OF I	AO. 100.00% (A/B)
Sapling/Shrub stratum (Plot size: 15' diameter				Prevalence Index Wor	ksheet
1 Acer rubrum	15	Υ	FAC	Total % Cover of:	
2				· <u> </u>	x 1 = 25
3				· —	x 2 = 60
4				·	x 3 = 300
5	15	= Total Cov	/Or	FACU species 0 UPL species 0	$\begin{array}{ccc} x & 4 & = & & 0 \\ x & 5 & = & & 0 \end{array}$
Herb stratum (Plot size: 5' diameter)	- Total Cov	/CI	Column totals 155	(A) 385 (B)
1 Acer rubrum	5	Υ	FAC	Prevalence Index = B/A	· ' — ` '
2		<u>.</u>		Trevalence maex Birt	2.10
3				Hydrophytic Vegetatio	n Indicators:
4				Rapid test for hydro	
5				X Dominance test is >	
6				X Prevalence index is	≤3.0*
/				Morphological adap	**
8				supporting data in F separate sheet)	temarks or on a
10				Problematic hydrop	hytic vegetation*
	5	= Total Cov	/er	(explain)	ny no vogotanom
Woody vine stratum (Plot size: 30' diameter 1)	•			d wetland hydrology must be urbed or problematic
2				Hydrophytic	
	0	= Total Cov	/er	vegetation present?	Y
Demonstrative (Inchesion in the American Inchesion Inche	-4b4\			hieseiit:	
Remarks: (Include photo numbers here or on a separa The herb stratum is almost completely absent, prin		o shade and	d Ohio River fl	looding.	

 SOIL
 Sampling Point:
 DP-4A-1-IN

Profile Desc	cription: (Descr	ibe to th	e depth needed	to docu	ment the	indicat	or or confirm the	absence of indicators	.)
Depth	<u>Matrix</u>		Red	lox Feat	<u>ures</u>				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Ren	narks
0-12	10YR 5/1	100					Silt loam		
12-20	10YR 5/2	95	2.5Y 6/1	5	С	М	Silt loam		
12 20	101110/2	00	2.01 0/1			101	One loans		
± T 0 0		5						<u> </u>	
*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix Hydric Soil Indicators: Indicators for Problematic Hydric Soils:									
_	il Indicators:		•			(0.4)			
	isol (A1)				ed Matrix	(S4)		airie Redox (A16) (LRR	K, L, R)
	ic Epipedon (A2)			dy Redo	. ,			face (S7) (LRR K, L)	
	ck Histic (A3)	• `		oped Ma	. ,	. (= 4)		ganese Masses (F12) (L	•
	rogen Sulfide (A			-	ky Minera			Illow Dark Surface (TF12	2)
	tified Layers (A5))			ed Matrix		Other (ex	plain in remarks)	
	n Muck (A10)	0 (atrix (F3)				
	leted Below Dark		· · · —		Surface	. ,			
	ck Dark Surface (,			ark Surfa	. ,		of hydrophytic vegetation	
	dy Mucky Minera	` '		lox Depr	essions ((F8)	hydrology	must be present, unles	s disturbed or
5 cr	n Mucky Peat or	Peat (S3)					problematic	
Restrictive	Layer (if observ	ed):							
Type: N	one						Hydric soil	present? Y	
Depth (inche	es): N/A				•				
Remarks:					_				
There is a thin layer of leaf litter on top of the soil's surface. This location met the depleted matrix (F3) indicator.									
There is a	unin layer or lear	iillei oii i	op of the soils st	iiiace. Ii	iis iocati	on met u	ie depieted matrix	(1 3) Indicator.	
HYDROLO)CV								
1	drology Indicate						_		
		of one is	required; check					dary Indicators (minimur	n of two required)
	Water (A1)				Fauna (B	,		Surface Soil Cracks (B6)	
	ter Table (A2)				uatic Plar			Orainage Patterns (B10)	(00)
Saturation						Odor (C1		Ory-Season Water Table ((C2)
X Water M					Rnizosp	neres on		Crayfish Burrows (C8)	ol Ima a m a m . (CO)
	t Deposits (B2)			(C3)	o of Dodu	lood Iron		Saturation Visible on Aeria	• • , ,
X Drift Dep				i i		iced Iron		Stunted or Stressed Plants	
	t or Crust (B4)				ron Reau	iction in 1		Geomorphic Position (D2)	
	osits (B5) on Visible on Aeria	ıl İmaden	, (B7)	(C6)	ck Surfac	o (C7)	'	FAC-Neutral Test (D5)	
	Vegetated Conca		· · ·	i	or Well Da	. ,			
	ained Leaves (B9					Remarks	١		
	`	,		Other (E	хріант ін	rtemants	,		
Field Obser		Voc	No	~	Denth (nchec):			
Surface wate Water table	•	Yes Yes	No No	X	Depth (i Depth (i		>20	Indicators of wetla	and
Saturation p		Yes	No	X	Depth (i		>20	hydrology preser	
-	oillary fringe)	163			Pobul (I	1101103).	- 20	nyarology preser	··· <u> </u>
		m dalia	a monitoring well	aerial n	hotos n	revious is	nenections) if ava	ilahla.	
Describe 160	orucu uala (Silea	arri yauyi	s, monitoring well	, acııaı þ	ποιος, ρ	cvious II	nspections), if ava	iiaVIC.	
Remarks:									
	le point is located	near th	e edge of a borro	w pit. we	st of a ra	ised leve	ee that was exlude	d from wetland.	
	,		5 : ::::::0	,					

Project/Site: I-69 Ohio River Crossing	City/	County:	Evansville/Van	derburgh	Sampling Date:	7/25/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC (State			Sampling Point:	DP-4A-1-OUT
Investigator(s): Luke Eggering; Lindsey Postaski		Sec	ction, Township		· · · -	ship 7S, Range 10W
Landform (hillslope, terrace, etc.):			relief (concave	=		None
Slope (%): 1 Lat: 37.93396		Long:	-87.5252		Datum:	NAD-1983
Soil Map Unit Name: Water		_		Classification		NA
Are climatic/hydrologic conditions of the site typical for	this time of	the vear?			ain in remarks)	
Are vegetation , soil , or hydro		-	tly disturbed? N		Are "normal circu	metancee"
Are vegetation , soil , or hydro			problematic? N	_	Ale normal circu	present? Yes
SUMMARY OF FINDINGS		,	<u>-</u>	_	ed. explain anv ar	swers in remarks.)
Hydrophytic vegetation present? Y				, , , , , ,	, - p , -	
Hydric soil present? N	-	ls th	e sampled are	a within a	wetland?	N
Indicators of wetland hydrology present?	-		s, optional wetla		_	<u>··</u>
		•				
Remarks: (Explain alternative procedures here or in a	separate re	port.)				
This is an upland area between a fringe wetland of a b	orrow pit an	nd a bottor	nland hardwoo	d to the we	est. WOTUS 2018	ID: WTL-57
VEGETATION Use scientific names of plant						
Torra Object on the Aller (Diet single 2001 disposed on a linear control of the C	Absolute	Dominar			ance Test Worksl	
<u>Tree Stratum</u> (Plot size: <u>30' diameter</u>) 1 Acer saccharinum	% Cover 60	Species Y	s Status FACW		of Dominant Speci OBL, FACW, or FA	
2 Ulmus americana	30	- <u>'</u> Y	FACW		Number of Domina	``´
3 Salix nigra	10	N	OBL		cies Across all Strat	
4					of Dominant Speci	
5					OBL, FACW, or FA	
	100	= Total Co	over			
Sapling/Shrub stratum (Plot size: 15' diameter)				ence Index Works	sheet
1					Cover of:	
2				OBL sp		1 = 10
3				FACW :	· —	2 = <u>190</u> 3 = 0
5				FACU s		4 = 0
	0	= Total Co	over	UPL sp		5 = 0
Herb stratum (Plot size: 5' diameter)			Column	totals 105 (A) 200 (B)
1 Laportea canadensis	5	Υ	FACW	Prevale	nce Index = B/A =	1.90
2						
3					hytic Vegetation	
4				I	oid test for hydropl	
5				l —	minance test is >5	
6		-			valence index is ≤	
8					rphological adapta porting data in Re	
9					arate sheet)	marks of on a
10				_ ·	blematic hydrophy	tic vegetation*
	5	= Total Co	over		plain)	· ·
Woody vine stratum (Plot size: 30' diameter 1)				ors of hydric soil and v present, unless disturt	wetland hydrology must be ped or problematic
2				_	drophytic	
	0	= Total Co	over	_	jetation	
				pre	sent? Y	
Remarks: (Include photo numbers here or on a separa	-					
The trees are rooted in the bottomland hardwood in	orest to the	west.				

SOIL Sampling Point: DP-4A-1-OUT

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the absen	ce of indicators.)
Depth	Matrix			dox Feat		-		,
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	10YR 5/3	100		1			Silt loam	
12-20	10YR 6/4	98	10YR 6/8	2	С	М	Silt loam	
12-20	10110/4	90	1011000			IVI	Siit ioaiii	
			_					
					1			
		= Depleti	ion, RM = Reduce	ed Matrix	i, MS = N	/lasked S		on: PL = Pore Lining, M = Matrix
	il Indicators:							ematic Hydric Soils:
	isol (A1)				ed Matrix	(S4)		dox (A16) (LRR K, L, R)
	ic Epipedon (A2)			ndy Redo	. ,		Dark Surface (S	
	ck Histic (A3)			pped Ma	, ,			Masses (F12) (LRR K, L, R)
	lrogen Sulfide (A4			-	ky Minera			ırk Surface (TF12)
	tified Layers (A5))	Loa	my Gley	ed Matrix	k (F2)	Other (explain in	remarks)
2 cr	n Muck (A10)		Dep	oleted Ma	atrix (F3)			
Dep	leted Below Dark	ς Surface	(A11) Rec	lox Dark	Surface	(F6)		
Thic	ck Dark Surface (A12)	Dep	oleted Da	ark Surfac	ce (F7)	*Indicators of hyd	ophytic vegetation and wetland
Sar	dy Mucky Minera	ıl (S1)	Rec	lox Depr	essions ((F8)		pe present, unless disturbed or
5 cr	n Mucky Peat or	Peat (S3	<u>—</u>			•	- -	problematic
Restrictive	Layer (if observe					I		
	one	suj.			İ		Hydric soil presei	nt? N
Depth (inche					. 1		ilyanio och proces	
Remarks:								
This samp	le point was loca	ted on a	levee road betwe	en two b	orrow pit	ts.		
:::/:::::::::::::::::::::::::::::::::::	201/							
HYDROLO								
_	drology Indicate							
		of one is	required; check					dicators (minimum of two required)
	Water (A1)			•	Fauna (B	,		Soil Cracks (B6)
	ter Table (A2)				uatic Plar			e Patterns (B10)
Saturation					n Sulfide		·	son Water Table (C2)
	arks (B1)				l Rhizosp	heres on		Burrows (C8)
	nt Deposits (B2)			(C3)				on Visible on Aerial Imagery (C9)
	posits (B3)				e of Redu			or Stressed Plants (D1)
	it or Crust (B4)				ron Redu	iction in I		phic Position (D2)
	osits (B5)		··	(C6)		: >=\	X FAC-Ne	utral Test (D5)
	on Visible on Aeria			-	ck Surfac			
	Vegetated Conca		ce (B8)	_	or Well Da			
	tained Leaves (B9)		Other (E	xplain in	Remarks) 	
Field Obser								
Surface wat	•	Yes	No	X	Depth (i		.	
Water table		Yes	No		Depth (i	-		dicators of wetland
Saturation p		Yes	No	X	Depth (i	nches):	>20 h	ydrology present? N
(includes ca	pillary fringe)							
Describe red	corded data (strea	am gauge	e, monitoring well	, aerial p	hotos, p	revious ii	nspections), if available:	
Remarks:								
This raise	d area is very intr	equently	flooded by the O	hio Rivei	۲.			

Project/Site: I-69 Ohio River Crossing City.	/County: Ev	ansville/Vande	rburgh Sampling Date:	7/25/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC (KYTC#:2-1	088) State:	Indiana	Sampling Point:	DP-4B-2-IN
Investigator(s): Luke Eggering; Lindsey Postaski	Section	n, Township, F	Range: Section 10, Towr	nship 7S, Range 10W
Landform (hillslope, terrace, etc.):	Local rel	ief (concave, c	onvex, none):	None
Slope (%): 0 Lat: 37.93359	Long:	-87.52471	Datum:	NAD-1983
Soil Map Unit Name: Water		NWI Clas	ssification:	NA
Are climatic/hydrologic conditions of the site typical for this time or	of the year?	 Y (If r	no, explain in remarks)	
Are vegetation , soil , or hydrology	significantly	disturbed? No	Are "normal circui	mstances"
Are vegetation , soil , or hydrology	naturally pro	blematic? No	7 II O Monthair Girodi	present? Yes
SUMMARY OF FINDINGS	-		(If needed, explain any an	swers in remarks.)
Hydrophytic vegetation present?	1			•
Hydric soil present?	Is the s	sampled area	within a wetland?	Υ
Indicators of wetland hydrology present?	If yes, o	ptional wetland	d site ID	
		•	-	
Remarks: (Explain alternative procedures here or in a separate re				
This is a fringe emergent wetland on the southern border of a bordepending on the amount of water in the borrow pit. WOTUS 201 8		•	kely has herbaceous vege	tation annually
,	0 ID: WIL-3/			
VEGETATION Use scientific names of plants.				
Absolute Tree Stratum (Plot size: 30' diameter) % Cover		nidiodioi	Dominance Test Worksh	
<u>Tree Stratum</u> (Plot size: <u>30' diameter</u>) % Cover	Species		Number of Dominant Specients are OBL, FACW, or FA	
2	- ——	 '	Total Number of Domina	``
3	- ——		Species Across all Strat	-
4			Percent of Dominant Specie	``
5			that are OBL, FACW, or FA	
0	= Total Cove			
Sapling/Shrub stratum (Plot size: 15' diameter)			Prevalence Index Works	sheet
1	- ——		Total % Cover of:	4 - 00
3			·	1 = 60
	- ——			3 = 0
5			·	4 = 0
	= Total Cove			5 = 0
Herb stratum (Plot size: 5' diameter)	-		Column totals 60 (A	A) 60 (B)
1 Scirpus atrovirens 60	Υ	OBL	Prevalence Index = B/A =	1.00
2				
3			Hydrophytic Vegetation	
4			X Rapid test for hydroph	-
5			X Dominance test is >50 X Prevalence index is ≤	
6				
8			Morphological adapta supporting data in Re	
9	- ——		separate sheet)	marko or on a
10	- ——		Problematic hydrophy	tic vegetation*
60	= Total Cove	r	(explain)	•
Woody vine stratum (Plot size: 30' diameter)	-		*Indicators of hydric soil and w present, unless disturb	
2			Hydrophytic	
0	= Total Cove	r	vegetation	
			present? Y	
Remarks: (Include photo numbers here or on a separate sheet)	lha acusult	int		
Purple loosestrife (Lythrum salicaria) is present just beyond the	ne sample po	int.		

 SOIL
 Sampling Point:
 DP-4B-2-IN

Profile Desc	cription: (Descr	ibe to th	e depth needed	to docu	ment the	indicat	or or confirm th	e absence of i	ndicators.)		
Depth Matrix Redox Features											
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture		Remarks		
0-6	10YR 5/2	70	2.5Y 5/1	30	С	М	Silt loam				
6-20	2.5Y 6/1	70	10YR 5/4	30	С	М	Silt loam				
							0.100				
*Type: C = Concentration D = Depletion RM = Reduced Matrix MS = Masked Sand Grains **Location: PL = Pore Liping M = Matrix											
*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix Hydric Soil Indicators: Indicators for Problematic Hydric Soils:											
	isol (A1)		Sar	dy Clay	ed Matrix	(84)			16) (LRR K, L, R)		
	isol (AT) ic Epipedon (A2)			ndy Redo		(34)		raine Redox (A irface (S7) (LRF			
	ck Histic (A3)			pped Ma					es (F12) (LRR K, L, R)		
	rogen Sulfide (A	1)			ky Minera	al (F1)		allow Dark Surf			
	tified Layers (A5			-	ed Matrix			explain in remar	` '		
	n Muck (A10)	,			atrix (F3)			sxpiaiii iii reiliai	N3)		
	leted Below Dark	Surface			Surface						
	k Dark Surface (· · · —		ark Surfa	. ,	*Indicator	e of hydrophytic	c vegetation and wetland		
	dy Mucky Minera	,			essions (. ,			ent, unless disturbed or		
	n Mucky Peat or	. ,		ох Бері	C3310113 ((10)	riyarolog	proble			
			,					proble	That is		
	Layer (if observe	ed):					111		\ <u>'</u>		
71	one				-		Hydric so	il present?	<u>Y</u>		
Depth (inche	es): N/A				-						
Remarks:											
This locati	on met the deple	ted matri	x (F3) indicator.								
HYDROLO	OGY										
Wetland Hy	drology Indicate	rs:									
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Secoi	ndary Indicators	(minimum of two required)		
Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface Soil Cra			
High Wa	ter Table (A2)			True Aq	uatic Plar	nts (B14)		Drainage Patter	rns (B10)		
Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C1		Dry-Season Wa			
X Water M					d Rhizosp	heres on	Living Roots X	Crayfish Burrow			
	t Deposits (B2)			(C3)				=	le on Aerial Imagery (C9)		
X Drift Dep				-	e of Redu		· · · · · · · · · · · · · · · · · · ·	-	ssed Plants (D1)		
	t or Crust (B4)				ron Redu	ction in T	illed Soils	Geomorphic Po			
	osits (B5)		. (DZ)	(C6)	-I- Of	- (07)	<u> X</u>	FAC-Neutral Te	est (D5)		
	on Visible on Aeria			-	ck Surfac	. ,					
	Vegetated Conca ained Leaves (B9				or Well Da Explain in	, ,	\				
	`)		Other (L	.хріант ін	inciliai ko)	1			
Field Obser		Voc	NI.	~	Donth /	nobos):					
Surface wate Water table	•	Yes Yes	X No	<u>X</u>	Depth (i Depth (i		18"	Indicator	s of wetland		
Saturation p		Yes	X No		Depth (i		12"		gy present?		
-	oillary fringe)	103			- Dobui (i		12	ilyai olo	g, procent:		
		m dalid	monitoring wol	l apriol n	hotos n	revious ir	nenections) if our	ı ailahle			
Describe 160	orded data (strea	ını yauy	s, monitoring wei	ı, a c ııaı þ	ποιος, ρ	cvious II	ispections), ii ava	anavie.			
Remarks:											
	le point is located	near th	e edge of a borro	w pit.							
				•							

Project/Site: I-69 Ohio River Crossing	City/	County: I	Evansville/Van	derburgh	Sampling Date:	7/25/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC ((#2-1088)	State	e: India	ina S	Sampling Point:	DP-4B-2-OUT
Investigator(s): Luke Eggering; Lindsey Postaski		Sec	tion, Township		· · · —	nship 7S, Range 10W
Landform (hillslope, terrace, etc.): Hillslo	pe	Local	relief (concave	e, convex, n	one):	Convex
Slope (%): 5 Lat: 37.93348	<u></u> 3	Long:	-87.5248		Datum:	NAD-1983
Soil Map Unit Name: Water				Classificatio		NA
Are climatic/hydrologic conditions of the site typical for	r this time of	f the year?	Y ((If no, expla	in in remarks)	
Are vegetation , soil , or hydro		-	tly disturbed? N	No	Are "normal circu	metances"
Are vegetation , soil , or hydro		• -	oroblematic? N		Ale Horrial circu	present? Yes
SUMMARY OF FINDINGS		. ,,			ed, explain any ar	swers in remarks.)
Hydrophytic vegetation present? Y				•		,
Hydric soil present? Y	_	Is the	e sampled are	ea within a	wetland?	N
Indicators of wetland hydrology present?	_		s, optional wetla		_	
		·	•	-		
Remarks: (Explain alternative procedures here or in a	separate re	eport.)				
This sample point was taken at the top of the bank of	a borrow pit	(OW-1) ne	ear the edge of	f a corn field	d. WOTUS 2018	ID: WTL-57
VEGETATION Use scientific names of plant				I B	T ()A/	4
Troo Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominan			nce Test Worksl	
<u>Tree Stratum</u> (Plot size: <u>30' diameter</u>) 1 Quercus palustris	30	Species Y	FACW		of Dominant Speci DBL, FACW, or FA	
2 Ulmus americana	15	<u> </u>	FACW		Number of Domina	
3		· -			ies Across all Strat	
4					of Dominant Speci	
5					DBL, FACW, or FA	
	45	= Total Co	ver			
Sapling/Shrub stratum (Plot size: 15' diameter)				nce Index Works	sheet
1 Ulmus americana	45	<u> </u>	FACW		Cover of:	4 0
2				OBL spe		1 = <u>0</u> 2 = 180
3			_	FACW S	· —	3 = 150
5	-			FACU s		4 = 0
	45	= Total Co	ver	UPL spe		5 = 0
Herb stratum (Plot size: 5' diameter)	•		Column	totals 140 (A) 330 (B)
1 Ambrosia trifida	40	Υ	FAC	Prevaler	nce Index = B/A =	2.36
2 Secale cereale	30	Υ	NI			
3 Toxicodendron radicans	10	N	FAC		hytic Vegetation	
4				· — ·	id test for hydropl	, ,
5	· 			<u> </u>	ninance test is >5	
6					/alence index is ≤	
8					phological adapta porting data in Re	
9		-			arate sheet)	marks or on a
10					olematic hydrophy	tic vegetation*
	80	= Total Co	ver		lain)	· ·
Woody vine stratum (Plot size: 30' diameter 1)	•			ors of hydric soil and voresent, unless disturb	vetland hydrology must be bed or problematic
2			_		rophytic	
	0	= Total Co	ver	_	etation sent? Y	
Demandar (laskeds abots acceptant)	-4l4\			Pres		_
Remarks: (Include photo numbers here or on a separa Pin oak (Quercus palustris) was rooted in the ban						
Pili oak (Quercus paiustris) was rooted in the ban	к.					

SOIL Sampling Point: DP-4B-2-OUT

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the a	bsence of indicators.)
Depth Matrix Redox Features					·			
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
0-4	2.5Y 5/2	90	2.5Y 6/3	10	С	М	Silt loam	
4-15	2.5Y 6/3	100					Silt loam	
15-20	2.5Y 5/2	100					Silt loam	
15-20	2.51 5/2	100					Siit ioani	
*T. (20) C = (Concentration D	– Donloti	ion DM – Doduce	ad Matrix	. MC = N	Applied C	and Crains **I	acation, DI — Dava Lining, M — Matrix
		= Depleti	ion, RM = Reduce	ed Matrix	K, IVIS = IV	lasked S		ocation: PL = Pore Lining, M = Matrix Problematic Hydric Soils:
_	il Indicators:		Con	du Clau	ad Matrix	(04)		
	isol (A1)				ed Matrix	(54)		rie Redox (A16) (LRR K, L, R)
	ic Epipedon (A2)			dy Redo	trix (S6)			ce (S7) (LRR K, L) anese Masses (F12) (LRR K, L, R)
	ck Histic (A3) Irogen Sulfide (A4	4)		•	` ,	ol (E1)	_	ow Dark Surface (TF12)
	itified Layers (A5	•		-	ky Minera			lain in remarks)
	n Muck (A10))			ed Matrix atrix (F3)		Other (exp	ialli ili remarks)
	oleted Below Dark	Curface			Surface			
	ck Dark Surface (· · · · · · · · · · · · · · · · · · ·		ark Surfa	. ,	*Indicators o	f hydrophytic vogotation and watland
	idy Mucky Minera	,			essions (. ,		f hydrophytic vegetation and wetland nust be present, unless disturbed or
	n Mucky Peat or	. ,		юх Бері	63310113	(10)	riyurology r	problematic
			') 			ī		problematic
	Layer (if observ	ed):						
- · · · · · · · · · · · · · · · · · · ·	one				•		Hydric soil p	resent? Y
Depth (inche	es): N/A							
Remarks:								
The soils v	were very well dra	ained and	d redox features v	vere min	imal.			
HYDROLO	OGY							
Wetland Hy	drology Indicate	ors:						
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Seconda	ary Indicators (minimum of two required)
Surface	Water (A1)			Aquatic	Fauna (B	13)		ırface Soil Cracks (B6)
High Wa	ter Table (A2)			True Aq	uatic Plar	nts (B14)	Dr	ainage Patterns (B10)
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	·	y-Season Water Table (C2)
	arks (B1)				l Rhizosp	heres on		ayfish Burrows (C8)
	nt Deposits (B2)			(C3)				aturation Visible on Aerial Imagery (C9)
	oosits (B3)			•		uced Iron	· ·	unted or Stressed Plants (D1)
	t or Crust (B4)				ron Redu	iction in I		eomorphic Position (D2)
	osits (B5) on Visible on Aeria	ıl İmagon	, (P7)	(C6)	ck Surfac	o (C7)	<u>X</u> FA	AC-Neutral Test (D5)
	Vegetated Conca				or Well Da	` '		
	tained Leaves (B9					Remarks)	
	•	,		Other (E	.хрішіт іп	rtemanto	, 	
Field Obser Surface water		Yes	No	Х	Depth (i	nchee).		
Water table		Yes	No	$\frac{\lambda}{X}$	Depth (i	,	>20	Indicators of wetland
Saturation p		Yes	No	$\frac{\lambda}{X}$	Depth (i	-	>20	hydrology present? N
(includes ca					/·	/ .		
		am gaug	e. monitorina well	aerial r	hotos p	revious i	nspections), if availa	ble:
20001100100	oraca aata (circi	ani gaag	o, momenty won	, aona p	ποτου, ρ		iopodiono), ii avaiid	
Remarks:								
This area	is very well draine	ed.						

Project/Site: I-69 Ohio River Crossing	City/	County:	Evansville/Van	derburgh	Sampling Date:	5/16/2019	
Applicant/Owner: INDOT (Des#:1601700); KYTC (#2-1088)	State	e: India	na	Sampling Point:	DP-4B-3-OUT	
Investigator(s): Luke Eggering; Lindsey Postaski		Sec	ction, Township	, Range:	Section 10, Towr	nship 7S, Range 10W	
Landform (hillslope, terrace, etc.): Hillslo	ре	Local	relief (concave	e, convex,	none):	Convex	
Slope (%): 1 Lat: 37.93522	<u>,</u>	Long:	-87.523	92	Datum:	NAD-1983	
Soil Map Unit Name: Borrow Pits			NWI C	Classification	on:	NA	
Are climatic/hydrologic conditions of the site typical for	this time of	f the year?	Y ((If no, expl	ain in remarks)		
Are vegetation, soil, or hydro	ology	significan	tly disturbed? 1	No_	Are "normal circu	mstances"	
	ology	naturally	problematic? 1	No		present? Yes	
SUMMARY OF FINDINGS				(If need	ded, explain any ar	nswers in remarks.)	
Hydrophytic vegetation present? Y	_						
Hydric soil present? N	_		e sampled are		_	N	
Indicators of wetland hydrology present? Y	_	If ye	s, optional wetl	and site ID)		
Remarks: (Explain alternative procedures here or in a separate report.) This sample point is located on an upland terrace between Eagle Creek and OW-1 (borrow pit). The area is well drained. A corresponding wetland point was not taken because Ohio River flooding had filled the borrow pit. There is a wetland fringe around the open water. WOTUS 2018 ID: WTL-57 VEGETATION Use scientific names of plants.							
	Absolute	Dominar	nt Indicator	Domin	ance Test Worksh	neet	
<u>Tree Stratum</u> (Plot size:30' diameter)	% Cover	Species		Number	of Dominant Speci	es	
1 Acer saccharinum	60	Y	FACW	that are	OBL, FACW, or FA	C: 3 (A)	
2 Acer negundo	20	Y	FAC		Number of Domina		
3					cies Across all Strat		
5					of Dominant Specion of FACW, or FACCO		
	80	= Total Co	over	lilat aro	002,171011,01171	(, (, (, (, (, (, (, (, (, (, (, (, (, (
Sapling/Shrub stratum (Plot size: 15' diameter)	•		Prevale	ence Index Works	heet	
1				Total %	Cover of:		
2				OBL sp		1 = 0	
3					· —	2 = 120	
5				FAC sp		3 = <u>180</u> 4 = <u>120</u>	
	0	= Total Co	over	UPL sp	· —	5 = 0	
Herb stratum (Plot size: 5' diameter)			Column		A) 420 (B)	
1 Toxicodendron radicans	40	Υ	FAC	Prevale	ence Index = B/A =	2.80	
2 Campsis radicans	30	Υ	FACU				
3					ohytic Vegetation		
4					pid test for hydroph	-	
5					minance test is >50		
6				<u> </u>	evalence index is ≤		
8					rphological adapta pporting data in Re		
9					parate sheet)	marks or on a	
10				I ——	blematic hydrophy	tic vegetation*	
	70	= Total Co	over		plain)	· ·	
Woody vine stratum (Plot size: 30' diameter 1)	•			tors of hydric soil and v present, unless disturb	vetland hydrology must be ped or problematic	
2				_	drophytic		
	0	= Total Co	over	_	getation esent? Y		
Remarks: (Include photo numbers here or on a separa	ate sheet)			1			
Recent flooding limited the herbaceous layer.							

SOIL Sampling Point: DP-4B-3-OUT

Profile Desc	ription: (Descr	ibe to th	e depth needed	to docu	ment the	indicat	or or confirm the abser	ce of indicators.)		
Depth	Matrix			lox Feat				,		
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks		
0-12	10YR 5/3	100					Silt loam			
12-20	10YR 5/3	95	2.5Y 6/1	5	С	М	Silt loam			
12-20	10110 3/3	90	2.51 0/1	J	C	IVI	Siit ioairi			
*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix										
• •		= Depleti	on, RM = Reduce	ed Matrix	k, MS = N	lasked S		on: PL = Pore Lining, M = Matrix		
_	il Indicators:		_					lematic Hydric Soils:		
	isol (A1)				ed Matrix	(S4)		edox (A16) (LRR K, L, R)		
	ic Epipedon (A2)			dy Redo	. ,		Dark Surface (S			
	ck Histic (A3)			oped Ma	. ,			e Masses (F12) (LRR K, L, R)		
	rogen Sulfide (A4			-	ky Minera			ark Surface (TF12)		
	tified Layers (A5))			ed Matrix		Other (explain in	n remarks)		
	n Muck (A10)				atrix (F3)					
	leted Below Dark		· · · · · · · · · · · · · · · · · · ·		Surface	. ,				
	k Dark Surface (,			ark Surfa	. ,		rophytic vegetation and wetland		
	dy Mucky Minera	` '		lox Depr	essions ((F8)	hydrology must	pe present, unless disturbed or		
5 cn	n Mucky Peat or	Peat (S3)					problematic		
Restrictive	Layer (if observe	ed):								
Type: No	one						Hydric soil prese	nt? N		
Depth (inche	s): N/A				•					
Remarks:					•					
	vara madarataly	wall drain	and							
i ne solis v	vere moderately	well drair	iea.							
LIVEROLO	NOV									
HYDROLO										
	drology Indicato									
		of one is	required; check					dicators (minimum of two required)		
	Water (A1)				Fauna (B			Soil Cracks (B6)		
	ter Table (A2)				uatic Plar			e Patterns (B10)		
Saturation						Odor (C1		son Water Table (C2)		
	arks (B1)				l Rhizosp	heres on		Burrows (C8)		
	t Deposits (B2)			(C3)	(5)			on Visible on Aerial Imagery (C9)		
	osits (B3)			i		ced Iron	· ·	or Stressed Plants (D1)		
	t or Crust (B4)				ron Redu	iction in I		phic Position (D2)		
	osits (B5)	llmaaan	. (D7)	(C6)	ali Cimfa a	- (07)	FAC-NE	eutral Test (D5)		
	on Visible on Aeria		· ·		ck Surfac					
	Vegetated Conca ained Leaves (B9			_	or Well Da	Remarks	1			
	`	,		Other (L	.xpiaiii iii	i (ciliai ko				
Field Obser		Voc	No	~	Donth /	nohoo):				
Surface water	•	Yes Yes	No	X	Depth (i		>20 In	dicators of wetland		
Water table Saturation p		Yes	No No	X	Depth (i Depth (i			ydrology present?		
(includes cap		163			Debin (i	1101103).		yarorogy present:		
		m aqua	nonitoring wall	ooriol n	hoton n	rovious ir	anactions) if available:			
Describe red	orded data (Strea	ını yauyı	e, monitoring wen	, aeriai p	motos, p	revious ii	nspections), if available:			
Remarks:										
	oint was inundate	ed during	recent Ohio Riv	er backw	ater floo	dina Soi	me silt and flood debris c	overed the site.		
			, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.:	Wetland 4	Project/Site:	I-69 Ohio River Crossing

Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for	3	The area receives frequent overflow flooding from Eagle Creek and the Ohio River.
prolonged periods following precipitation events.		
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	3	Sediment removal was evident.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	3	The wetland and bottomland hardwood vegetation help stabilize the soils in the area.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	3	Animal signs were observed within the wetland (tracks, scat, burrows). Raccoon tracks were visible along the edge of the borrow pit. There is quite a bit of beaver activity and the area is less disturbed since it is farther from existing I-69 traffic noise.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	2	The lowest portions of this wetland, especially the wetland fringe of the borrow pits, are frequently flooded, thereby providing cover and spawning habitat for fish, invertebrates, and amphibians.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	3	The visual quality/aesthetics of this wetland is low because of its juxtaposition with I-69 and the obvious man-made affects of the adjacent borrow pit. Trash is strewn throughout the wetland. Highway noise is audible from the wetland.

Total Score 17

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River Crossing City	/County: Evansville/Vand	lerburgh Sampling Date:	5/16/2019
Applicant/Owner: INDOT (Des#:1601700); KYTC (#2-1088)	State: Indian	na Sampling Point:	UPL-01
Investigator(s): Luke Eggering	Section, Township,	Range: Section 10, Tow	nship 7S, Range 10W
Landform (hillslope, terrace, etc.):	Local relief (concave,	convex, none):	Concave
Slope (%): 1 Lat: 37.92506	Long: -87.5230	6 Datum:	NAD-1983
Soil Map Unit Name: Huntington silty clay loam	NWI CI	assification:	NA
Are climatic/hydrologic conditions of the site typical for this time of	f the year? Y (II	f no, explain in remarks)	
Are vegetation X, soil , or hydrology	significantly disturbed?	Are "normal circu	umstances"
Are vegetation , soil , or hydrology	naturally problematic? N		present? Yes
SUMMARY OF FINDINGS		(If needed, explain any a	nswers in remarks.)
Hydrophytic vegetation present? N			
Hydric soil present? N	Is the sampled area	within a wetland?	<u>N</u>
Indicators of wetland hydrology present? Y	If yes, optional wetla	nd site ID	
Remarks: (Explain alternative procedures here or in a separate re	eport.)	-	-
This is an upland point within an agricultural field. The area was r		o River, however, the swal	e appears to dry
rapidly. This area typically does not retain water for long durations	-		
VEGETATION Use scientific names of plants.			
Absolute	Dominant Indicator	Dominance Test Works	heet
<u>Tree Stratum</u> (Plot size: <u>30' diameter</u>) % Cover	Species Status	Number of Dominant Spec	ies
		that are OBL, FACW, or FA	AC: 0 (A)
	· —— —	Total Number of Domin	
3	· ——	Species Across all Stra	
5	· ———	Percent of Dominant Specthat are OBL, FACW, or FA	
	= Total Cover		(700)
Sapling/Shrub stratum (Plot size: 15' diameter)	•	Prevalence Index Work	sheet
1		Total % Cover of:	
2		·	x 1 = 0
3	· ——	· —	x 2 = 0
5	·	·	x 3 = 0 x 4 = 0
	= Total Cover	·	x 5 = 0
Herb stratum (Plot size: 5' diameter)		·	(A) 0 (B)
1		Prevalence Index = B/A =	
2	·		
3		Hydrophytic Vegetation	n Indicators:
4		Rapid test for hydrop	
5	· —— —	Dominance test is >5	
6		Prevalence index is s	
8	·	Morphological adapta supporting data in Re	
9	·	separate sheet)	smarks or on a
10	· ——	Problematic hydroph	ytic vegetation*
0	= Total Cover	(explain)	
Woody vine stratum (Plot size: 30' diameter)		*Indicators of hydric soil and present, unless distur	
2		Hydrophytic	
0	= Total Cover	vegetation present? N	I
		present:	
Remarks: (Include photo numbers here or on a separate sheet) There was no living vegetation in the sample point. Old growt	h/stubble from corn (Zea n	nays) was observed in the	sample point.

SOIL Sampling Point: UPL-01

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*	Loc**	Texture	Remarks		
0-14	10YR 5/4	100					Silt loam			
14-20	10YR 6/3	98	2.5Y 6/1	2	С	М	Silt loam			
*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix										
	il Indicators:	- Depicti	on, raw – raeduce	o Matrix	., IVIO – IV	naskeu C		ematic Hydric Soils:		
-	isol (A1)		San	dv Gleve	ed Matrix	(S4)		dox (A16) (LRR K, L, R)		
	ic Epipedon (A2)			dy Redo		(01)	Dark Surface (S	, , , , , , , , , , , , , , , , , , , ,		
	k Histic (A3)			oped Ma	. ,			Masses (F12) (LRR K, L, R)		
	rogen Sulfide (A4	1)		•	ky Minera	al (F1)		rk Surface (TF12)		
	tified Layers (A5)			-	ed Matrix		Other (explain in			
	n Muck (A10)	•			atrix (F3)			· o.n.e.n.e/		
	leted Below Dark	Surface			Surface					
	k Dark Surface (· · · · · · · · · · · · · ·		ırk Surfa	` '	*Indicators of hydi	ophytic vegetation and wetland		
	dy Mucky Minera	,			essions (. ,		pe present, unless disturbed or		
	n Mucky Peat or I	. ,				(- /	,	problematic		
			,			I				
	L ayer (if observe one	au):					Hydric soil preser	nt? N		
Depth (inche					i		nyunc son preser	<u> </u>		
	:5). <u>IN/A</u>				•					
Remarks:										
The top tw	elve inches of so	il are wit	hin the plow zone	١.						
HYDROLO										
	drology Indicate									
Primary India	cators (minimum	of one is	required; check				Secondary Inc	licators (minimum of two required)		
Surface '	Water (A1)			Aquatic	Fauna (B	13)		Soil Cracks (B6)		
	ter Table (A2)				uatic Plar			e Patterns (B10)		
Saturatio						Odor (C1		son Water Table (C2)		
	arks (B1)				Rhizosp	heres on	Living Roots X Crayfish			
	t Deposits (B2)			(C3)	o of Dodu	lood Iron		on Visible on Aerial Imagery (C9) or Stressed Plants (D1)		
	osits (B3) t or Crust (B4)			i)		uced Iron	· · ·	phic Position (D2)		
	osits (B5)			(C6)	ion Redu	iction in i		utral Test (D5)		
	on Visible on Aeria	l Imagery	(B7)		ck Surfac	e (C7)		utial Test (BS)		
	Vegetated Conca				r Well Da					
	ained Leaves (B9			_		Remarks)			
Field Obser	•			`	-	-	1			
Surface water		Yes	No	X	Depth (i	nches):				
Water table		Yes	No	X	Depth (i		>20 Inc	dicators of wetland		
Saturation p		Yes	No	Х	Depth (i			ydrology present? N		
(includes cap	oillary fringe)				·					
Describe rec	orded data (strea	ım gauge	e, monitoring well	, aerial p	hotos, p	revious ir	nspections), if available:			
	-	_	_	•	·					
Remarks:	_	_								
								ater is removed efficiently from the		
	nout recent infrec	uent Oh	io River flooding,	there wo	ouid not l	oe suffici	ent hydrology and, in a no	ormal year, hydrology would be		
lacking.										

Project/Site: I-69 Ohio River Crossing City	y/County: Evansville/Vanderburgh Sampling Date: 7/25/2018
Applicant/Owner: INDOT (Des#:1601700); KYTC (#2-1088)	State: Indiana Sampling Point: UPL-02
Investigator(s): Luke Eggering; Lindsey Postaski	Section, Township, Range: Section 10, Township 7S, Range 10V
Landform (hillslope, terrace, etc.):	Local relief (concave, convex, none): None
Slope (%): 0 Lat: 37.92307	Long: -87.52214 Datum: NAD-1983
Soil Map Unit Name: Huntington silty clay loam	NWI Classification: NA
Are climatic/hydrologic conditions of the site typical for this time of	of the year? Y (If no, explain in remarks)
Are vegetation X, soil , or hydrology	significantly disturbed? Are "normal circumstances"
Are vegetation , soil , or hydrology	
SUMMARY OF FINDINGS	(If needed, explain any answers in remarks.)
Hydrophytic vegetation present? Y	
Hydric soil present? N	Is the sampled area within a wetland?
Indicators of wetland hydrology present? N	If yes, optional wetland site ID
	eport.) d with soybeans. It appears that the Ohio River flood kept this area wet for n water for long durations during the growing season and is usually farmed.
Absolute	Dominant Indicator Dominance Test Worksheet
<u>Tree Stratum</u> (Plot size: <u>30' diameter</u>) % Cover	Bollinalit maleater
2	Total Number of Dominant
3	Species Across all Strata: 2 (B)
4	Percent of Dominant Species
5	that are OBL, FACW, or FAC: 50.00% (A/B)
Sapling/Shrub stratum (Plot size: 15' diameter)	Prevalence Index Worksheet
1 2	Total % Cover of: OBL species 0 x 1 = 0
3	FACW species 30 x 2 = 60
4	FAC species 0 x 3 = 0
5	FACU species 10 x 4 = 40
	= Total Cover UPL species 0 x 5 = 0
Herb stratum (Plot size: 5' diameter)	Column totals 40 (A) 100 (B)
1 Echinochloa crus-galli 30	Y FACW Prevalence Index = B/A = 2.50
2 Amaranthus spinosus 10	Y FACU
3 4 5	Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation Dominance test is >50%
6	X Prevalence index is ≤3.0*
7	Morphological adaptations* (provide supporting data in Remarks or on a
9	separate sheet) Problematic budrophytic vegetation*
40	Problematic hydrophytic vegetation* = Total Cover (explain)
Woody vine stratum (Plot size: 30' diameter) 1	*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
2 0	= Total Cover vegetation present? Y
Remarks: (Include photo numbers here or on a separate sheet) The majority of the barnyard grass (<i>Echinochloa crus-galli</i>) is	dead due to herbicide treatment.

SOIL Sampling Point: UPL-02

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*	Loc**	Texture	е	Remarks		
0-12	10YR 4/3	100					Silt loam				
12-16	10YR 5/3	98	2.5Y 6/1	2	С	М	Silt loam				
16-20	10YR 4/3	100					Silt loam				
10-20	10111 4/3	100					Silt ibarri				
*Typo: C = C	Concentration D	– Doploti	ion, RM = Reduce	d Matrix	. 140 - 1	Anakad C	Crains	**Location: I	DI - Doro Lining M - Motriy		
		- Depleti	ion, Rivi – Reduce	u Mainx	., IVIO – IV	llaskeu S			PL = Pore Lining, M = Matrix		
Hydric Soil Indicators: Indicators for Problematic Hydric Soils: Histisol (A1) Sandy Gleyed Matrix (S4) Coast Prairie Redox (A16) (LRR K, L, R)											
	ic Epipedon (A2)			dy Redo		(34)		urface (S7) (I	. , , , , , , , , , , , , , , , , , , ,		
	ck Histic (A3)			oped Ma	. ,				sses (F12) (LRR K, L, R)		
	rogen Sulfide (A	1)		•	ky Minera	al (F1)		-	Surface (TF12)		
	tified Layers (A5			-	ed Matrix			explain in rer			
	n Muck (A10)	,			atrix (F3)			explain in let	nans)		
	leted Below Dark	Surface			Surface						
	ck Dark Surface (rk Surfa	. ,	*Indicato	are of hydronh	nytic vegetation and wetland		
	dy Mucky Minera	,			essions (. ,			resent, unless disturbed or		
	n Mucky Peat or			iox Dop.	00010110 ((. 0)	riyarolo	••	oblematic		
						ı		P. 5			
	Layer (if observe	ed):					Harabata a a	.:	N		
	one						Hydric sc	oil present?	<u>N</u>		
Depth (inche	es): N/A				<u>.</u>						
Remarks:											
Soils are v	vell drained. The	top twelv	e inches of soil a	re within	the plow	zone.					
HYDROLO	OGY										
Wetland Hy	drology Indicate	ors:									
Primary Indi	cators (minimum	of one is	required; check	all that a	(ylqq		Seco	ondary Indica	tors (minimum of two required)		
	Water (A1)		,		Fauna (B	13)		Surface Soil			
	ter Table (A2)		-		uatic Plar			 Drainage Pa	, ,		
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	1)	Dry-Season	Water Table (C2)		
Water M	arks (B1)			Oxidized	l Rhizosp	heres on	Living Roots	Crayfish Bur	rows (C8)		
Sedimen	t Deposits (B2)			(C3)			<u> </u>	Saturation V	isible on Aerial Imagery (C9)		
	osits (B3)			i)		uced Iron			tressed Plants (D1)		
	t or Crust (B4)				ron Redu	iction in T	illed Soils		Position (D2)		
	osits (B5)		- (DZ)	(C6)		(07)		FAC-Neutra	Test (D5)		
	on Visible on Aeria		· · · · · <u> · · · · · · · · · · · ·</u>		ck Surfac						
	Vegetated Conca tained Leaves (B9		ce (B8)	_	r Well Da	ata (D9) Remarks	\				
	•)		Other (E	хріані ін	Remarks)	1			
Field Obser		V	NI-	V	Danth (
Surface water		Yes	No No	X	Depth (i			Indias	tors of wetland		
Water table Saturation p		Yes Yes	No No	X	Depth (i		>20				
(includes ca		168	INU	^	Depth (i	11011 0 8).	-20	nyure	ology present? N		
		nm =====	o monitorio - · · · · ·	nordal -	hotos	rovio:- '	nonootions\ if =	(cilchia:			
Describe red	corded data (strea	am gaug	e, monitoring well	, aeriai p	motos, p	revious ii	nspections), if av	valiable:			
Remarks:											
	was sampled her	ause the	2018 Ohio River	flooding	showed	l visual A	vidence of a nos	sible wetland	l. The area was dry and		
	2017 and dry dur			coaii ig	, 5.10*****	. Floudi C		JIDIO WOUGHU	o area wae ary and		
	3, 201	5	- J								

Project/Site: I-69 Ohio River Crossing Cit	ty/County: Evansville/Va	inderburgh Sampling Date:	5/16/2019
Applicant/Owner: INDOT (Des#:1601700); KYTC (#2-1088)	• -	iana Sampling Point:	
Investigator(s): Luke Eggering		ip, Range: Section 10, Tov	
Landform (hillslope, terrace, etc.): Floodplain swale	Local relief (concav		Concave
Slope (%): 1% Lat: 37.92179	 Long: -87.52	. ,	NAD-1983
Soil Map Unit Name: Huntington silty clay loam		Classification:	NA NA
Are climatic/hydrologic conditions of the site typical for this time		(If no, explain in remarks)	
Are vegetation X , soil , or hydrology	significantly disturbed?		umetanece"
Are vegetation , soil , or hydrology	naturally problematic?		present? Yes
SUMMARY OF FINDINGS		(If needed, explain any a	· —
Hydrophytic vegetation present? N		· · · · · · · · · · · · · · · · · · ·	
Hydric soil present?	Is the sampled a	rea within a wetland?	N
Indicators of wetland hydrology present?	If yes, optional we		
		-	
Remarks: (Explain alternative procedures here or in a separate	• /		
This is an upland point within an agricultural field. The area appetithe Ohio River. WOTUS 2018 ID: NA	ears to be moderately we	II-drained, however the area	was recently flooded by
VEGETATION Use scientific names of plants.		Dominance Test Works	-h-ot
Absolut Tree Stratum (Plot size: 30' diameter) % Cove			
1	opeoles Status	Number of Dominant Spethat are OBL, FACW, or F	
2		Total Number of Domir	``
3		Species Across all Str	
4		Percent of Dominant Spe	cies
5		that are OBL, FACW, or F	AC: 0.00% (A/B)
O Capilla a (Chauth attactura - (Diataina) - 451 diagrapha	=Total Cover	Dunialanaa luulan Wani	lah aat
Sapling/Shrub stratum (Plot size: 15' diameter)		Prevalence Index World Total % Cover of:	(Sneet
		-	x 1 = 0
3		· -	$x^{2} = \frac{0}{0}$
4		.	x 3 = 0
5		FACU species 0	x 4 = 0
0	= Total Cover		x 5 = 0
Herb stratum (Plot size: 5' diameter)		Column totals 0	(A) 0 (B)
		Prevalence Index = B/A	=
		He hand of Wester	. In Protein
3		Hydrophytic Vegetatio Rapid test for hydro	
5		Dominance test is >	
6		Prevalence index is	
7		Morphological adapt	tations* (provide
8		supporting data in R	
9		separate sheet)	
		Problematic hydroph	nytic vegetation*
0	_=Total Cover	(explain)	
Woody vine stratum (Plot size: 30' diameter)		*Indicators of hydric soil and present, unless distu	d wetland hydrology must be
		Hydrophytic	inded of problematic
	= Total Cover	vegetation	
		present?	N
Remarks: (Include photo numbers here or on a separate sheet)		•	-
There was no living vegetation in the sample point. Old grov	vth/stubble from corn (Zea	a mays) and soybean (<i>Glycii</i>	ne max) was observed
in the sample point.			

SOIL Sampling Point: UPL-03

Profile Desc	cription: (Descri	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm th	he absence d	of indicators.)
Depth	<u>Matrix</u>		Red	dox Feat	<u>ures</u>				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	е	Remarks
0-8	10YR 4/3	98	2.5Y 5/1	2	С	М	Silt loam		
8-20	10YR 5/4	100					Silt loam		
							0.11.00		
		= Depleti	ion, RM = Reduce	ed Matrix	k, MS = N	/lasked S			PL = Pore Lining, M = Matrix
_	il Indicators:								atic Hydric Soils:
	isol (A1)				ed Matrix	(S4)			(A16) (LRR K, L, R)
	ic Epipedon (A2)			idy Redo	. ,			urface (S7) (I	
	ck Histic (A3)			pped Ma	` ,			=	sses (F12) (LRR K, L, R)
Hyd	rogen Sulfide (A4	1)		-	ky Minera				Surface (TF12)
Stra	tified Layers (A5))			ed Matrix		Other (explain in ren	narks)
	n Muck (A10)				atrix (F3)				
Dep	leted Below Dark	Surface	(A11) Red	lox Dark	Surface	(F6)			
Thic	ck Dark Surface (A12)	Dep	leted Da	ark Surfa	ce (F7)	*Indicato	ors of hydroph	ytic vegetation and wetland
	dy Mucky Minera			lox Depr	essions	(F8)	hydrolo	gy must be p	resent, unless disturbed or
5 cr	n Mucky Peat or	Peat (S3	<u> </u>					pro	blematic
Restrictive	Layer (if observe	ed):							
	one	,					Hvdric so	oil present?	N
Depth (inche					•		,		
					•				
Remarks:									
The soil ap	opears to dry out	rapidly.	The top twelve inc	ches of s	oil are w	ithin the	plow zone.		
HYDROLO									
_	drology Indicate								
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Seco	ondary Indicat	tors (minimum of two required)
Surface	Water (A1)			Aquatic	Fauna (B	13)	X	Surface Soil	Cracks (B6)
High Wa	ter Table (A2)			True Aq	uatic Plar	nts (B14)		Drainage Pa	` ,
Saturation	on (A3)					Odor (C			Water Table (C2)
	arks (B1)				l Rhizosp	heres on	Living Roots X	_ ′	` ,
	it Deposits (B2)			(C3)					isible on Aerial Imagery (C9)
	oosits (B3)			•)		uced Iron		_	tressed Plants (D1)
	t or Crust (B4)				ron Redu	iction in T	illed Soils	_	Position (D2)
	osits (B5)		(DZ)	(C6)		(O=)		FAC-Neutral	Test (D5)
	on Visible on Aeria			-	ck Surfac	. ,			
	Vegetated Conca		ce (B8)		or Well Da		`		
	tained Leaves (B9)		Other (E	xpiain in	Remarks)		
Field Obser			NI.	V	D 11- (I X-			
Surface water	•	Yes	No	X	Depth (i		> 20	Indian	toro of wotland
Water table		Yes	No No	X	Depth (i		>20		tors of wetland
Saturation p (includes ca		Yes	No	<u> </u>	Depth (i	nunes).	-20	nyara	ology present? Y
					. la t - :			la la la la c	
Describe red	corded data (strea	am gaug	e, monitoring well	, aerial p	onotos, p	revious i	nspections), if av	/allable:	
Remarks:									
	e cracke and cro	vfich hur	rows were a direc	et recult :	of the rec	ent Ohio	River flooding	The area ann	ears to drain and dry rapidly.
The surface	o oracio ana ora	y non bui	10W3 WOIE a UIIE	or result (or the rec	Join Oill	, raver hooding.	της αισα αρμ	care to drain and dry rapidly.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Cr	·	City/County: Evans	sville/Vanderbu	<u>Irgh</u> Sampling	Date:	7/25/2018
Applicant/Owner: INDOT (Des	/ ,	38)	State: IN	Sampling	Point:	UPL-04
Investigator(s): Luke Eggering	յ; Lindsey Postaski	Section, Township, R	ange:		N/A	
Landform (hillslope, terrace, etc.):	Flat	Local relief (concave	, convex, none):	Concave	Slope (%):	2%
Subregion (LRR or MLRA): MLRA		37.91278	Long:	-87.52105	Datum:	NAD-1983
Soil Map Unit Name: Huntington	ı silt loam, 0 to 4 percent sle	opes, occasionally	y flooded	NWI classificat	ion:	NA
Are climatic / hydrologic conditions	on the site typical for this time of the	the year? Yes _	X No	(If no, explain ir	າ Remarks.)	
	, or Hydrologysignificant		Are "normal circun	•		X No
Are vegetation, Soil	, or Hydrologynaturally p	problematic? No	(If needed, explain	n any answers in	Remarks.)	
SUMMARY OF FINDINGS –	Attach site map showing	sampling point	locations, trai	nsects, impo	rtant featur	es, etc.
Hydrophytic Vegetation Present?	Yes NoX	_ la the Sampler	! Area within a			
Hydric Soil Present?	Yes No X	I is the Sampled	l Area Witmin a	Yes	No X	
Wetland Hydrology Present?	Yes No X					_
Pemarke: This is a swale lo	ocated in the middle of an a	<u> </u>	rmed with sout	peans (Glycine	may) at th	e time of
survey. This point is located WOTUS 2018 ID: NA.						
HYDROLOGY						
Wetland Hydrology Indicators:			Sec	condary Indicator	s (minimum of	two required)
Primary Indicators (minimum of or	ne is required; check all that apply	<u>')</u>		Surface Soil Cra	acks (B6)	
Surface Water (A1)	True Aquat	tic Plants (B14)	_	Sparsely Vegeta	ated Concave S	Surface (B8)
High Water Table (A2)	Hydrogen S	Sulfide Odor (C1)	_	Drainage Patter	ns (B10)	
Saturation (A3)	Oxidized R	hizospheres on Living	Roots (C3)	Moss Trim Line	s (B16)	
Water Marks (B1)	Presence o	of Reduced Iron (C4)	_	Dry-Season Wa	iter Table (C2)	
Sediment Deposits (B2)	Recent Iron	n Reduction in Tilled So	oils (C6)	Crayfish Burrow	/s (C8)	
Drift Deposits (B3)	Thin Muck	Surface (C7)	_	Saturation Visib	le on Aerial Im	agery (C9)
Algal Mat or Crust (B4)	Other (Expl	lain in Remarks)	<u>x</u>	Geomorphic Po	sition (D2)	
Iron Deposits (B5)			_	Shallow Aquitar	d (D3)	
Inundation Visible on Aerial Ir	magery (B7)		_	Microtopograph	ic Relief (D4)	
Water-Stained Leaves (B9)			_	FAC-Neutral Te	st (D5)	
Aquatic Fauna (B13)						
Field Observations:						
Surface water present?	Yes No X Depth (inc	ches):	I			
Water table present?	Yes No X Depth (inc	ches): >20	I			
Saturation present? (includes capillary fringe)	Yes No X Depth (inc		Wetland Hydrolo	ogy Present?	Yes	No X
Describe Recorded Data (stream						
Remarks: This area does n		-	ons during the	growing seas	on; howeve	r, soybeans
(Glycine max) are stunted	or absent at the bottom of t	ihe swale.				

VEGETATION (Four Strata) - Use scientific names of plants Sampling Point: UPL-04

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
2				
3				Total Number of Dominant Species Across all Strata: 1 (B)
4		· ·		Percent of Deminant Species that
5				Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species 0 x 1 = 0
Sapliing/Shrub Stratum (Plot Size: 15' radius)			FACW species 0 x 2 = 0
1				FAC species 0 x 3 = 0
2				FACU species 0 x 4 = 0
3				UPL species 0 x 5 = 0
4			-	Column totals 0 (A) 0 (B)
5				
6				Prevalence Index = B/A =
7				Hydrophytic Vegetation Indicators:
8		· ——		1 -Rapid Test for Hydrophytic Vegetation
0				2 - Dominance Test is >50%
*	0	= Total Cover		3 - Prevalence Index is ≤3.0 ¹
500/ offstal assume 0				
50% of total cover: 0	20%	of total cover:	0	 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot Size: 5' radius)	05	V	NII	
1 Glycine max	95	<u> </u>	NI	Problematic Hydrophytic Vegetation ¹ (Explain)
2				
3				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7				in diameter at breast height (DBH), regardless of height.
8				Sapling/shrub - Woody plants, excluding vines, less than 3
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Herb - All herbaceous (non-woody) plants, regardless of
11			-	size, and woody plants less than 3.28 ft tall.
	95	= Total Cover		Mandy vines All woody vines greater than 2.29 ft in
50% of total cover: 47.5		of total cover:	19	Woody vines - All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot Size: 30' radius	2070	or total cover.	10	5
)			
1		· ——		
2				
3				
4				Hydrophytic
5				Vegetation
	0	= Total Cover		Present? Yes NoX
50% of total cover: 0	20%	of total cover:	0	
Remarks: (Include photo numbers here or on a separate	sheet.)		<u> </u>	

This data point is located in the middle of an agricultural field farmed with soybeans (*Glycine max*) at the time of survey. The soybeans are likely Roundup Ready®, as all other vegetation is absent. Vegetation is disturbed due to farming operations.

SOIL

Sampling Point: _____UPL-04

		atrix			Redox I							_	
ches)	Color (mo		%	Color (mo	ist)	%	Type ¹	Loc2	Text			Remark	s
-20	10YR 5	/ 3	100						Silt lo	oam			
											-		
	-												
/pe: C=0	Concentration,	D=Deplet	tion. RM=I	Reduced Ma	atrix. CS=0	Covere	d or Coa	ted Sand	Grains.	² Location	n: PL=Pore Lir	ning. M=Mat	rix.
	oil Indicators:		,		,						ors for Proble	_	
				Б.	10.6	(07)						_	
Histisol	, ,			_	rk Surface						Muck (A10) (
	Epipedon (A2)								147, 148)		st Prairie Redo	ox (A16)	
	Histic (A3)			_				RA 147, 1	48)		RA 147,148)		
	gen Sulfide (A4))		_	amy Gleye					_	mont Floodpla		9)
	ed Layers (A5)			De	pleted Ma	trix (F3)				ILRA 136, 14		
2 cm M	Mucky Mineral (A	A10) (LR	R N)	Re	dox Dark	Surface	e (F6)			_	Shallow Dark		- 12)
Deplete	ed Below Dark	Suface (A	A11)	De	pleted Da	k Surfa	ace (F7)			Othe	r (Explain in F	Remarks)	
Thick D	Dark Surface (A	(12)		Re	dox Depre	ssions	(F8)						
Sand	ly Mucky Minera	al (S1) (L l	RR N,	Iro	n-Mangan	ese Ma	sses (F	12) (LRR	٧,				
	RA 147, 148)			_	MLRA								
Sandy	Gleyed Matrix	(S4)		Un	nbric Surfa	ce (F1	3) (MLR	A 136,122)	31	6 1 1 1.	e	
	Redox (S5)	,		_				F19) (MLF			rs of hydrophy hydrology mus		
	()										nyurology mus	51 DE DIESEN	
	ed Matrix (S6)					/laterial	(F21) (I						ι,
Strippe	ed Matrix (S6)	orvod):				/lateria	(F21) (I	MLRA 127			isturbed or pro		.,
Strippe strictive	e Layer (if obs	erved):				Materia	(F21) (I						·,
Strippe strictive Type:	None	erved):				/lateria	(F21) (I	MLRA 127	', 147)	unless d	isturbed or pro	blematic.	
Strippe strictive Type: Depth (i	e Layer (if obs		il are wit	Re	d Parent N			MLRA 127 Hydric	soil presen	unless di			<u> </u>
Strippe strictive Type: Depth (i	None N/A		il are wit	Re	d Parent N			MLRA 127 Hydric	soil presen	unless di	isturbed or pro	blematic.	

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Cro	ssing	c	City/County: Hend	erson/Hender	son Sampling	Date:	7/26/2018
Applicant/Owner: INDOT (Des#	:1601700); K	YTC (KYTC#:2	2-1088)	State: K			DP-5A-1-IN
Investigator(s): Luke Eggering;	Lindsey Post	aski s	ection, Township, F	Range:	<u>.</u>	N/A	
Landform (hillslope, terrace, etc.): F	lat	L	ocal relief (concave	e, convex, none):	Concave	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	120A	Lat: 3	37.89997	Long:	-87.52027	Datum:	NAD-1983
Soil Map Unit Name: Melvin silty	clay loam				NWI classificat	ion:	NA
Are climatic / hydrologic conditions or	n the site typical f	for this time of the	e year? Yes	X No	(If no, explain ir	n Remarks.)	
Are vegetation X, Soil	, or Hydrology _	significantly	disturbed?	Are "normal circu	umstances" preser	nt? Yes _	X No
Are vegetation , Soil	, or Hydrology	naturally pro	oblematic? No	(If needed, expla	in any answers in	Remarks.)	
SUMMARY OF FINDINGS -	Attach site m	ap showing s	ampling point	locations, tra	ansects, impo	rtant featu	ıres, etc.
Hydrophytic Vegetation Present?	Yes X	No	Is the Sample	d Area within a			
Hydric Soil Present?	Yes X	No	Wetland?	u Aica Widilii a	Yes X	No	
Wetland Hydrology Present?	Yes X	No					
WOTUS 2018 ID: WTL-58. HYDROLOGY	_						
				9,	dami Indicator	- (minimum c	of two required)
Wetland Hydrology Indicators: Primary Indicators (minimum of one	s is required; the	solvall that anniv)			econdary Indicator		if two required)
Surface Water (A1)	s is required, one		Planta (P14)	^	Surface Soil Cra Sparsely Vegeta		e Surface (B8)
High Water Table (A2)	_	True Aquatic F Hydrogen Sulf	lfide Odor (C1)	x			; Surface (DO)
Saturation (A3)	_		cospheres on Living		. Moss Trim Line	, ,	
Water Marks (B1)	_		Reduced Iron (C4)	Roots (03)	Dry-Season Wa	, ,) \
Sediment Deposits (B2)	_		Reduction in Tilled S	Soils (C6) X		,	•,
Drift Deposits (B3)	_	Thin Muck Su)Olio (00) <u>-:</u>	Saturation Visib		magery (C9)
Algal Mat or Crust (B4)	_	Other (Explain	• •	x			11490.7 (,
Iron Deposits (B5)	_		,		Shallow Aquitar	, ,	
Inundation Visible on Aerial Im	agery (B7)				Microtopograph		
Water-Stained Leaves (B9)	• • •			x		` ′	
Aquatic Fauna (B13)					•		
Field Observations:							
Surface water present?	Yes No_	X Depth (inche	es):				
Water table present?	Yes No	X Depth (inche	es): >20	1			
Saturation present?	Yes No	X Depth (inche	es): >20	Wetland Hydro	logy Present?	Yes X	No
(includes capillary fringe)	manitaring		ious inspect	'' :==\ if available		_	
Describe Recorded Data (stream gaseribe Remarks: Although it was no		•				aturated fo	r long durations
during the growing season. I			•	• •		alui alca io	Tong durations
dening the grann grana		0400					

VEGETATION (Four Strata) - Use scientific names of plants

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius) 1	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC:1(A)
2 3				Total Number of Dominant Species Across all Strata: 1 (B)
3 4				
5				Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species 5 x 1 = 5
Sapliing/Shrub Stratum (Plot Size: 15' radius				FACW species 52 x 2 = 104
1				FAC species 0 x 3 = 0
2				FACU species 0 x 4 = 0
3				UPL species 0 x 5 = 0
4				Column totals <u>57</u> (A) <u>109</u> (B)
5				
6				Prevalence Index = B/A = 1.91 Hydrophytic Vegetation Indicators:
0				X 1 -Rapid Test for Hydrophytic Vegetation X 2 - Dominance Test is >50%
9		- Tatal Causa		
T00/ (/ / /)	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0 Herb Stratum (Plot Size: 5' radius)	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
1 Fraxinus pennsylvanica	40	Υ	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2 Impatiens capensis	10	N	FACW	_
3 Cephalanthus occidentalis	5		OBL	¹ Indicators of hydric soil and wetland hydrology must be
4 Lobelia cardinalis	2		FACW	present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7				in diameter at breast height (DBH), regardless of height.
8			,	Sapling/shrub - Woody plants, excluding vines, less than 3
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Herb - All herbaceous (non-woody) plants, regardless of
11				size, and woody plants less than 3.28 ft tall.
	57	= Total Cover		Was de la constant de
50% of total cover: 28.5		of total cover:	11.4	Woody vines - All woody vines greater than 3.28 ft in height.
	20 /6	oi total cover.	11.4	
<u> </u>				
1				
2			-	
3				
4				Hydrophytic
5				Vegetation
	0	= Total Cover		Present? Yes X No
50% of total cover: 0		of total cover:	0	
Remarks: (Include photo numbers here or on a separate s	sheet.)			
The vegetation is mowed in this area. In dry ye	ears, this	area is prob	oably farm	ned.

Sampling Point:

DP-5A-1-IN

SOIL

Sampling Point: DP-5A-1-IN

nches) Color (moist) % Color (moist) % Type* Loc2 Texture Remarks 9-20 10YR 5 / 3 80 7.5YR 4 / 6 20 C M Silty clay loam Pype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Pype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Pype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Pype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Pype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Pype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Indicators: Indicators for Problematic Hydric Soils (MIRA 147, 148) Pydric Soil Indicators: Indicators for Problematic Hydric Soils (MIRA 147, 148) Polyvalue Below Surface (S9) (MIRA 147, 148) Polyvalue Below Surface (S9) (MIRA 147, 148) Pydrogen Sulfide (A4) Loamy Gleyed Matrix (F3) (MIRA 147, 148) Pedmont Floodplain Soils (F19) Wery Shallow Dark Surface (TF12) Other (Explain in Remarks) Pick Dark Surface (A12) Sandy Mucky Mineral (A10) (LRR N) Iron-Manganese Masses (F12) (LRR N, MIRA 147, 147) MIRA 147, 148) Sandy Gleyed Matrix (S4) Piedmont Floodplain Soils (F19) (MIRA 148) Red Parent Material (F21) (MIRA 126, 122) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MIRA 148) Red Parent Material (F21) (MIRA 147, 147) Pyes None Depth (inches): N/A Pydric soil present? Pyes X No Remarks: Piss Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Pyer: None Depth (inches): N/A Pydric soil present? Pyes X No Piedmont Floodplain Soils (F19) (MIRA 147, 147) Pyers None Peth (inches): N/A Pyeric soil present? Pyes X No Piedmont Floodplain Soils (F21) (MIRA 127, 147) Pyers None Peth (inches): N/A Pyeric soil present? Pyes X No Pyeric soil present? Pyes X No Pyeric soil present? Pyes X No Pyeric soil present? Pyes X No Pyeric soil present? Pyes X No Pyeric soi	ches)	Matrix			x Features	1	_		
-20 10YR 5 / 2 95 7.5YR 4 / 6 5 C M Silty clay loam per C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. per C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. per C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. per C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Coation: PL=Pore Lining, M=Matrix.	<u> </u>								Remarks
pe: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ric Soil Indicators:									
Indicators for Problematic Hydric Soils dististion (A1)	20	10YR 5/2	2 95	7.5YR 4 / 6	<u> </u>	C M	Slity clay	/ ioam	
Indicators for Problematic Hydric Soils distisol (A1)									
Indicators for Problematic Hydric Soils distisol (A1)									
Indicators for Problematic Hydric Soils distisol (A1)									
Indicators for Problematic Hydric Soils dististion (A1)									
Indicators for Problematic Hydric Soils dististic (A1)									
Indicators: Histisol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Commucky Mineral (A10) (LRR N) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Depleted Matrix (S6) MLRA 136, 122) Polyvalue Below Surface (S8) (MLRA 147, 148) (MLRA 147, 148) (MLRA 147, 148) (MLRA 147, 148) (MLRA 136, 147) Piedmont Floodplain Soils (F19) Other (Explain in Remarks) Pindicators of Problematic Hydric Soils (MLRA 147, 148) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Thick Dark Surface (A12) Redox Depressions (F8) Iron-Manganese Masses (F12) (LRR N, MLRA 136, 122) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Trictive Layer (if observed): Trictive Layer (if observed): Trictive Layer (if observed): Thick Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Depleted Surface (F13) (MLRA 127, 147) Thick Dark Surface (
Indicators: Indicators for Problematic Hydric Soils Histisol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Pedmont Floodplain Soils (F19) Thick Dark Surface (A11) Depleted Dark Surface (F6) Sandy Mucky Mineral (A10) (LRR N) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) MIRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Sandy Redox (S5) Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 148) Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Pyes None Pepth (inches): N/A Hydric soil present? Indicators for Problematic Hydric Soils C om Muck (A10) (MLRA 147) Coast Prairie Redox (A16) (MLRA 147, 148) (MLRA 147, 148) Piedmont Floodplain Soils (F19) Yery Shallow Dark Surface (TF12) Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.									
Histisol (A1)								2	
Histisol (A1)			Depletion, RI	M=Reduced Matrix, CS	=Covered	or Coated Sand	Grains.		
Histic Epipedon (A2) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Z Depleted Matrix (F2) Depleted Below Dark Surface (A10) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Stripped Matrix (S6) Strictive Layer (if observed): Type: None Polyvalue Below Surface (S8) (MLRA 147, 148) Coast Prairie Redox (A16) (MLRA 147, 148) Piedmont Floodplain Soils (F19) (MLRA 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Thick Dark Surface (A12) Sardy Mucky Mineral (S1) (LRR N, MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Thick Dark Surface (A12) Strictive Layer (if observed): Type: None Depth (inches): N/A Hydric soil present? Yes X No Thin Dark Surface (S9) (MLRA 147, 148) Piedmont Floodplain Soils (F19) Wetland hydrology must be present, unless disturbed or problematic.	dric So	il Indicators:						Indicator	s for Problematic Hydric Soils
Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) (MLRA 147,148) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soils (F19) Stratified Layers (A5) X Depleted Matrix (F3) (MLRA 136, 147) 2 cm Mucky Mineral (A10) (LRR N) Redox Dark Surface (F6) Very Shallow Dark Surface (TF12) Depleted Below Dark Suface (A11) Depleted Dark Surface (F7) Other (Explain in Remarks) Thick Dark Surface (A12) Redox Depressions (F8) Iron-Manganese Masses (F12) (LRR N, MLRA 147, 148) Sandy Mucky Mineral (S1) (LRR N, MLRA 136, 122) Iron-Manganese Masses (F13) (MLRA 136, 122) Sandy Gleyed Matrix (S4) Diedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present, unless disturbed or problematic. Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Present? Strictive Layer (if observed): Type: None Depth (inches): N/A Hydric soil present? Yes X No	Histisol	(A1)		Dark Surfa	ce (S7)			2 cm l	Muck (A10) (MLRA 147)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) Z Depleted Matrix (F3) Redox Dark Surface (F6) Depleted Below Dark Suface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Stripped Matrix (S6) Type: None Depleted Matrix (F2) Loamy Gleyed Matrix (F2) Redox Dark Surface (F6) Depleted Dark Surface (F6) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Where (Explain in Remarks) Thick Dark Surface (A12) Redox Depressions (F8) Iron-Manganese Masses (F12) (LRR N, MLRA 136) Umbric Surface (F13) (MLRA 136,122) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Wet and hydrology must be present, unless disturbed or problematic. Wet and hydrology must be problematic. We and Parent Material (F21) (MLRA 127, 147) Wet and hydrology must be problematic.	Histic E	Epipedon (A2)		Polyvalue	Below Surfa	ace (S8) (MLRA	147, 148)	Coast	Prairie Redox (A16)
Stratified Layers (A5) Z Depleted Matrix (F3) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Stripped Matrix (S6) Stripped Matrix (S6) Depleted Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) MICHA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Other (Explain in Remarks) MLRA 136, 122) Jandicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Strictive Layer (if observed): Type: None Depth (inches): N/A MICHA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) All Clark N, MLRA 136, 122) Jandicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Matrix (S6) Hydric soil present? Yes X No	Black F	Histic (A3)		Thin Dark	Surface (S9) (MLRA 147, 1	148)	(MLR	A 147,148)
Stratified Layers (A5) Z Depleted Matrix (F3) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 136) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Stripped Matrix (S6) Stripped Matrix (S6) Depleted Matrix (F3) MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Memarks: MERA 136, 122) John Charles Matrix (S4) MIRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 148) Memarks: Matrix (S6) MyA Mydric soil present? MyA No MIRA 136, 147) Very Shallow Dark Surface (TF12) Very Shallow Dark Surface (TF12) Memarks: Memarks Surface (F6) Very Shallow Dark Surface (TF12) Memarks Surface (F12) Memarks Surface (F				Loamy Gle	yed Matrix	(F2)		Piedm	ont Floodplain Soils (F19)
2 cm Mucky Mineral (A10) (LRR N) Depleted Below Dark Suface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 136) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Stripped Matrix (S6) Stripped Matrix (S6) Strictive Layer (if observed): Depleted Dark Surface (F6) Depleted Dark Surface (F7) De		• •				•			
Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Depleted Dark Surface (F7) Redox Depressions (F8) Iron-Manganese Masses (F12) (LRR N, MLRA 136) Umbric Surface (F13) (MLRA 136,122) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Strictive Layer (if observed): Type: None Depth (inches): N/A Hydric soil present? Yes X No) (LRR N)			F6)		•	• •
Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Strictive Layer (if observed): Type: None Depth (inches): N/A Redox Depressions (F8) Iron-Manganese Masses (F12) (LRR N, MLRA 136,) Iron-Manganese Masses (F12) (LRR N, MLRA 148) Iron-Manganese Masses (F12) (LRR N, MLRA 148) Iron-Manganese Masses (F12) (LRR N,									
Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Stripped Matrix									•
MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Fiedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Strictive Layer (if observed): Type: None Depth (inches): N/A Hydric soil present? Yes X No						•	N,		
Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Strictive Layer (if observed): Type: None Depth (inches): N/A Marks: Umbric Surface (F13) (MLRA 136,122) Red Parent Material (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Hydric soil present? Yes X No			,			,,,	,		
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Strictive Layer (if observed): Type: None Depth (inches): N/A Marks: Hidicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric soil present? Yes X No)			(MLRA 136.12	2)	2	
Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. Strictive Layer (if observed): Type: None Depth (inches): N/A Hydric soil present? Yes X No marks:			,						
Strictive Layer (if observed): Type: None Depth (inches): N/A									
Type: None Depth (inches): N/A Hydric soil present? Yes X No			(ad):		t material (i	121) (MEIOT 12	7, 147)	41000 4.0	
Depth (inches): N/A Hydric soil present? Yes X No marks:			rea):						
marks:					-			_	
	Depth (i	nches): N/A				Hydric	soil present	?	Yes X No
	nis ioca	ation met the d							
	nis loca	ation met the d							
	is ioca	ation met the d							
	iis ioca	ation met the d							
	is loca	ation met the d							
	s loca	ation met the d							

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River C	rossing		City	//County: Hend	lerson/Henders	on Sampling	Date:	7/27/2018
Applicant/Owner: INDOT (Des		KYTC (#			State: KY			DP-5A-1-OUT
Investigator(s): Luke Eggerin				tion, Township, R	Range:		N/A	
Landform (hillslope, terrace, etc.):			Loc	al relief (concave	e, convex, none):	Concave	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	120A	Lat:	37.	.90022	Long:	-87.52084	Datum:	NAD-1983
Soil Map Unit Name: Melvin silt	y clay loam					NWI classification	on:	NA
Are climatic / hydrologic conditions	on the site typica	al for this ti	ime of the ye	ear? Yes	X No	(If no, explain in	Remarks.)	
Are vegetation X , Soil	, or Hydrology	, siç	gnificantly dis	sturbed?	Are "normal circun	nstances" presen	t? Yes	X No
Are vegetation , Soil	, or Hydrology	na na	aturally proble	ematic? No	(If needed, explain	n any answers in I	Remarks.)	
SUMMARY OF FINDINGS								res, etc.
Hydrophytic Vegetation Present?	Yes	No	<u>x</u>	la tha Camula	al Avan midhin n			
Hydric Soil Present?	Yes	No	X	Wetland?	d Area within a	Yes	No X	
Wetland Hydrology Present?	Yes 2	X No						
Remarks: This is an uplan- upland point is adjacent to WOTUS 2018 ID: WTL-58	an agricultura		-			ver and Greer	ı River#2 F	Road. This
HYDROLOGY								
Wetland Hydrology Indicators:					Sec	ondary Indicators	(minimum of	two required)
Primary Indicators (minimum of o	ne is required; ch	heck all tha	at apply)		<u> </u>	Surface Soil Cra	cks (B6)	
Surface Water (A1)		True	e Aquatic Pla	ınts (B14)	_	Sparsely Vegeta	ted Concave	Surface (B8)
High Water Table (A2)		Hyd	Irogen Sulfide	e Odor (C1)	_	Drainage Patterr	ns (B10)	
Saturation (A3)		Oxio	dized Rhizos	pheres on Living	Roots (C3)	Moss Trim Lines	(B16)	
Water Marks (B1)		Pres	sence of Red	duced Iron (C4)	_	Dry-Season Wat	er Table (C2)	
Sediment Deposits (B2)		Rec	ent Iron Red	luction in Tilled S	Soils (C6)	Crayfish Burrows	s (C8)	
Drift Deposits (B3)		Thin	n Muck Surfa	ce (C7)		Saturation Visibl	e on Aerial Im	agery (C9)
Algal Mat or Crust (B4)		Othe	er (Explain in	ı Remarks)		Geomorphic Pos	sition (D2)	
Iron Deposits (B5)						Shallow Aquitaro	d (D3)	
Inundation Visible on Aerial	lmagery (B7)				_	Microtopographi	c Relief (D4)	
Water-Stained Leaves (B9)						FAC-Neutral Tes	st (D5)	
Aquatic Fauna (B13)								
Field Observations:								
Surface water present?	Yes No	o <u>X</u> De	epth (inches):	c				
Water table present?	Yes No	o X De	epth (inches):	:>20				
Saturation present? (includes capillary fringe)	Yes No	о <u>Х</u> De	epth (inches):	: >20	Wetland Hydrolo	ogy Present?	Yes X	No
Describe Recorded Data (stream	gauge, monitorir	ng well, ae	rial photos, r	revious inspection	ons), if available:			
Remarks: Some surface s	oil cracks resu	ulting fro	m infreque	ent Ohio Rive	r flooding were	observed.		

VEGETATION (Four Strata) - Use scientific names of plants

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius) 1	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
2				Total Number of Dominant Species Across all Strata:3(B)
5				Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species 0 x 1 = 0
Sapliing/Shrub Stratum (Plot Size: 15' radius)			FACW species 0 x 2 = 0
1				FAC species 0 x 3 = 0
2				FACU species 6 x 4 = 24
3				UPL species 0 x 5 = 0
4				Column totals 6 (A) 24 (B)
5				(-)
6				Prevalence Index = B/A = 4.00
7				Hydrophytic Vegetation Indicators:
	. ———			
8				1 -Rapid Test for Hydrophytic Vegetation
9				2 - Dominance Test is >50%
	0	= Total Cover		3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0 Herb Stratum (Plot Size: 5' radius)	20%	of total cover:	0	4 - Morphological Adaptations 1 (Provide supporting data in Remarks or on a separate sheet)
1 Sorghum halepense	2	Υ	FACU	Problematic Hydrophytic Vegetation (Explain)
2 Amaranthus retroflexus	2	Y	FACU	
3 Chamaecrista fasciculata	2		FACU	¹ Indicators of hydric soil and wetland hydrology must be
4				present, unless disturbed or problematic
·				Definitions of Four Vegetation Strata:
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7				in diameter at breast height (DBH), regardless of height.
				Sapling/shrub - Woody plants, excluding vines, less than 3
°				in. DBH and greater than or equal to 3.28 ft (1m) tall.
9	. ———			
10				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
11				oles, and mossy planto loss than oles it tall
	6	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in
50% of total cover: 3	20%	of total cover:	1.2	height.
Woody Vine Stratum (Plot Size: 30' radius)			
1				
2				
3				
4				Hardward and a
5 _				Hydrophytic Vegetation
	0	= Total Cover		Present? Yes No X
50% of total cover: 0	20%	of total cover:	0	
Remarks: (Include photo numbers here or on a separate		•		
		area haa raa	ently bee	an tilled so natural vagotation is chaost
Minimal vegetation is present in the herb stra	ium. me a	area nas iec	cilly bee	en illieu so natural vegetation is absent.

Sampling Point: DP-5A-1-OUT

SOIL

Sampling Point: DP-5A-1-OUT

Depth	scription: (Describe Matrix	o to the do		lox Featu		01 01 001111	aboo	nice or ma	•	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Textu	ıre		Remarks
0-11	10YR 5 / 3	100	20.0. (1110101)		. , , , ,		Silt lo			
11-20	10YR 5 / 2	95	10YR 5 / 4	5	С	M	Silt lo		•	
11-20	10110 372		10110 3 7 4			IVI	Silt io	aiii		
						. ——				
				_		· ——				
				_						
						· —— ·				
¹ Type: C=0	Concentration, D=De	nletion RM	=Reduced Matrix (S=Cove	red or Coa	ated Sand	Grains	² l ocation	: PL=Pore Lini	ng M=Matrix
	il Indicators:	piction, ravi	reduced Matrix, e	0000	100 01 000	ated Carla	ordino.			natic Hydric Soils ³ :
•			Dorle Com	face (07	`					-
Histiso	, ,		Dark Sur	•					Muck (A10) (N	
Histic E	Epipedon (A2)					88) (MLRA		Coas	t Prairie Redox	(A16)
Black H	Histic (A3)		Thin Darl	k Surface	e (S9) (ML	RA 147, 1	48)	(MLF	RA 147,148)	
Hydrog	gen Sulfide (A4)		Loamy G	leyed Ma	atrix (F2)			Piedr	nont Floodplair	n Soils (F19)
	ed Layers (A5)		Depleted					_	ILRA 136, 147)	
	lucky Mineral (A10) (I RP NI	Redox D					•	Shallow Dark S	
	ed Below Dark Sufac	e (ATT)			ırface (F7)	1		Otne	r (Explain in Re	marks)
Thick D	Dark Surface (A12)		Redox D	epressio	ns (F8)					
Sand	y Mucky Mineral (S1)) (LRR N,	Iron-Man	ganese I	Masses (F	12) (LRR I	٧,			
MLI	RA 147, 148)		ML	RA 136)						
Sandy	Gleyed Matrix (S4)		Umbric S	urface (F	-13) (MLR	RA 136,122)	3, ,, ,		
	Redox (S5)					F19) (MLR				c vegetation and
						MLRA 127			nydrology must sturbed or prob	
			REO PAIE			IVII RA 1//			Stutbed of bloc	
	ed Matrix (S6)			in matci	iai (i - i) (, 147)	uriicaa ur		
	Layer (if observed):			in matci	iai (i 2 i) (, 141)	unicss di		
				THE INICIO	idi (i 2 i) (, 147)	unicos di		
Restrictive Type:	Layer (if observed): None				Tar (1 2 1) (
Restrictive Type: Depth (i	Layer (if observed): None				idi (i 21) (soil present		Yes	No X
Restrictive Type: Depth (i	Layer (if observed): None	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			
Restrictive Type: Depth (i	Layer (if observed): None inches): N/A	soil is wit		_		Hydric	soil present			

Project/Site: I-69 Ohio River C	Crossing			City/County:	Henderson	n/Henderso	on Sampling	Date:	5/17/2019
Applicant/Owner: INDOT (De	s#:1601700); KY1	C (KYTC#	:2-1088)		State: KY	Sampling	Point:	DP-5A-2-IN
Investigator(s): Luke Eggerin	ng			Section, Town	nship, Range:			N/A	
Landform (hillslope, terrace, etc.):	Flat			Local relief (c	concave, conv	ex, none):	Concave	Slope (%):	2%
Subregion (LRR or MLRA): MLR	A 120A		Lat:	37.89722	Lon	ng:	-87.51989	Datum:	NAD-1983
Soil Map Unit Name: Melvin sil	ty clay loam						NWI classificat	ion:	NA
Are climatic / hydrologic condition	s on the site typ	oical for	this time of the	ne year?	Yes X	No	(If no, explain ir	n Remarks.)	
Are vegetation X, Soil	, or Hydrolo	gy	significant	tly disturbed?	Are "n	ormal circum	nstances" preser	nt? Yes _	X No
Are vegetation, Soil	, or Hydrold	gy	naturally p	oroblematic?	No (If nee	eded, explain	any answers in	Remarks.)	
SUMMARY OF FINDINGS	– Attach sit	e ma	showing	sampling	point locat	tions, trar	nsects, impo	rtant featu	ıres, etc.
Hydrophytic Vegetation Present	? Yes _	Х	No	- la tha C	Samuelad Avaa	ithin a			
Hydric Soil Present?	Yes	X	No	_ is the S	Sampled Area d?	i within a	Yes X	No	
Wetland Hydrology Present?	Yes	х	No	_					<u> </u>
Remarks: This wetland sy	-		_	Ohio Diver	and Green	Divor #2 [Poad This w	atland evet	om has DEO and
PEM components. This dawners 2018 ID: WTL-5	•		is a r Livi p	ortion of the	e welland li	п а ріреші	e rigiti-oi-wa	y.	
HYDROLOGY									
Wetland Hydrology Indicators	;:					Sec	ondary Indicator	s (minimum o	f two required)
Primary Indicators (minimum of	one is required	; check	all that apply)			Surface Soil Cra	acks (B6)	
Surface Water (A1)			True Aquati	c Plants (B14))	_	Sparsely Veget	ated Concave	Surface (B8)
High Water Table (A2)			Hydrogen S	Sulfide Odor (C	(1)	<u>x</u>	Drainage Patter	ns (B10)	
X Saturation (A3)			Oxidized Rh	nizospheres or	n Living Roots	(C3)	Moss Trim Line	s (B16)	
X Water Marks (B1)			Presence of	f Reduced Iron	n (C4)	_	Dry-Season Wa	iter Table (C2	2)
X Sediment Deposits (B2)			Recent Iron	Reduction in	Tilled Soils (C	6) <u>X</u>	Crayfish Burrow	/s (C8)	
Drift Deposits (B3)		_	Thin Muck S	Surface (C7)		_	Saturation Visib	le on Aerial Ir	magery (C9)
Algal Mat or Crust (B4)		_	Other (Expl	ain in Remarks	s)	_	Geomorphic Po	sition (D2)	
Iron Deposits (B5)						_	Shallow Aquitar	d (D3)	
Inundation Visible on Aerial	Imagery (B7)					_	Microtopograph	ic Relief (D4)	
Water-Stained Leaves (B9)	1					_	FAC-Neutral Te	st (D5)	
Aquatic Fauna (B13)									
Field Observations:									
Surface water present?		No X							
Water table present?	Yes	No X	Depth (inc	ches): 4	ı .				
Saturation present?	Yes	No X	Depth (inc	ches): 0	Wetla	and Hydrolo	gy Present?	Yes X	_ No
(includes capillary fringe) Describe Recorded Data (strear	n gauge, monit	orina we	ell. aerial pho	tos, previous ir	nspections). if	available:			
Remarks: Sediment depo							soil pit was o	bserved a	t four inches.
•			,				·		

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius) 1	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: (A)
2				Total Number of Dominant Species Across all Strata: 2 (B)
4				Percent of Dominant Species that
5				are OBL, FACW, or FAC: 100.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species 45 x 1 = 45
Sapliing/Shrub Stratum (Plot Size: 15' radius		•		FACW species 50 x 2 = 100
1				FAC species 0 x 3 = 0
2				FACU species 0 x 4 = 0
3				UPL species 0 x 5 = 0
4				Column totals 95 (A) 145 (B)
5				(2)
6				Prevalence Index = B/A = 1.91
7				Hydrophytic Vegetation Indicators:
8				X 1 -Rapid Test for Hydrophytic Vegetation
9				X 2 - Dominance Test is >50%
	0	= Total Cover		\mathbf{X} 3 - Prevalence Index is $\leq 3.0^1$
50% of total cover: 0		of total cover:		4 - Morphological Adaptations ¹ (Provide supporting data
Herb Stratum (Plot Size: 5' radius)	2070	or total cover.		in Remarks or on a separate sheet)
1 Carex scoparia	40	Υ	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2 Polygonum hydropiperoides	30	<u>'</u> Y	OBL	1 Toblematic Hydrophytic Vegetation (Explain)
3 Cephalanthus occidentalis	15		OBL	The first constitution of the defendance of the constitution of th
	10		FACW	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
· · · · · · · · · · · · · · · · · · ·	10		FACW	Definitions of Four Vegetation Strata:
5				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
				in diameter at breast height (DBH), regardless of height.
				Sapling/shrub - Woody plants, excluding vines, less than 3
8				in. DBH and greater than or equal to 3.28 ft (1m) tall.
9				Hada Allika kana a Kana and Natada an and line a
10				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
11				
	95	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in height.
50% of total cover: <u>47.5</u>	20%	of total cover:	19	negnt.
Woody Vine Stratum (Plot Size: 30' radius)				
1				
2				
3				
4				Hydrophytic
5				Vegetation
	0	= Total Cover		Present? Yes X No No
50% of total cover: 0		of total cover:	0	
Remarks: (Include photo numbers here or on a separate	sheet.)			
Green ash (Franxinus pennsylvanica) and shi	ubs were	rooted just	outside o	f the plot in the wooded portion of the slough.

Sampling Point: DP-5A-2-IN

10YR 4 / 1 90 10YR 5 / 4 10 4-16 10YR 5 / 2 90 2.5Y 3 / 1 10 16-20 2.5Y 3 / 1 100	C M Silty Silty	Texture Remarks Silt loam / clay loam / clay loam
pe: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered of the Color Indicators: Histisol (A1) Histisc Epipedon (A2) Dark Surface (S7) Polyvalue Below Surface	C M Silty Silty	/ clay loam / clay loam
pe: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or ric Soil Indicators: Histisol (A1) Dark Surface (S7) Polyvalue Below Surface	Silty	/ clay loam
pe: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or ric Soil Indicators: Histisol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface		
ric Soil Indicators: Histisol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface	or Coated Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
ric Soil Indicators: Histisol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface	or Coated Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Histic Soil Indicators: Histisol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface	or Coated Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Histic Soil Indicators: Histisol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface	or Coated Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
ric Soil Indicators: Histisol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface	or Coated Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Histic Soil Indicators: Histisol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface	r Coated Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
ric Soil Indicators: Histisol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface	or Coated Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Histiscl (A1) Histic Epipedon (A2) Dark Surface (S7) Polyvalue Below Surface	r Coated Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Histisol (A1) Dark Surface (S7) Histic Epipedon (A2) Polyvalue Below Surface		
Histic Epipedon (A2) Polyvalue Below Surfa		Indicators for Problematic Hydric Soils ³ :
Histic Epipedon (A2) Polyvalue Below Surfa		2 cm Muck (A10) (MLRA 147)
	ce (S8) (MLRA 147, 14	_
) (MLRA 147, 148)	(MLRA 147,148)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (Piedmont Floodplain Soils (F19)
Stratified Layers (A5) X Depleted Matrix (F3)	· =/	(MLRA 136, 147)
2 cm Mucky Mineral (A10) (LRR N) Redox Dark Surface (F	- 6)	Very Shallow Dark Surface (TF12)
Depleted Below Dark Surface (A11) Depleted Dark Surface (A11) Depleted Dark Surface (A11)		Other (Explain in Remarks)
		Other (Explain in Remarks)
Thick Dark Surface (A12) Redox Depressions (F		
Sandy Mucky Mineral (S1) (LRR N, Iron-Manganese Mass	es (Γ 1∠) (LKK N,	
MLRA 147, 148) MLRA 136)	(MI DA 400 400)	
Sandy Gleyed Matrix (S4) Umbric Surface (F13)		³ Indicators of hydrophytic vegetation and
	ioils (F19) (MLRA 148)	,,gy
Stripped Matrix (S6) Red Parent Material (F	² 21) (MLRA 127, 147)	unless disturbed or problematic.
strictive Layer (if observed):		
Type: None		
Depth (inches): N/A	Hydric soil pre	esent? Yes X No No

Project/Site: I-69 Ohio River Cr	ossina	City	v/Countv: Hend	erson/Henders	on Sampling	Date:	7/27/2018
Applicant/Owner: INDOT (Des				State: KY			DP-5B-1-IN
Investigator(s): Luke Eggering		•	tion, Township, F	Range:		N/A	
Landform (hillslope, terrace, etc.):			cal relief (concave	e, convex, none):	Concave	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	120A	Lat: 37.	.89918	Long:	-87.52014	Datum:	NAD-1983
Soil Map Unit Name: Melvin silt	y clay loam				NWI classification	on:	NA
Are climatic / hydrologic conditions	on the site typical for	r this time of the ye	ear? Yes	X No	(If no, explain in	Remarks.)	
Are vegetation , Soil	, or Hydrology	significantly dis	sturbed? No	Are "normal circur	nstances" presen	t? Yes	X No
Are vegetation , Soil	, or Hydrology	naturally proble	ematic? No	(If needed, explain	any answers in	Remarks.)	
SUMMARY OF FINDINGS -							res, etc.
Hydrophytic Vegetation Present?	Yes X	No					
Hydric Soil Present?	Yes X	No	-	d Area within a	Vaa V	Na	
Wetland Hydrology Present?	Yes X	No	Wetland?		Yes X	_No	
Remarks: This wetland sys			- Di		D	41 1 4 -	b DEO d
PEM components. Portions forested swale. WOTUS 2018 ID: WTL-58	s of the wetland a					-	
HYDROLOGY							
Wetland Hydrology Indicators:				Sec	ondary Indicators	(minimum o	f two required)
Primary Indicators (minimum of o	ne is required; check	(all that apply)		<u> </u>	Surface Soil Cra	cks (B6)	
Surface Water (A1)	_	True Aquatic Pla	ants (B14)		Sparsely Vegeta	ited Concave	Surface (B8)
High Water Table (A2)		Hydrogen Sulfide	e Odor (C1)	_	Drainage Patteri	ns (B10)	
Saturation (A3)	_	Oxidized Rhizos	spheres on Living	Roots (C3)	Moss Trim Lines	s (B16)	
Water Marks (B1)	_	Presence of Rec	duced Iron (C4)	_	Dry-Season Wa	ter Table (C2)
Sediment Deposits (B2)	_	Recent Iron Red	duction in Tilled S	Soils (C6) X	Crayfish Burrow	s (C8)	
Drift Deposits (B3)	_	Thin Muck Surfa	ace (C7)	_	Saturation Visible	e on Aerial In	nagery (C9)
Algal Mat or Crust (B4)	_	Other (Explain in	n Remarks)	<u>x</u>	Geomorphic Pos	sition (D2)	
Iron Deposits (B5)				_	Shallow Aquitare	d (D3)	
Inundation Visible on Aerial I	magery (B7)			_	Microtopographi	c Relief (D4)	
X Water-Stained Leaves (B9)				<u>x</u>	FAC-Neutral Tes	st (D5)	
Aquatic Fauna (B13)							
Field Observations:							
Surface water present?	Yes No_X	Depth (inches)):				
Water table present?	Yes No X	Depth (inches)): >20				
Saturation present?	Yes No X	Depth (inches)): >20	Wetland Hydrold	ogy Present?	Yes X	No
(includes capillary fringe)				in and if a continuous			
Describe Recorded Data (stream Remarks:	gauge, monitoring w	/eii, aeriai pnotos,	previous inspect	ions), if available:			
Water moves through this	swale during stor	mwater events	and during C	hio River flood	9		
vater moves though this	swale dailing stor	inwater events	, and daming c	onio ravei nood	.		

1 Cephalanthus occidentalis 40 Y OBL FAC species 75 x 3	4 4 100.00% Multiply by:	(A) (B) (A/B)
2 Ulmus americana 10 N FACW Total Number of Dominant Species Across all Strata: 4	4 100.00% Multiply by:	(B)
3	100.00% Multiply by:	_ ` `
are OBL, FACW, or FAC: Prevalence Index worksheet Prevalence Index worksheet Total % Cover of: Sapliing/Shrub Stratum (Plot Size: 15' radius) Cephalanthus occidentalis 40 Y OBL FAC species 75 x 3	Multiply by:	_ (A/B)
are OBL, FACW, or FAC: Prevalence Index worksheet Prevalence Index worksheet Total % Cover of: Sapliing/Shrub Stratum (Plot Size: 15' radius) Cephalanthus occidentalis 40 Y OBL FAC species 75 x 3	Multiply by:	_ (A/B)
Prevalence Index worksheet 85 = Total Cover Total % Cover of: 50% of total cover: 42.5 20% of total cover: 17 OBL species 40 x 3 Sapliing/Shrub Stratum (Plot Size: 15' radius) FACW species 35 x 3 1 Cephalanthus occidentalis 40 Y OBL FAC species 75 x 3		
85 = Total Cover Total % Cover of: 50% of total cover: 42.5 20% of total cover: 17 OBL species 40 x Sapliing/Shrub Stratum (Plot Size: 15' radius) FACW species 35 x 1 Cephalanthus occidentalis 40 Y OBL FAC species 75 x		
Sapliing/Shrub Stratum(Plot Size: 15' radius)20% of total cover:17OBL species40x1Cephalanthus occidentalis40YOBLFAC species75x		
Sapliing/Shrub Stratum (Plot Size: 15' radius) 1 Cephalanthus occidentalis 40 Y OBL FAC species 75 x 3	4 - 40	_
1 Cephalanthus occidentalis 40 Y OBL FAC species 75 x 3	1 = 40	_
	2 =70	_
	3 = 225	_
2 FACU species 0 x 4	4 =0	_
3 UPL species x s	5 = 0	_
4 Column totals150(/	A) 335	(B)
5		
6 Prevalence Index = B/A		
7 Hydrophytic Vegetation Indicator	rs:	
81 -Rapid Test for Hydrophytic V	/egetation	
9 X 2 - Dominance Test is >50%		
40 = Total Cover X 3 - Prevalence Index is ≤3.0 ¹		
50% of total cover: 20 20% of total cover: 8 4 - Morphological Adaptations ¹		orting data
Herb Stratum (Plot Size: 5' radius) in Remarks or on a separate sh		
1Impatiens capensis 15 Y FACW Problematic Hydrophytic Veget	tation¹ (Explain))
2 Fraxinus pennsylvanica 10 Y FACW		
¹ Indicators of hydric soil and wetlan		ıst be
present, unless disturbed or probler		
5 Definitions of Four Vegetation St		
6 Tree - Woody plants, excluding vine in diameter at breast height (DBH),		
7		
8 Sapling/shrub - Woody plants, exc		
9 in. DBH and greater than or equal to	ιο 3.28 π (1m) τα	AII.
10 Herb - All herbaceous (non-woody)		ess of
11 size, and woody plants less than 3.2	28 ft tall.	
= Total Cover	eater than 3.28	ft in
50% of total cover: 12.5 20% of total cover: 5 height.		
Woody Vine Stratum (Plot Size: 30' radius)		
1		
2		
3		
4		
5 Hydrophytic		
	X No	
vegetation		_
0 = Total Cover Present? Yes 2		
0 = Total Cover Present? Yes		
The second secon		
0 = Total Cover Present? Yes 2		
The second secon		

DP-5B-1-IN

Sampling Point:

Sampling Point: DP-5B-1-IN

Depth (inches)			epin neede				or or con	firm the abse	ince or inc	ilcators.		
	Mat		O-land		x Featur		1 0	T4			Damada	
(inches) 0-2	Color (mois	<u> </u>	Color (moist)	<u>%</u>	Type ¹	Loc2	Textu		A lot of or	Remarks	propert
	2.5YR 6 /		10YR	6 / 6	20		- N.A	Silty clay		A lot of of	ganic matter is	present.
2-14 14-20	2.5YR 6 /		101R 10YR	6 / 6	40	<u>C</u>	<u>M</u>	Silty clay				
14-20	2.51K 0 /	1 00	TUTK	0 / 0	40		IVI	Silty clay	y ioaiii			
-												
	-									-		
1 0		Destrict DI						0	21	- DL D L'		
	Concentration, D	=Depletion, RN	/I=Reduced	Matrix, CS	s=Cover	ed or Coa	ated Sand	Grains.			ning, M=Matrix.	_3.
•	il Indicators:										ematic Hydric Soil	S :
Histisc			_	Dark Surfa	, ,					n Muck (A10)		
	Epipedon (A2)		_	•				147, 148)		st Prairie Red	ox (A16)	
	Histic (A3)		_	Thin Dark			.RA 147, 1	148)		RA 147,148)		
	gen Sulfide (A4)		_	Loamy Gle							ain Soils (F19)	
Stratifi	ed Layers (A5)		<u>X</u>	Depleted N	•	•				MLRA 136, 14		
2 cm N	lucky Mineral (A	10) (LRR N)		Redox Dai	k Surfac	ce (F6)			Very	Shallow Dark	Surface (TF12)	
x Deplet	ed Below Dark S	uface (A11)	_	Depleted [Dark Sur	face (F7)			Othe	er (Explain in F	Remarks)	
Thick I	Dark Surface (A1	2)	_	Redox Dep	oression	s (F8)						
Sand	y Mucky Mineral	(S1) (LRR N,	_	Iron-Mang	anese M	lasses (F	12) (LRR	N,				
ML	RA 147, 148)			MLR	A 136)							
Sandy	Gleyed Matrix (S	84)		Umbric Su	rface (F	13) (MLR	A 136,12	2)	3Indicate	ore of hydronh	ytic vegetation and	
Sandy	Redox (S5)			Piedmont	Floodpla	in Soils (F19) (ML I	RA 148)		hydrology mu		
Stringe	ed Matrix (S6)			Dod Daron	t Matari	ol (E24) (MLRA 12	7 147)		isturbed or pro		
Ottippe	a main (00)			Reu Paiei	it iviateri	ai (FZI) (., <i>,</i>	uriicaa u			
	e Layer (if obse	rved):		Reu Palei	it iviateri	ai (F21) (.,,	unicss u			
		rved):		Red Palei	it Materia	ai (F21) (.,,	unicas u			
Restrictiv	e Layer (if obse	rved):	-	Red Falei	-	ai (F 2 1) (<u> </u>		
Restrictiv Type: Depth (e Layer (if obse	rved):		Reu Falei	- -	ai (FZ1) (soil present		Yes_X		_
Restrictiv Type: Depth (Remarks:	None N/A		atriv (E3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	e Layer (if obse		atrix (F3)		-		Hydric	soil present	?	Yes X		
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (Remarks:	None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_
Restrictiv Type: Depth (None N/A		atrix (F3)		-		Hydric	soil present	?	Yes X		_

Project/Site: I-69 Ohio River Cr	ossing	(City/County: Henderson	/Henderson	Sampling D	ate:	7/26/2018
Applicant/Owner: INDOT (Des	#:1601700); KY	ГС (#2-1088	s)	State: KY	Sampling P	oint: I	OP-5B-1-OUT
Investigator(s): Luke Eggering	g; Lindsey Posta	ski s	Section, Township, Range:			N/A	
Landform (hillslope, terrace, etc.):	Flat	l	Local relief (concave, conve	ex, none):(Convex	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	120A	Lat:	37.89906 Long	g: <u>-87</u>	7.51998	Datum:	NAD-1983
Soil Map Unit Name: Melvin silty	/ clay loam			NV	VI classification	n:	NA
Are climatic / hydrologic conditions					no, explain in F	•	
			disturbed? No Are "no			_	X No
Are vegetation, Soil	, or Hydrology	naturally pro	oblematic? No (If need	ded, explain any	y answers in R	emarks.)	
SUMMARY OF FINDINGS -	Attach site ma	p showing s	sampling point locat	ions, transe	cts, import	ant featu	res, etc.
Hydrophytic Vegetation Present?	Yes X	No	Is the Sampled Area	within a			
Hydric Soil Present?	Yes	No X	Wetland?		es	No X	
Wetland Hydrology Present?	Yes	No X					
WOTUS 2018 ID: WTL-58.							
HYDROLOGY							
Wetland Hydrology Indicators:	Company also also also also also also also also	9.05 - Canada A			ary Indicators (two required)
Primary Indicators (minimum of or	ne is requirea; cneck		Plants (D44)		rface Soil Cracl	, ,	Of (DO)
Surface Water (A1)	_	True Aquatic	, ,		arsely Vegetate		Suпасе (Во)
High Water Table (A2)	_		Ilfide Odor (C1)		ainage Patterns	, ,	
Saturation (A3) Water Marks (B1)	_	•	zospheres on Living Roots Reduced Iron (C4)	` ′ —	ss Trim Lines (
Sediment Deposits (B2)	_	•	Reduced from (C4) Reduction in Tilled Soils (C6		y-Season Wate ayfish Burrows		
Drift Deposits (B3)	_	Thin Muck Su	·		turation Visible		nagery (C9)
Algal Mat or Crust (B4)	_	•	in in Remarks)	_	omorphic Posit		iagory (CC)
Iron Deposits (B5)	_	(.,		allow Aquitard		
Inundation Visible on Aerial I	magery (B7)				crotopographic	` '	
Water-Stained Leaves (B9)	•			FA	C-Neutral Test	(D5)	
Aquatic Fauna (B13)							
Field Observations:							
Surface water present?	Yes No_X	Depth (inch	ies):				
Water table present?	Yes No _X	Depth (inch	nes): >20				
Saturation present?	Yes No _X	Depth (inch	nes): >20 Wetla	and Hydrology I	Present?	Yes	No X
(includes capillary fringe) Describe Recorded Data (stream	gauge, monitoring w	ell, aerial photo	os, previous inspections), if	available:			
Remarks:	<u>5</u>			<u>-</u>			
This data point is on a high	er terrace and w	as moderate	ely well drained.				

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius)	% Cover	Species?	Status	Number of Dominant Species That
1 Acer rubrum	80	<u> </u>	FAC	Are OBL, FACW, or FAC: 3 (A)
2				Total Number of Dominant Species
3				Across all Strata: 4 (B)
4				Percent of Dominant Species that
5				are OBL, FACW, or FAC: <u>75.00%</u> (A/B)
6	-			Prevalence Index worksheet
7				
	80	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 40	20%	of total cover:	16	OBL species 0 x 1 = 0
Sapliing/Shrub Stratum (Plot Size: 15' radius)		E 4 0) 4 /	FACW species30 x 2 =60
1 Ulmus americana	30	<u> </u>	FACW	FAC species165 x 3 =495
2				FACU species25 x 4 =100
3				UPL species 0 x 5 = 0
4				Column totals <u>220</u> (A) <u>655</u> (B)
5				
6				Prevalence Index = B/A = 2.98 Hydrophytic Vegetation Indicators:
7				
8				1 -Rapid Test for Hydrophytic Vegetation
9				X 2 - Dominance Test is >50%
F00/ - (Late Le	30	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 15	20%	of total cover:	6	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot Size: 5' radius)	80	Υ	FAC	
1 Toxicodendron radicans	20		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2 Chasmanthium latifolium	5		FAC	1
3 Campsis radicans			FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
5	-			Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
°				in diameter at breast height (DBH), regardless of height.
0	-			Sapling/shrub - Woody plants, excluding vines, less than 3
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Herb - All herbaceous (non-woody) plants, regardless of
				size, and woody plants less than 3.28 ft tall.
11	105	= Total Cover		
50% of total cover: 52.5		of total cover:	21	Woody vines - All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot Size: 30' radius	2070	or total cover.		
1 Smilax glauca	, 5	Υ	FACU	
2		'	1700	
3				
4				
5				Hydrophytic
<u> </u>	5	= Total Cover		Vegetation Present? Yes X No
50% of total cover: 2.5		of total cover:	1	rieseitt?
		or total cover.		
Remarks: (Include photo numbers here or on a separate	ડાલ્લા.)			

Sampling Point:

DP-5B-1-OUT

Sampling Point: DP-5B-1-OUT

Depth (mches) Cook (moist) % Color (moist) % Type Loc2 Sitt Loam S	Profile Description: (Describe to the dep			or or confirm	n the absence o	f indicators.)	
1-12 2.5				Loc2	Texture		Remarks
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Coation: PL=Pore Lining, M=Matrix.			,, .,,,,				. tomanio
12-20 10YR 5 / 4 100 Silt loam 1-Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 1-Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 1-Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 1-Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 1-Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 1-Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 1-Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 1-Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 1-Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 1-Type: None		10YR 5 / 4	2 C				
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Hydric Soil Indicators: Histisol (A1)							
Hydric Soil Indicators: Histisol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Sandy Mucky Mineral (A10) (LRR N) Redox Derpessions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Jandicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long	·	, -					
Hydric Soil Indicators: Histisol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Sandy Mucky Mineral (A10) (LRR N) Redox Derpessions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Jandicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long							
Hydric Soil Indicators: Histisol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Sandy Mucky Mineral (A10) (LRR N) Redox Derpessions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Jandicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long							
Hydric Soil Indicators: Histisol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Sandy Mucky Mineral (A10) (LRR N) Redox Derpessions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Jandicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long							
Hydric Soil Indicators: Histisol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Sandy Mucky Mineral (A10) (LRR N) Redox Derpessions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Jandicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long							
Hydric Soil Indicators: Histisol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Sandy Mucky Mineral (A10) (LRR N) Redox Derpessions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Jandicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long							
Hydric Soil Indicators: Histisol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Sandy Mucky Mineral (A10) (LRR N) Redox Derpessions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Jandicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long							
Histisol (A1)		=Reduced Matrix, CS=C	Covered or Coa	ated Sand Gr			
Histic Epipedon (A2)	Hydric Soil Indicators:				Inc	licators for Proble	matic Hydric Soils ³ :
Black Histic (A3)	Histisol (A1)	Dark Surface	(S7)		_	2 cm Muck (A10) (N	/ILRA 147)
Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F3) Depleted Matrix (F3) Z cm Mucky Mineral (A10) (LRR N) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Stripped Matrix (S6) Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long	Histic Epipedon (A2)	Polyvalue Bel	low Surface (S	8) (MLRA 1 4	47, 148)	Coast Prairie Redox	(A16)
Stratified Layers (A5)	Black Histic (A3)	Thin Dark Sui	rface (S9) (ML	RA 147, 148	3)	(MLRA 147,148)	
2 cm Mucky Mineral (A10) (LRR N)	Hydrogen Sulfide (A4)	Loamy Gleye	d Matrix (F2)			Piedmont Floodplai	n Soils (F19)
Depleted Below Dark Suface (A11) Thick Dark Surface (A12) Redox Depressions (F8) Iron-Manganese Masses (F12) (LRR N, MLRA 147, 148) MLRA 136) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long	Stratified Layers (A5)	Depleted Mat	rix (F3)			•	•
Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) (LRR N, Iron-Manganese Masses (F12) (LRR N, MLRA 147, 148) MLRA 136) Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136,122) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: None Depth (inches): N/A Hydric soil present? Yes No X Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long	2 cm Mucky Mineral (A10) (LRR N)	Redox Dark S	Surface (F6)				
Sandy Mucky Mineral (S1) (LRR N, MLRA 136) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long	Depleted Below Dark Suface (A11)	Depleted Dar	k Surface (F7)		_	Other (Explain in Re	emarks)
MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Restrictive Layer (if observed): Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long	Thick Dark Surface (A12)	Redox Depre	ssions (F8)				
Sandy Redox (S5)	Sandy Mucky Mineral (S1) (LRR N,	Iron-Mangane	ese Masses (F	12) (LRR N,			
Sandy Redox (S5)			-				
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: None Depth (inches): N/A					³ Ind	licators of hydrophyt	ic vegetation and
Restrictive Layer (if observed): Type: None Depth (inches): N/A Hydric soil present? Yes No X Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long	_	Piedmont Flo	odplain Soils (I	F19) (MLRA	148) wet	land hydrology must	be present,
Type: None Depth (inches): N/A Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long	Stripped Matrix (S6)	Red Parent M	laterial (F21) (MLRA 127, 1	147) unle	ess disturbed or prol	olematic.
Depth (inches): N/A	Restrictive Layer (if observed):						
Remarks: Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long	Type: None						
Soils at this point are within the plow zone. Soils are moderately well drained and do not appear to retain water for long	Depth (inches): N/A			Hydric so	oil present?	Yes	No <u>X</u>
	Soils at this point are within the plo	w zone. Soils are r	moderately v	well draine	ed and do not	appear to retain	water for long

Project/Site: I-69 Ohio River Cr	ossina	City	v/Countv: Hend	lerson/Henders	on Sampling	Date:	5/17/2019
Applicant/Owner: INDOT (Des				State: KY			DP-5C-1-IN
Investigator(s): Luke Eggering	•	•	tion, Township, R			N/A	
Landform (hillslope, terrace, etc.):			•	e, convex, none):	Concave	Slope (%):	1%
Subregion (LRR or MLRA): MLRA	· · · · · ·		89969 [`]	Long:	-87.51981	Datum:	NAD-1983
Soil Map Unit Name: Melvin silty				<u> </u>	NWI classification		NA
Are climatic / hydrologic conditions		this time of the ye	ear? Yes	X No	(If no, explain in		
	, or Hydrology		_	Are "normal circun	•	•	X No
	, or Hydrology			(If needed, explain	•	_	
SUMMARY OF FINDINGS -	_			locations, trai	nsects, impor	rtant featu	res, etc.
Hydrophytic Vegetation Present?	Yes X	No					
Hydric Soil Present?	Yes X	No	Is the Sampled Wetland?	d Area within a	Yes X	No	
Wetland Hydrology Present?	Yes X	No	Trotturia :		100	_ '**	
Remarks: This wetland sys			o River and C	Freen River #2	Road This we	tland syste	em has PFO and
PEM components. This dat WTL-58.						•	
HYDROLOGY							
Wetland Hydrology Indicators:				Sec	condary Indicators	(minimum of	two required)
Primary Indicators (minimum of or	ne is required; check	all that apply)			Surface Soil Cra	cks (B6)	_
Surface Water (A1)		True Aquatic Pla	ants (B14)		Sparsely Vegeta	ited Concave	Surface (B8)
X High Water Table (A2)	_	Hydrogen Sulfide	e Odor (C1)	<u>x</u>	Drainage Patterr	ns (B10)	
X Saturation (A3)		Oxidized Rhizos	spheres on Living	Roots (C3)	Moss Trim Lines	; (B16)	
X Water Marks (B1)	_	Presence of Red	duced Iron (C4)	_	Dry-Season Wat	ter Table (C2)
Sediment Deposits (B2)	_	Recent Iron Red	duction in Tilled S	Soils (C6) X	Crayfish Burrows	s (C8)	
Drift Deposits (B3)	_	Thin Muck Surfa	ice (C7)	_	Saturation Visibl	e on Aerial In	nagery (C9)
Algal Mat or Crust (B4)	_	Other (Explain in	n Remarks)	_	Geomorphic Pos	sition (D2)	
Iron Deposits (B5)				_	Shallow Aquitaro	d (EQ) t	
Inundation Visible on Aerial In	magery (B7)			_	Microtopographi	c Relief (D4)	
Water-Stained Leaves (B9)				_	FAC-Neutral Tes	st (D5)	
Aquatic Fauna (B13)							
Field Observations:							
Surface water present?	Yes No X	Depth (inches)):]			
Water table present?	Yes X No	Depth (inches)):4]			
Saturation present?	Yes X No	Depth (inches)):0	Wetland Hydrolo	ogy Present?	Yes X	No
(includes capillary fringe) Describe Recorded Data (stream	gauge monitoring w	ell aerial photos, r	nrevious inspecti	ons) if available:			
Remarks:	gauge, memering	on, donar priotos, p	MOVIOGO INSPECT.	ono), ii avaiiasio.			
Small pools of inundation a	re near this sam	ple point. Wate	er was preser	nt at four inches	in the soil pit.	-	
,			•		-		

	Absolute	Dominant	Indicator	Dominance Test w	orksheet:			
Tree Stratum (Plot Size: 30' radius)	% Cover	Species?	Status	Number of Dominar	nt Species	Γhat		
1 Acer rubrum	60	Y	FAC	Are OBL, FACW, or	r FAC:		5	(A)
2 Quercus palustris	40	<u>Y</u>	FACW	Total Number of Do	minant Spe	ecies		
3 Celtis laevigata	25	Y	FACW	Across all Strata:			6	(B)
4			_	Percent of Dominar	nt Species t	hat		_
5				are OBL, FACW, or	•		83.33%	(A/B)
6								• ` ´
7				Prevalence Index	worksheet			
	125	= Total Cover		Total % Cove	er of	Mul	tiply by:	
50% of total cover: 62.5		of total cover:	25	OBL species	0	x 1 =	0	-
Sapliing/Shrub Stratum (Plot Size: 15' radius)	or total cover.		FACW species	145	x 2 =	290	-
1 Fraxinus pennsylvanica	60	Υ	FACW	_	60	x3=	180	-
			TACVV	FAC species				-
2				FACU species	5	x 4 =	20	-
3				UPL species	0	x 5 =	0	-
4				Column totals	210	(A)	490	(B)
5								
6					ence Index		2.33	
7				Hydrophytic Vege	tation Indic	cators:		
8				1 -Rapid Test fo	or Hydrophy	tic Veget	ation	
9				X 2 - Dominance	Test is >50	%		
	60	= Total Cover		X 3 - Prevalence	Index is ≤3.	.0 ¹		
50% of total cover: 30	20%	of total cover:	12	4 - Morphologic	al Adaptati	ons¹ (Prov	ide suppor	ting data
Herb Stratum (Plot Size: 5' radius)		•		in Remarks or o				J
1 Fraxinus pennsylvanica	20	Υ	FACW	Problematic Hy	drophytic V	egetation	1 (Explain)	
2 Parthenocissus quinquefolia			FACU	<u> </u>	, ,	Ü	· · /	
3		<u> </u>		¹ Indicators of hydric	s coil and w	otland by	trology mus	st bo
1				present, unless dist				St DC
				Definitions of Fou	r Vegetatio	n Strata:		
·				Tree - Woody plant	s. excluding	vines 3 i	n. (7.6 cm)	or more
0				in diameter at breas				
				Sapling/shrub - W	oody plants	ovoludin	a vinos los	e than 3
8				in. DBH and greate				
9								
10				Herb - All herbaced size, and woody pla				ss of
11				size, and woody pia	11115 1695 1116	III 3.20 IL	ıaıı.	
	25	= Total Cover		Woody vines - All v	woody vines	s greater t	han 3.28 ft	in
50% of total cover: 12.5	20%	of total cover:	5	height.				
Woody Vine Stratum (Plot Size: 30' radius)							
1								
2								
3								
4								
5				Hydrophytic				
	0	= Total Cover		Vegetation Present?	Yes	, X	No	
50% of total cover: 0	20%	of total cover:	0					_
Remarks: (Include photo numbers here or on a separate								
		+ ab = d = 41		ouo lover ···	n / 4la !·a			
Due to recent Ohio River flooding and to a les	ser exten	τ, snade, the	e nerbace	ous layer was ver	y tnin.			

Sampling Point:

DP-5C-1-IN

Sampling Point: DP-5C-1-IN

	scription:	(Desc		o the de	epth nee		ment the		or or con	firm the abse	nce of indi	icators.)	
Depth (inches)	Colo	r (moist		%	Colo	or (moist)	%	Type ¹	Loc2	Textu	ıre		Remarks
0-3	10YR	3 /		90	2.5Y	6 / 1	10	С	M	Silt lo		Organ	nic matter present.
3-12	2.5Y	5 /		98	10YR		2	$\frac{\sigma}{c}$	M	Silt lo		<u> </u>	no matter precent
12-20	10YR	5 /		80	2.5Y	5 / 1	20	$\frac{c}{c}$	M	Silty clay			
12-20	1011	J /		- 00	2.31	3 / 1			IVI	Silty Clay	loain		
									. ———	-			
	-												
¹ Type: C=0	Concentra	tion, D=	=Deple	tion, RN	/I=Reduc	ed Matrix, C	S=Covere	ed or Coa	ated Sand	Grains.	² Location	n: PL=Pore Lini	ing, M=Matrix.
Hydric So	il Indicato	ors:									Indicato	ors for Proble	matic Hydric Soils ³ :
Histisol	(A1)					Dark Surf	ace (S7)				2 cm	Muck (A10) (N	MLRA 147)
	i Epipedon (A2)			_			urface (S	88) (MI R 4	A 147, 148)		t Prairie Redo	
_		· - /			_	Thin Dark						RA 147,148)	/
_	Histic (A3)	. / ٨ 4 \			_	_			.IXA 141,	170)			n Coile (E40)
	en Sulfide				_	Loamy GI						mont Floodplai	
	ed Layers				<u> </u>	- '	•	•				ILRA 136, 147	
	lucky Mine					Redox Da	ırk Surfac	e (F6)			_		Surface (TF12)
Deplete	ed Below I	Dark Su	uface (A11)		Depleted	Dark Surf	face (F7))		Othe	r (Explain in Re	emarks)
Thick D	ark Surfa	ce (A12	2)			Redox De	pression	s (F8)					
Sand	y Mucky M	lineral ((S1) (L	.RR N,		- Iron-Mang	ganese M	asses (F	12) (LRR	N,			
- MLF	RA 147, 14	48)				_	RA 136)		, .				
	Gleyed Ma		4)			Umbric Si		13) (MI R	2Δ 136 12	2)			
_	Redox (S		7)		_			, ,		-			tic vegetation and
					_	_ Piedmont						nydrology must	
	d Matrix (_	Red Pare	nt Materia	ai (F21) (MLRA 12	7, 147)	uniess ai	sturbed or prol	Diematic.
Restrictive	e Layer (i	fobser	rved):										
Type:	None						_						
Depth (i	nches):	N/A					_		Hydric	soil present	?	Yes X	No
	auon me	t the C	acpic.		AUTA (I C) indicate		or or ga	ine mate	or was pres	Serie III uik	e top three i	TIGITOS.

Project/Site: I-69 Ohio River Cro	ssing			City/Cc	ounty: Hend	derson/Hend	derso	on Sampling	Date:	7/28/2018
Applicant/Owner: INDOT (Des#	<i>‡</i> :1601700)); K YT(C (KYTC#:	:2-108	38)	State	: KY	Sampling	Point	DP-5D-1-IN
Investigator(s): Luke Eggering;	, Lindsey P	ostasl	ki s	Section	ı, Township, F	Range:	_	_	N/A	
Landform (hillslope, terrace, etc.): $\underline{\mathbf{f}}$	-lat			Local re	elief (concav	re, convex, nor	ne):	Concave	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	120A		Lat:	37.89	798	Long:		-87.51971	Datum:	NAD-1983
Soil Map Unit Name: Melvin silty	clay loam							NWI classificat	ion:	NA
Are climatic / hydrologic conditions o					_	X No		(If no, explain ir	•	
Are vegetation, Soil	_					Are "normal of	circun	nstances" preser	nt? Yes _	X No
Are vegetation, Soil	_, or Hydrolog	gy	naturally p	roblema	atic? No	(If needed, e	xplain	n any answers in	Remarks.)	
SUMMARY OF FINDINGS -	Attach site	e map	showing	samp	ling point	t locations,	, trar	nsects, impo	rtant featu	res, etc.
Hydrophytic Vegetation Present?	Yes _	Х	No	_ _ _s	the Sample	ed Area within	าล	_		
Hydric Soil Present?	Yes	X	No		Vetland?	iu Alea Willin	Iα	YesX	No	
Wetland Hydrology Present?	Yes	Х	No							
Remarks: This wetland system PEM components. Portions WOTUS 2018 ID: WTL-58.									•	
HYDROLOGY										
Wetland Hydrology Indicators:							Sec	ondary Indicator	s (minimum o	f two required)
Primary Indicators (minimum of one	e is required;	; check a	all that apply))			_	Surface Soil Cra	acks (B6)	
Surface Water (A1)			True Aquation	c Plants	s (B14)		_	Sparsely Vegeta	ated Concave	: Surface (B8)
High Water Table (A2)		_	Hydrogen Su	ulfide O	odor (C1)		_	Drainage Patter	rns (B10)	
Saturation (A3)		_	Oxidized Rh	izosphe	eres on Living	g Roots (C3)	_	Moss Trim Line	s (B16)	
Water Marks (B1)			Presence of	Reduc	ed Iron (C4)		_	Dry-Season Wa	ater Table (C2	2)
Sediment Deposits (B2)		_	Recent Iron	Reduct	tion in Tilled S	Soils (C6)	<u>X</u>	Crayfish Burrow	vs (C8)	
Drift Deposits (B3)		_	Thin Muck S	Surface	(C7)		_	Saturation Visib	ole on Aerial In	nagery (C9)
X Algal Mat or Crust (B4)		_	Other (Expla	ain in Re	emarks)		X	Geomorphic Po	sition (D2)	
Iron Deposits (B5)							_	Shallow Aquitar	rd (D3)	
Inundation Visible on Aerial Im	nagery (B7)						_	Microtopograph	ic Relief (D4)	
Water-Stained Leaves (B9)							X	FAC-Neutral Te	est (D5)	
Aquatic Fauna (B13)										
Field Observations:										
Surface water present?	Yes !	No X	Depth (incl	hes):		_				
'		No X	- '		>20	_				
•	Yes !	No X	Depth (incl	hes):	>20	Wetland Hy	/drolo	ogy Present?	Yes X	No
(includes capillary fringe) Describe Recorded Data (stream g	auge, monito	oring we	ell, aerial pho	tos, pre	vious inspec	tions), if availa	able:			
Remarks:			<u> </u>							
This area remained wet for a	a very long	time i و	in 2018 foll	lowing	the Ohio	River flood.				

/EGETATION (Four Strata) - Use scientific r	names of p	lants		Sampling Point: DP-5D-1-IN
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius) 1	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
2				Total Number of Dominant Species
3				Across all Strata: (B)
4				Percent of Dominant Species that
5				are OBL, FACW, or FAC: 100.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species80 x 1 =80
Sapliing/Shrub Stratum (Plot Size: 15' radius	_)			FACW species35 x 2 =70
1				FAC species 0 x 3 = 0
2				FACU species 0 x 4 = 0
3				UPL species 0 x 5 = 0
4				Column totals115 (A)150 (B)
5				
6				Prevalence Index = B/A = 1.30
7				Hydrophytic Vegetation Indicators:
8				X 1 -Rapid Test for Hydrophytic Vegetation
9				X 2 - Dominance Test is >50%
	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot Size: 5' radius)	22		251	
1 Eleocharis obtusa	80	<u> </u>	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
2 Echinochloa muricata	30	<u>Y</u>	FACW	
3 Fraxinus pennsylvanica	5	N	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
4				Definitions of Four Vegetation Strata:
5		, ·		Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
6		, ·		in diameter at breast height (DBH), regardless of height.
7				Seelinglebruk Woody plants evoluding vines less than 3
8	-			Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
9				- All I was a second a second as a second
10	- ——			Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
11	115	- Total Cayor		
50% of total cover: 57.5	115	= Total Cover of total cover:		Woody vines - All woody vines greater than 3.28 ft in height.
50% of total cover: 57.5 Woody Vine Stratum (Plot Size: 30' radius	20 /0	of total cover.	23	noight.
	_)			
12	-			
3				
,		,		
5	. ——			Hydrophytic
	0	= Total Cover		Vegetation Present? Yes X No
50% of total cover: 0		of total cover:		100
	-	Of total octor.		
Remarks: (Include photo numbers here or on a separate	sneet.)			

Sampling Point: DP-5D-1-IN

0-12	Matrix			Redox Featur			- .		5
-17	Color (moist)		Color (mois		Type ¹	Loc2	Textur		Remarks
	2.5YR 6 / 1			/ 4 20	<u>C</u>	<u>M</u>	Silty clay		
20	2.5YR 6 / 1	60	10YR 5	/ 4 40	C	<u>M</u>	Silty clay	ioam	
					-				
	-								
	-								
 .								2	
	Concentration, D=D	Depletion, RN	1=Reduced Ma	trix, CS=Cover	ed or Coa	ated Sand (3rains.		: PL=Pore Lining, M=Matrix.
ic Soi	il Indicators:							Indicato	rs for Problematic Hydric Soils
listisol	• •		Dar	k Surface (S7)				2 cm	Muck (A10) (MLRA 147)
listic E	pipedon (A2)		Poly	yvalue Below S	Surface (S	8) (MLRA	147, 148)	Coas	t Prairie Redox (A16)
lack H	listic (A3)		Thir	n Dark Surface	(S9) (ML	.RA 147, 14	1 8)	(MLR	A 147,148)
lydrog	en Sulfide (A4)		Loa	my Gleyed Mat	trix (F2)			Piedr	nont Floodplain Soils (F19)
tratifie	ed Layers (A5)		X Dep	oleted Matrix (F	3)			(M	LRA 136, 147)
cm M	lucky Mineral (A10)) (LRR N)	Red	lox Dark Surfac	ce (F6)			Very	Shallow Dark Surface (TF12)
eplete	ed Below Dark Sufa	ace (A11)	Dep	leted Dark Sur	face (F7)			Other	(Explain in Remarks)
hick D	ark Surface (A12)		Red	lox Depression	s (F8)				
Sandy	y Mucky Mineral (S	31) (LRR N,	Iron	-Manganese M	lasses (F	12) (LRR N	l,		
MLF	RA 147, 148)			MLRA 136)					
Sandy (Gleyed Matrix (S4))	Uml	bric Surface (F	13) (MLR	A 136,122)	³ Indicator	s of hydrophytic vegetation and
Sandy I	Redox (S5)		Pied	dmont Floodpla	in Soils (F19) (MLR	A 148)		ydrology must be present,
Strippe	d Matrix (S6)		Red	l Parent Materia	al (F21) (MLRA 127	, 147)		sturbed or problematic.
rictiv	e Layer (if observe	ed):							
เกเบเเชย	c Layer (ii observ								
	None	,							
ype:		,				Hydric s	soil present?		Yes X No
/pe: epth (ir arks:	None nches): N/A								Yes X No
/pe: epth (ir arks:	None		atrix (F3) ind	icator. Soils	were m			e.	Yes X No
/pe: epth (ii arks:	None nches): N/A		ıtrix (F3) indi	icator. Soils	were m			e.	Yes <u>X</u> No
/pe: epth (ii arks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes <u>X</u> No
/pe: epth (ii arks:	None nches): N/A		ntrix (F3) ind	icator. Soils	were m			e.	Yes X No
/pe: epth (ir arks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
/pe: epth (ii arks:	None nches): N/A		ntrix (F3) indi	icator. Soils	were m			e.	Yes X No
/pe: epth (ii arks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
/pe: epth (ii arks:	None nches): N/A		ntrix (F3) indi	icator. Soils	were m			e.	Yes X No
/pe: epth (ii arks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
ype: epth (ir narks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
/pe: epth (ir arks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
/pe: epth (ii arks:	None nches): N/A		ntrix (F3) indi	icator. Soils	were m			e.	Yes X No
/pe: epth (ir arks:	None nches): N/A		ntrix (F3) indi	icator. Soils	were m			e.	Yes X No
/pe: epth (ii arks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
ype: epth (ii arks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
ype: epth (ir narks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
ype: epth (innarks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
ype: epth (in narks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
ype: epth (ir narks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
ype: epth (ir narks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No
/pe: epth (ii arks:	None nches): N/A		ntrix (F3) indi	icator. Soils	were m			e.	Yes X No
/pe: epth (ii arks:	None nches): N/A		atrix (F3) indi	icator. Soils	were m			e.	Yes X No

Project/Site: I-69 Ohio River Cr	ossing	City/County: Henders	on/Henderson	Sampling Date	e: 7/28/2018
Applicant/Owner: INDOT (Des		38)	State: KY	Sampling Poir	nt: DP-5D-1-OUT
Investigator(s): Luke Eggering	g; Lindsey Postaski	Section, Township, Rang	je:	N	/A
Landform (hillslope, terrace, etc.):	Flat	Local relief (concave, co	nvex, none):	Concave s	lope (%): 2%
Subregion (LRR or MLRA): MLRA	. 120A Lat:	37.89821 L	_ong:8	37.51988	Datum: NAD-1983
Soil Map Unit Name: Melvin silty	/ clay loam		١	NWI classification:	NA
Are climatic / hydrologic conditions	on the site typical for this time of t	the year? Yes X	No (I	f no, explain in Rei	marks.)
	, or Hydrologysignifican		"normal circumst	tances" present?	Yes <u>X</u> No
Are vegetation, Soil	, or Hydrologynaturally	problematic? No (If n	needed, explain a	ny answers in Rem	narks.)
SUMMARY OF FINDINGS -	Attach site map showing	sampling point loc	ations, trans	ects, importar	nt features, etc.
Hydrophytic Vegetation Present?	Yes NoX	_ - the Compled Ar	م ماهاکات م		
Hydric Soil Present?	Yes NoX	Is the Sampled Ar Wetland?		Yes No	o X
Wetland Hydrology Present?	Yes No X	_			
Remarks: This is an upland		d system located sour	ıth of the Ohio	River and Gre	en River #2 Road It is
on a higher stream terrace WOTUS 2018 ID: WTL-58.	•	ined.			
HYDROLOGY					
Wetland Hydrology Indicators:			Secon	dary Indicators (mi	inimum of two required)
Primary Indicators (minimum of or	ne is required; check all that apply	<u>')</u>	S	urface Soil Cracks	(B6)
Surface Water (A1)	True Aquat	tic Plants (B14)	S	parsely Vegetated	Concave Surface (B8)
High Water Table (A2)	Hydrogen S	Sulfide Odor (C1)	_ D	rainage Patterns (F	310)
Saturation (A3)	Oxidized R	hizospheres on Living Roc	ots (C3) M	loss Trim Lines (B1	16)
Water Marks (B1)	Presence o	of Reduced Iron (C4)	_ D	ry-Season Water T	able (C2)
Sediment Deposits (B2)	Recent Iron	n Reduction in Tilled Soils	(C6) _ C	rayfish Burrows (C	8)
Drift Deposits (B3)	Thin Muck	Surface (C7)	S	aturation Visible or	n Aerial Imagery (C9)
Algal Mat or Crust (B4)	Other (Expl	lain in Remarks)	<u>x</u> G	eomorphic Position	n (D2)
Iron Deposits (B5)			S	hallow Aquitard (D	3)
Inundation Visible on Aerial II	magery (B7)		M	licrotopographic Re	elief (D4)
Water-Stained Leaves (B9)			F	AC-Neutral Test (D	95)
Aquatic Fauna (B13)					
Field Observations:					
Surface water present?	Yes No X Depth (inc	ches):			
Water table present?	Yes No X Depth (inc	ches): >20			
Saturation present? (includes capillary fringe)	Yes No X Depth (inc		etland Hydrology	y Present? Ye	es NoX
Describe Recorded Data (stream Remarks:	gauge, monitoring well, aerial pho	itos, previous inspections)	, if available:		
Area is infrequently flooded	I by the Ohio River				
Area is infrequently flooded	T by the Offic Priver.				

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius) 1	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC:0 (A)
2				Total Number of Dominant Species
3				Across all Strata: 1 (B)
4				Percent of Dominant Species that
5				are OBL, FACW, or FAC: 0.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species0 x 1 =0
Sapliing/Shrub Stratum (Plot Size: 15' radius)			FACW species0 x 2 =0
1				FAC species 0 x 3 = 0
2				FACU species 0 x 4 = 0
3				UPL species0 x 5 =0
4				Column totals 0 (A) 0 (B)
5				
6				Prevalence Index = B/A =
7				Hydrophytic Vegetation Indicators:
8				1 -Rapid Test for Hydrophytic Vegetation
9				2 - Dominance Test is >50%
	0	= Total Cover		3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations ¹ (Provide supporting data
Herb Stratum (Plot Size: 5' radius)		•		in Remarks or on a separate sheet)
1 Zea mays	80	Υ	NI	Problematic Hydrophytic Vegetation ¹ (Explain)
2				<u> </u>
2				¹ Indicators of hydric soil and wetland hydrology must be
4				present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7				in diameter at breast height (DBH), regardless of height.
8				Sapling/shrub - Woody plants, excluding vines, less than 3
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Herb - All herbaceous (non-woody) plants, regardless of
11				size, and woody plants less than 3.28 ft tall.
	80	= Total Cover		
50% of total cover: 40		of total cover:	16	Woody vines - All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot Size: 30' radius	2070	or total cover.	10	
	,			
2				
2				
3				
				Hydrophytic
5				Vegetation
700 / (1.1.1	0	= Total Cover		Present? Yes No X
50% of total cover: 0		of total cover:	0	
Remarks: (Include photo numbers here or on a separate				
This upland point was taken in an agricultural likely killed the natural vegetation.	field that	was planted	d with con	n (Zea mays) at the time of the survey. Herbicides

Sampling Point:

DP-5D-1-OUT

Sampling Point: DP-5D-1-OUT

Depth (inches) Matrix Redox Features 0-5 Color (moist) % Color (moist) % Type¹ Loc2 Texture Silt loam	
	Remarks
O Z.OTK O / Z TOO OIL IOUTT	remains
5-18 10YR 5 / 3 90 10YR 6 / 6 10 C M Silt loam	
18-20 10YR 5 / 2 60 10YR 5 / 4 40 C M Silty clay loam	
10-20 1011 372 00 1011 374 40 C W Shity Clay Ioani	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore	Lining, M=Matrix.
Hydric Soil Indicators: Indicators for Prol	blematic Hydric Soils ³ :
Histisol (A1) Dark Surface (S7) 2 cm Muck (A10) (MLRA 147)
Histic Epipedon (A2) Polyvalue Below Surface (S8) (MLRA 147, 148) Coast Prairie Re	edox (A16)
Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) (MLRA 147,148	
	plain Soils (F19)
Stratified Layers (A5) Depleted Matrix (F3) (MLRA 136,	
	ark Surface (TF12)
Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Other (Explain in	, ,
- · · - · · · - · · · · - · · · · · · · · · · · · · · · · · · ·	Tremarks)
Thick Dark Surface (A12) Redox Depressions (F8)	
Sandy Mucky Mineral (S1) (LRR N, Iron-Manganese Masses (F12) (LRR N,	
MLRA 147, 148) MLRA 136)	
Sandy Gleyed Matrix (S4) — Umbric Surface (F13) (MLRA 136,122) *Indicators of hydronic stress of hydronic	ohytic vegetation and
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology m	
Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or parent Material (F21) (MLRA 127, 147)	nrohlematic
	problematic.
Restrictive Layer (if observed):	problematic.
	prodictinatio.
Type: None	
Type: None Depth (inches): N/A Hydric soil present? Yes	No X
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	
Type: None Depth (inches): N/A Hydric soil present? Yes Remarks:	

Project/Site: I-69 Ohio River Cr	rossing			City/	/County: Henc	derson/Hen	derso	on Sampling	Date:	7/28/2018
Applicant/Owner: INDOT (Des)); KY	TC (KYTC#				e: KY			DP-5D-2-IN
Investigator(s): Luke Eggering		•	•		ion, Township,	Range:			N/A	
Landform (hillslope, terrace, etc.):				-	al relief (concav		ne):	Concave	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	120A		Lat:	-	89723	Long:		-87.51927	Datum:	NAD-1983
Soil Map Unit Name: Melvin silty		1				<u> </u>		NWI classificati	on:	NA
Are climatic / hydrologic conditions	on the site ty	pical fo	r this time of	the ye	ar? Yes	X No		(If no, explain in	Remarks.)	
Are vegetation X, Soil	_, or Hydrok	ogy	significan	ıtly dis	turbed?	Are "normal	circun	nstances" presen	t? Yes	X No
Are vegetation , Soil				proble	matic? No	(If needed, e	explain	any answers in	Remarks.)	
SUMMARY OF FINDINGS -	- Attach si	te ma	p showing	g san	npling poin	t locations	, trar	nsects, impoi	rtant featu	res, etc.
Hydrophytic Vegetation Present?	Yes	Х	No		L. the Commit					
Hydric Soil Present?	Yes	Х	No	_	Is the Sample Wetland?	ad Area Witriii	n a	Yes X	No	
Wetland Hydrology Present?	Yes	х	No	_	•••••					-
Remarks: This wetland sys	-			Ohic	River and (- Green River	#2 F	Poad This we	tland syste	m has PFO and
PEM components. Portions									-	
WOTUS 2018 ID: WTL-58		llui ic. c	110 1011110) dataon.cc.	оргооз	u	W portion 5	10 11000	11 4 0 1 4 5 5
	,									
HYDROLOGY										
Wetland Hydrology Indicators:							Sec	ondary Indicators	(minimum o	f two required)
Primary Indicators (minimum of o	ne is required	d; check	к all that appl	y)			X	Surface Soil Cra	cks (B6)	
Surface Water (A1)	_		True Aquat	tic Pla	nts (B14)	_	_	Sparsely Vegeta	ited Concave	Surface (B8)
High Water Table (A2)		_	Hydrogen S	Sulfide	e Odor (C1)		X	Drainage Patteri	ns (B10)	
Saturation (A3)		_	Oxidized R	≀hizosŗ	pheres on Living	g Roots (C3)	_	Moss Trim Lines	; (B16)	
Water Marks (B1)			Presence of	of Red	luced Iron (C4)			Dry-Season Wa	ter Table (C2)
Sediment Deposits (B2)		_	Recent Iror	n Redı	uction in Tilled	Soils (C6)	X	Crayfish Burrow	s (C8)	
Drift Deposits (B3)			Thin Muck	Surfac	ce (C7)			Saturation Visibl	e on Aerial In	nagery (C9)
X Algal Mat or Crust (B4)		_	Other (Exp	olain in	Remarks)		х	Geomorphic Pos	sition (D2)	
Iron Deposits (B5)							_	Shallow Aquitare	d (8D)	
Inundation Visible on Aerial I	magery (B7)						_	Microtopographi	c Relief (D4)	
Water-Stained Leaves (B9)							X	FAC-Neutral Tes	st (D5)	
Aquatic Fauna (B13)							_			
Field Observations:										
Surface water present?	Yes	No X	C Depth (in	iches):	<u>.</u>					
Water table present?	Yes	No X	C Depth (in	iches):	:>20					
Saturation present? (includes capillary fringe)	Yes	No X	Depth (in	iches):	>20	Wetland Hy	ydrolo	gy Present?	Yes X	No
Describe Recorded Data (stream	gauge, moni	toring w	vell, aerial ph	otos, r	orevious inspec	 ctions), if availa	able:			
Remarks:	<u> </u>		<u> </u>			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
The swale remained very w	vet followin	ig the	2018 Ohio	Rive	r flood.					

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius) 1	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2				Total Number of Dominant Species
3				Across all Strata:1 (B)
4				Percent of Dominant Species that
5				are OBL, FACW, or FAC: 100.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species 0 x 1 = 0
Sapliing/Shrub Stratum (Plot Size: 15' radius)			FACW species 80 x 2 = 160
1				FAC species 0 x 3 = 0
2				FACU species 0 x 4 = 0
3				UPL species 0 x 5 = 0
4				Column totals 80 (A) 160 (B)
5				
6				Prevalence Index = B/A = 2.00 Hydrophytic Vegetation Indicators:
7				
8				X 1 -Rapid Test for Hydrophytic Vegetation
9				X 2 - Dominance Test is >50%
FOOV of total course	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot Size: 5' radius) 1 Echinochloa muricata	80	Υ	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2		<u>'</u>	IACVV	Problematic Hydrophytic vegetation (Explain)
3				1 to disease of bodels and contact to the contact to
1				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7			_	in diameter at breast height (DBH), regardless of height.
8				Sapling/shrub - Woody plants, excluding vines, less than 3
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Herb - All herbaceous (non-woody) plants, regardless of
11				size, and woody plants less than 3.28 ft tall.
	80	= Total Cover		West to a All and income to the a Conference
50% of total cover: 40		of total cover:	16	Woody vines - All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot Size: 30' radius	2070	or total cover.	10	
1	,			
•				
1				
5			_	Hydrophytic
·	0	= Total Cover		Vegetation Present? Yes X No
50% of total cover: 0		of total cover:	0	rieseitt: res NO
		or total cover.		
Remarks: (Include photo numbers here or on a separate				
The vegetation in this area is dead due to her	DICIGE USE	.		

Sampling Point:

DP-5D-2-IN

Sampling Point: DP-5D-2-IN

	scription.	Matrix		pui necu		x Featur		or or com	firm the abse	ince or mur	,	
Depth (inches)	Color	(moist)	%	Color	(moist)	%	Type ¹	Loc2	Textu	ıre		Remarks
0-3	10YR	5 / 2	100		(moiot)		Турс		Silt lo			rtemanto
3-12	2.5Y	6 / 1	95	10YR	6 / 6	5	С		Silt lo			
	2.5Y	5 / 1	60	101R	6 / 6	40	$\frac{c}{c}$	M				
12-20	2.51	5/1	60	IUTR	6 / 6	40		IVI	Silty clay	y loam		
									·			
	·											
¹ Typo: C=	Concontrat	ion D-Donl	otion DA	1-Poduco	d Matrix, CS	S=Cover	od or Cor	atod Sand	Graine	² Location	: PL=Pore Linin	a M-Matrix
	il Indicato		ellon, Ki	i-Reduce	u Mailix, Co	5-Cover	eu or Coa	aleu Sanu	Giallis.			natic Hydric Soils ³ :
•		13.			5 1 6 ((0=)						-
Histiso					Dark Surfa						Muck (A10) (M	
Histic E	Epipedon (A	A 2)			Polyvalue	Below S	Surface (S	88) (MLRA	147, 148)	Coas	t Prairie Redox	(A16)
Black H	Histic (A3)			_	Thin Dark	Surface	(S9) (ML	.RA 147, 1	148)	(MLR	A 147,148)	
Hydrog	en Sulfide	(A4)			Loamy Gle	eyed Ma	trix (F2)			Piedn	nont Floodplain	Soils (F19)
	ed Layers (X							LRA 136, 147)	
	• ,	ral (A10) (Ll	RR NI		Redox Da	,	•				Shallow Dark S	
_		ark Suface		_	Depleted I						(Explain in Rei	, ,
_			(/ () / /								(Explain III IVE	marko)
_	Dark Surfac	` '		_	Redox De			10) (55				
		ineral (S1) (LKR N,	_	Iron-Mang		iasses (F	12) (LRR	N,			
	RA 147, 14				MLR	A 136)						
Sandy	Gleyed Ma	ıtrix (S4)			Umbric Su	rface (F	13) (MLR	RA 136,12	2)	3Indicator	s of hydronhytic	c vegetation and
Sandy	Redox (S5)			Piedmont	Floodpla	in Soils (F19) (MLI	RA 148)		ydrology must l	
Strinne	d Matrix (S	66)			Red Parer	nt Materia	al (F21) (MLRA 12	7, 147)		sturbed or probl	
Ottippo	a matrix (c							'	· ·			
Restrictiv	e Layer (if	observed):										
Restrictive	e Layer (if None	observed):				_				_		
Restrictiv	e Layer (if None					-		Hydric	soil present	?	Yes X	No
Restrictive	e Layer (if None	observed):				<u>-</u>		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes_X	No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3) indicator	<u>-</u> -		Hydric	soil present	?	Yes_X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3) indicator	-		Hydric	soil present	?	Yes X	No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3) indicator	-		Hydric	soil present	?	Yes X	No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3) indicator	- - :		Hydric	soil present	?	Yes X	No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	- -		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	- -		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	- -		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	- -		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3)) indicator	-		Hydric	soil present	?	Yes X	. No
Restrictive Type: Depth (i	e Layer (if None inches):	observed): N/A		atrix (F3) indicator	-		Hydric	soil present	?	Yes X	. No

Project/Site: I-69 Ohio River	Crossing		City	/County: Hende	erson/Hende	erson	Sampling	Date:	5/15/201	9
Applicant/Owner: INDOT (D	es#:1601700); K`	YTC (#2	-1088)		State:	KY	Sampling	Point:	DP-5D-2-OL	JT
Investigator(s): Luke Egger	ring		Sect	ion, Township, R	ange:			N/A		
Landform (hillslope, terrace, etc.	.): Ridge		Loc	al relief (concave	, convex, none	:): <u>Co</u>	nvex	Slope (%):	29	6
Subregion (LRR or MLRA): \underline{ML}	RA 120A	Lat:	37.	.89749	Long:	-87.5	1947	Datum:	NAD-1	983
Soil Map Unit Name: Melvin s	silty clay loam					NWI c	classificati	on:	NA	
Are climatic / hydrologic condition	ns on the site typical f	for this tim	e of the ye	ar? Yes _	X No	(If no,	explain ir	Remarks.)		
Are vegetation, Soil	, or Hydrology	sign	ificantly dis	sturbed? No	Are "normal cir	cumstance	s" preser	nt? Yes	X No	
Are vegetation, Soil _	, or Hydrology	natu	rally proble	ematic? No	(If needed, exp	olain any ar	iswers in	Remarks.)		
SUMMARY OF FINDING	S – Attach site m	ap shov	wing sar	mpling point	locations, t	transects	s, impo	rtant featu	ıres, etc.	
Hydrophytic Vegetation Preser	nt? Yes	No _	х	Is the Sampled	d Aroa within s					
Hydric Soil Present?	Yes	No	X	Wetland?	i Alea Willilli a	a Yes		No X		
Wetland Hydrology Present?	Yes X	No _				-				
WOTUS 2018 ID: WTL-	58.									
HYDROLOGY										
Wetland Hydrology Indicator	rs:				<u>.</u>	Secondary	Indicators	s (minimum o	f two require	d)
Primary Indicators (minimum o	of one is required; che	ck all that	apply)			X Surfac	e Soil Cra	acks (B6)		
Surface Water (A1)	_	True A	Aquatic Pla	nts (B14)	=	Sparse	ly Vegeta	ated Concave	Surface (B8	3)
High Water Table (A2)	_	Hydro	gen Sulfide	e Odor (C1)	_	Draina	ige Patter	ns (B10)		
Saturation (A3)	_	Oxidiz	zed Rhizos	pheres on Living	Roots (C3)	Moss	Trim Lines	s (B16)		
Water Marks (B1)	_	Prese	nce of Red	luced Iron (C4)	-	Dry-Se	ason Wa	ter Table (C2	2)	
Sediment Deposits (B2)	_			uction in Tilled S	oils (C6)		sh Burrow	, ,		
Drift Deposits (B3)	-	_	Nuck Surfa		-	_		le on Aerial I	magery (C9)	
Algal Mat or Crust (B4)	-	_ Other	(Explain in	Remarks)	-		•	sition (D2)		
Iron Deposits (B5)					=	_	w Aquitar	, ,		
Inundation Visible on Aeri					-			ic Relief (D4)		
Water-Stained Leaves (B))				-	FAC-N	leutral Te	st (D5)		
Aquatic Fauna (B13)										
Field Observations:	Voe Ne	V Dom	th (inches)							
Surface water present? Water table present?	Yes No_ Yes No	_	th (inches) th (inches)							
Saturation present?	Yes No		th (inches)		Wetland Hyd	rology Pro	eont?	Yes	No	X
(includes capillary fringe)	165 110_	X Dep	uii (iiiciies)	. 720	wedana riya	rology Fre	Sent:	165	_ ""	^
Describe Recorded Data (stream	am gauge, monitoring	well, aeria	al photos, p	revious inspection	ons), if available	e:				
Remarks:		- .			D.					
This low ridge is modera									omewhat	
irregular and infrequent	in this area. The r	lage is a	approxim	ately 18 inche	es nigher tha	an the we	mand s	waies.		

Tree Stratum (Plot Size: 30' radius)	% Cover				
1	1	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 0	(A)
3				Total Number of Dominant Species Across all Strata: 0	(B)
4				Percent of Dominant Species that are OBL, FACW, or FAC: 0.00%	(A/B)
6				Prevalence Index worksheet	
7					
	0	= Total Cover		Total % Cover of: Multiply by:	
50% of total cover: 0	<u> </u>	of total cover:	0	OBL species 0 x 1 = 0	
Sapliing/Shrub Stratum (Plot Size: 15' radius	_)			FACW species 0 x 2 = 0	
1	_			FAC species 0 x 3 = 0	
2				FACU species 0 x 4 = 0	
3				UPL species 0 x 5 = 0	
4	_			Column totals 0 (A) 0	(B)
5 6				Prevalence Index = B/A =	
7				Hydrophytic Vegetation Indicators:	
8				1 -Rapid Test for Hydrophytic Vegetation	
9		. ———		2 - Dominance Test is >50%	
·		= Total Cover		3 - Prevalence Index is ≤3.0 ¹	
50% of total cover: 0		of total cover:		4 - Morphological Adaptations (Provide supportion in Remarks or on a separate sheet)	ng dat
Herb Stratum (Plot Size: 5' radius)	1	No	NII		
1 Brassica rapa 2		<u>No</u>	NI	Problematic Hydrophytic Vegetation ¹ (Explain)	
3	_			¹ Indicators of hydric soil and wetland hydrology must present, unless disturbed or problematic	be
5		•		Definitions of Four Vegetation Strata:	
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) o in diameter at breast height (DBH), regardless of height	
8		· ·		Sapling/shrub - Woody plants, excluding vines, less in. DBH and greater than or equal to 3.28 ft (1m) tall.	than (
9				in 22. and ground than or equal to e.20 it () tain	
10		· ·		Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft tall.	s of
11	1	= Total Cover		Woody vines - All woody vines greater than 3.28 ft ir	1
50% of total cover: 0.5	20%	of total cover:	0.2	height.	
Voody Vine Stratum (Plot Size: 30' radius		•			
1	- ′				
0		· —— ·			
3	0				
	_	 .			
				Hydrophytic	
5				Vegetation	
	0	= Total Cover		Present? Yes No X	
50% of total cover: 0		of total cover:	0		
Remarks: (Include photo numbers here or on a separa There was almost no living vegetation due to		t flood. Ther	e was de	ad soybean <i>(Glycine max</i>) stubble.	

Sampling Point:

DP-5D-2-OUT

Sampling Point: DP-5D-2-OUT

Profile Description: (Describe to the d	lepth needed to docume Redox F		or or conf	irm the absence o	of indicators.)
(inches) Color (moist) %		% Type ¹	Loc2	Texture	Remarks
0-12 10YR 5 / 3 100	co.c. (moloc)	1,100		Silt loam	Within the plow zone.
12-20 10YR 5 / 3 80	2.5YR 4 / 1	20 C	M	Silty clay loa	
12 20 10111 0 7 0 00	2.011(+ 7 1			Only day loa	Below the plow zone.
¹ Type: C=Concentration, D=Depletion, R	M=Reduced Matrix, CS=C	Covered or Coa	ated Sand	Grains. ² Lo	cation: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:				In	dicators for Problematic Hydric Soils ³ :
Histisol (A1)	Dark Surface	(S7)			2 cm Muck (A10) (MLRA 147)
Histic Epipedon (A2)	Polyvalue Be	low Surface (S	8) (MLRA	147. 148)	Coast Prairie Redox (A16)
Black Histic (A3)		rface (S9) (ML		—	(MLRA 147,148)
				,	
Hydrogen Sulfide (A4)	Loamy Gleye			_	Piedmont Floodplain Soils (F19)
Stratified Layers (A5)	Depleted Mat	` '			(MLRA 136, 147)
2 cm Mucky Mineral (A10) (LRR N)	Redox Dark S			_	Very Shallow Dark Surface (TF12)
Depleted Below Dark Suface (A11)	Depleted Dar	k Surface (F7)			Other (Explain in Remarks)
Thick Dark Surface (A12)	Redox Depre				
Sandy Mucky Mineral (S1) (LRR N,	Iron-Mangane	ese Masses (F	12) (LRR	N,	
MLRA 147, 148)	MLRA '	136)			
Sandy Gleyed Matrix (S4)	Umbric Surfa	ce (F13) (MLR	A 136,122	3, .	Parties of hadron Properties
Sandy Redox (S5)		odplain Soils (I		1110	dicators of hydrophytic vegetation and land land hydrology must be present,
Stripped Matrix (S6)		/laterial (F21) (ess disturbed or problematic.
	rear arenew	naterial (1 2 1) (WIEI(74 12)	, 141)	
Restrictive Layer (if observed):					
Type: None					
Depth (inches): N/A			Hydric	soil present?	Yes No <u>X</u>
Even though the area was floode	ed the soils dried quic	ckly. There v	was no e	vidence of free	uent saturation.

Project/Site: I-69 Ohio River C	rossing	City	y/County: Hende	erson/Henders	on Sampling	g Date:	7/28/2018
Applicant/Owner: INDOT (Des	s#:1601700); KYT0	C (#2-1088)		State: KY	Sampling Point:		DP-5D-3-OUT
Investigator(s): Luke Eggerin	κi Sect	tion, Township, R	ange:	N/A			
Landform (hillslope, terrace, etc.):	Flat	Loc	cal relief (concave	, convex, none): _	Convex	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	\ 120A	Lat: 37.	7.89723	Long:	-87.51926	Datum:	NAD-1983
Soil Map Unit Name: Melvin silt	y clay loam				NWI classifica	tion:	NA
Are climatic / hydrologic conditions	on the site typical for t	his time of the ye	ear? Yes _	X No	(If no, explain i	n Remarks.)	
Are vegetation X, Soil	, or Hydrology	significantly dis	sturbed?	Are "normal circur	mstances" prese	nt? Yes	X No
Are vegetation, Soil	, or Hydrology	naturally proble	ematic? No	(If needed, explain	n any answers ir	Remarks.)	
SUMMARY OF FINDINGS -	- Attach site map	showing sar	mpling point	locations, tra	nsects, impo	ortant featu	ıres, etc.
Hydrophytic Vegetation Present?	Yes	No <u>X</u>	Is the Sampled	l Aroa within a			
Hydric Soil Present?	Yes	No X	Wetland?	i Alea Witiiii a	Yes	No X	
Wetland Hydrology Present?	Yes X	No					
Remarks: This is an upland positioned on a moderately WOTUS 2018 ID: WTL-58	y well drained terra	-	stem located s	south of the Of	nio River and	Green Rive	er #2 Road. It is
HYDROLOGY							
Wetland Hydrology Indicators:		•		Sec	condary Indicato	rs (minimum o	f two required)
Primary Indicators (minimum of o	ne is required; check a	ill that apply)		<u>X</u>	Surface Soil Cr	acks (B6)	
Surface Water (A1)	True Aquatic Pla	ants (B14)	_	_ Sparsely Vegetated Concave Surface (B8)			
High Water Table (A2)	Hydrogen Sulfide	ulfide Odor (C1) Drainage Patterns (B10)					
Saturation (A3)	Oxidized Rhizos	nizospheres on Living Roots (C3) Moss Trim Lines (B16)					
Water Marks (B1)	_	Presence of Rec	duced Iron (C4)	_	Dry-Season Wa	ater Table (C2	<u>'</u>)
Sediment Deposits (B2)	_	Recent Iron Red	duction in Tilled So	oils (C6)	Crayfish Burrov	ws (C8)	
Drift Deposits (B3)	_	Thin Muck Surfa	ace (C7)	_	Saturation Visil	ole on Aerial Ir	magery (C9)
Algal Mat or Crust (B4)	_	Other (Explain in	n Remarks)	<u>x</u>	Geomorphic Po	osition (D2)	
Iron Deposits (B5)				_	Shallow Aquita	rd (D3)	
Inundation Visible on Aerial	magery (B7)			_	Microtopograph	nic Relief (D4)	
Water-Stained Leaves (B9)				_	FAC-Neutral To	est (D5)	
Aquatic Fauna (B13)							
Field Observations:							
Surface water present?	Yes No X	•):				
Water table present?	Yes No _X	Depth (inches)):>20				
Saturation present? (includes capillary fringe)	Yes No_X	Depth (inches)):>20	Wetland Hydrol	ogy Present?	Yes X	No
Describe Recorded Data (stream	gauge, monitoring wel	l, aerial photos, r	previous inspection	ons), if available:			
Remarks:							
Some surface soil cracks r	esulting from infre	quent Ohio R	River flooding v	vere observed			

		Absolute	Dominant	Indicator	Dominance Test worksheet:		
1	t Size: 30' radius)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
•					Total Number of Dominant Species Across all Strata:	1	(B)
F					Percent of Dominant Species that are OBL, FACW, or FAC:	0.00%	(A/B)
6							
7				_	Prevalence Index worksheet		
		0	= Total Cover		Total % Cover of:	Multiply by:	
	50% of total cover:	0 20%	of total cover:	0	OBL species 0 x 1	= 0	
Sapliing/Shrub Stratum	(Plot Size: 15' radius)	•		FACW species 0 x 2	= 0	-
4					FAC species 0 x 3	= 0	-
						= 0	-
2					UPL species 0 x 5		-
1					Column totals 0 (A)		- (B)
5					Column totals (A)		(B)
6					Dravalance Index = B/A	_	
7					Prevalence Index = B/A Hydrophytic Vegetation Indicators		
,							
8					1 -Rapid Test for Hydrophytic Ve	getation	
9					2 - Dominance Test is >50%		
		0	= Total Cover		3 - Prevalence Index is ≤3.0 ¹		
Herb Stratum (Plot	50% of total cover: t Size: 5' radius)	0 20%	of total cover:	0	4 - Morphological Adaptations (Fin Remarks or on a separate she		ting data
1 Zea mays		100	Υ	NI	Problematic Hydrophytic Vegetat	ion ¹ (Explain)	
2					<u> </u>		
•					¹ Indicators of hydric soil and wetland	hydrology mus	st he
4					present, unless disturbed or problema		
5					Definitions of Four Vegetation Stra	ta:	
6					Tree - Woody plants, excluding vines	3 in. (7.6 cm)	or more
7					in diameter at breast height (DBH), re	gardless of he	eight.
0					Sapling/shrub - Woody plants, exclu	ıdina vines les	s than 3
8					in. DBH and greater than or equal to		
9							
					Herb - All herbaceous (non-woody) p size, and woody plants less than 3.28		ss of
11					l size, and mosay plante less than eles	, , , , , , , , , , , , , , , , , , , ,	
			= Total Cover		Woody vines - All woody vines great	er than 3.28 ft	in
		<u>50</u> 20%	of total cover:	20	height.		
Woody Vine Stratum	(Plot Size: 30' radius)					
1							
2							
3							
4					Hydrophytic		
5					Vegetation		
		0	= Total Cover		Present? Yes	NoX	
	50% of total cover:	0 20%	of total cover:	0			
Remarks: (Include photo	o numbers here or on a sep	arate sheet.)		_			
			ted with car	n <i>(700 m</i> r	ays). Herbicides likely killed the	natural vegs	etation
rins apiana point w	vas takon in an ayricul	tarai nela pian	CO WILLI COI	ıı ye ca iile	ayo ,. I lorbiolaes likely killed lile	iatarai vege	Janoi I.

Sampling Point:

DP-5D-3-OUT

Sampling Point: DP-5D-3-OUT

Depth	Matrix	•	n needed to docu	x Featur		01 01 001111111	i tile abselle	ce of indica	,		
(inches)	Color (moist)	%	Color (moist)	% %	Type ¹	Loc2	Texture	9		Remarks	
0-11	10YR 5 / 3		0YR 6 / 6	2	C	M	Silt loa				
11-20	2.5Y 6 / 2		0YR 6 / 8	10	C	M	Silt loa				
1120	2.01 012		0110 070				Ont loa	'''			
						· 					
						. — —					
			_								
¹ Type: C=0	Concentration, D=Depl	etion, RM=F	Reduced Matrix, CS	=Cover	ed or Coa	ated Sand Gra	ains.	² Location: P	L=Pore Linin	ıg, M=Matrix.	
Hydric So	il Indicators:							Indicators	for Problem	natic Hydric Soils ³	3:
Histisol	I (A1)		Dark Surfa	ce (S7)				2 cm Mı	uck (A10) (M	LRA 147)	
	Epipedon (A2)			, ,	urface (S	88) (MLRA 14	7 1/8\		rairie Redox		
										(10)	
	Histic (A3)					.RA 147, 148)		147,148)		
_ · ·	gen Sulfide (A4)		Loamy Gle						nt Floodplain		
Stratifie	ed Layers (A5)		Depleted I	Лatrix (F	3)			(MLF	RA 136, 147)		
2 cm M	lucky Mineral (A10) (Li	RR N)	Redox Da	k Surfac	ce (F6)		-	Very Sh	allow Dark S	urface (TF12)	
Deplete	ed Below Dark Suface	(A11)	Depleted [Dark Sur	face (F7))	•	Other (E	xplain in Rei	marks)	
Thick E	Dark Surface (A12)		Redox De	oression	s (F8)		•				
	y Mucky Mineral (S1) (IRRN				12) (LRR N,					
				A 136)	1) 656661	12) (LICITIA)					
	RA 147, 148)				40) (84) 5	. 4 400 400)					
	Gleyed Matrix (S4)					RA 136,122)		³ Indicators of	of hydrophytic	c vegetation and	
Sandy	Redox (S5)		Piedmont	Floodpla	in Soils (F19) (MLRA	148)	wetland hyd	rology must l	be present,	
Strippe	ed Matrix (S6)		Red Parer	t Materia	al (F21) (MLRA 127, 1	47)	unless distu	rbed or probl	ematic.	
Restrictive	e Layer (if observed):										
Type:	None										
Depth (i				-		Hydric so	il present?		Yes	No X	
Dopui (i	147 t			_		,	procont:		100	<u> </u>	
Remarks: The soils	s at this location ar	re within to	he plow zone.								

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: Wetland 5 Project/Site: I-69 Ohio River Crossing
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Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	3	This wetland complex transports Ohio River flood waters and stores flood waters from stormwater and backwater flood events.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	3	Sediment and drift deposits occur throughout this wetland.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	3	The bottomland hardwood portion of this wetland provides quality erosion control. The farmed portions provide less function and value.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	4	There appears to be quality wildlife habitat. If seasonally flooded, this area could provide important benefits for shorebirds and waterfowl.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	1	Aquatic species may benefit during seasonal flooding, but the area remains dry during most of the year.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	4	The only limiting factor for this area's aesthetics would be from on-going farming practices. The area provides quality views of PFO and PEM habitats.

Total Score 18

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River Cr	ossina		City	/County: He	nderson/Henderso	on Sampling	Date:	7/26/2018
Applicant/Owner: INDOT (Des		KYTC			State: KY			DP-6-1-IN
Investigator(s): Luke Eggering			•	ion, Township			N/A	
Landform (hillslope, terrace, etc.):		-		·	ave, convex, none):	Concave	Slope (%):	2%
Subregion (LRR or MLRA): MLRA			-	.89519	Long:	-87.51862	Datum:	NAD-1983
Soil Map Unit Name: Melvin silty				-		NWI classificati		NA NA
Are climatic / hydrologic conditions	•	al for th	is time of the ve	ear? Yes	X No	(If no, explain in		
					Are "normal circun		•	X No
					(If needed, explair		_	<u> </u>
SUMMARY OF FINDINGS -	_		=					res, etc.
Hydrophytic Vegetation Present?	Yes	X N	No					
Hydric Soil Present?	Yes	<u>х</u> N	No	Is the Samp Wetland?	pled Area within a	Yes X	No	
Wetland Hydrology Present?	Yes	X N	No	***************************************		100	_ 140	
Remarks: This is a large hi bisected by and parallel to farmed. WOTUS 2018 ID: WTL-59	a pipeline rig		-					•
HYDROLOGY								
Wetland Hydrology Indicators:	,				Sec	condary Indicators	s (minimum of	f two required)
Primary Indicators (minimum of o	ne is required; c	heck all	I that apply)		<u> </u>	Surface Soil Cra	acks (B6)	
Surface Water (A1)			Γrue Aquatic Pla	nts (B14)	_	Sparsely Vegeta	ated Concave	Surface (B8)
High Water Table (A2)		_ +	Hydrogen Sulfide	e Odor (C1)	<u>x</u>	Drainage Patter	ns (B10)	
Saturation (A3)		_ c	Oxidized Rhizosp	pheres on Liv	ing Roots (C3)	Moss Trim Lines	s (B16)	
X Water Marks (B1)		P	Presence of Red	luced Iron (C4	4)	Dry-Season Wa	ter Table (C2)
X Sediment Deposits (B2)		R	Recent Iron Redu	uction in Tille	d Soils (C6) X	Crayfish Burrow	's (C8)	
Drift Deposits (B3)		T	Thin Muck Surfac	ce (C7)	<u></u>	Saturation Visib	le on Aerial In	nagery (C9)
Algal Mat or Crust (B4)			Other (Explain in	Remarks)	<u>x</u>	Geomorphic Pos	sition (D2)	
Iron Deposits (B5)		_			<u> </u>	Shallow Aquitare	d (D3)	
Inundation Visible on Aerial I	magery (B7)				<u> </u>	Microtopographi	ic Relief (D4)	
Water-Stained Leaves (B9)					<u>x</u>	FAC-Neutral Te		
Aquatic Fauna (B13)					_ _			
Field Observations:								
Surface water present?	Yes No	o <u>X</u>	Depth (inches):	:				
Water table present?			Depth (inches):	: >20				
Saturation present?	Yes No	o X	Depth (inches):	>20	Wetland Hydrolo	ogy Present?	YesX	No
(includes capillary fringe) Describe Recorded Data (stream	gauge, monitori	ina well,	aerial photos, r	previous insp	ections), if available:			
Remarks: Crayfish burrows						flooded by st	ormwater e	events and
during Ohio River floods.	•		,			•		

VEGETATION (Four Strata) - Use scientific n	ames of p	lants		Sampling Point:	DP-6-1-IN
Tree Stratum (Plot Size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	_
1 Ulmus americana	35	Y	FACW	Number of Dominant Species That Are OBL, FACW, or FAC:	5 (A)
2 Acer rubrum	30	Υ	FAC	Total Number of Dominant Species	
3 Quercus michauxii	10	N	FACW	Across all Strata:	5 (B)
4 Celtis occidentalis	10	N	FACU	Percent of Dominant Species that	
5				are OBL, FACW, or FAC:	100.00% (A/B)
6				_	
7				Prevalence Index worksheet	
	85	= Total Cover		Total % Cover of:	Multiply by:
50% of total cover: 42.5	20%	of total cover:	17	OBL species 0 x 1 =	= 0
Sapliing/Shrub Stratum (Plot Size: 15' radius)			FACW species 47 x 2 =	= 94
1				FAC species 37 x 3 =	= 111
2				FACU species10 x 4 =	= 40
3				UPL species 0 x 5 =	= 0
4				Column totals 94 (A)	245 (B)
5					
6				Prevalence Index = B/A	
7				Hydrophytic Vegetation Indicators:	ı
8				1 -Rapid Test for Hydrophytic Ve	getation
9				X 2 - Dominance Test is >50%	
	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹	
50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations (F	
Herb Stratum (Plot Size: 5' radius)	_			in Remarks or on a separate shee	•
1 Laportea canadensis	5	<u>Y</u>	FAC	Problematic Hydrophytic Vegetati	ion¹ (Explain)
2 Carex grayi	2	<u>Y</u>	FACW		
3 Toxicodendron radicans	2	<u> </u>	FAC	¹ Indicators of hydric soil and wetland present, unless disturbed or problema	
4				Definitions of Four Vegetation Stra	
5	-			Tree - Woody plants, excluding vines	
6				in diameter at breast height (DBH), re	, ,
				Sanling/shrub Woody plants ovelu	ding vines, less than 3
8				Sapling/shrub - Woody plants, exclu in. DBH and greater than or equal to 3	
9				Hark All barbasassa (ran was do) a	lanta
10				Herb - All herbaceous (non-woody) posize, and woody plants less than 3.28	. •
11	9	= Total Cover			
50% of total cover: 4.5		of total cover:		Woody vines - All woody vines great height.	er than 3.28 ft in
50% of total cover: 4.5 Woody Vine Stratum (Plot Size: 30' radius	20%	oi total cover.	1.0		
<u> </u>	,				
2					
3					
5				Hydrophytic	
-	0	= Total Cover		Vegetation Present? Yes X	No
50% of total cover: 0		of total cover:			
0070 01 10101 00701.	20 /0		<u> </u>		

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

The herb stratum is primarily unvegetated. Hackberry (Celtis occidentalis) may have been sugarberry (Celtis laevigata) but the obvious identifying characteristics lean toward Celtis occidentalis. The position in the landscape and the wet conditions point to Celtis laevigata.

Sampling Point: DP-6-1-IN

Depth		.00	epth needed to doo				iiii tile absell	ce oi illu	icators.)
•	Matrix	0/		lox Featu		10	Tandon	_	Damada
(inches) 0-2	Color (moist) 10YR 5 / 1	% 100	Color (moist)	%	Type ¹	Loc2	Texture Silt loa		Remarks Organic matter throughout core
2-6		90	10YR 6 / 6	10		- N.A			Organic matter throughout con
6-20	10YR 5 / 2 10YR 6 / 1	60	10YR 6 / 6	40	$\frac{c}{c}$	M	Silt loa		
0-20	101R 6 / 1	60	101R 6 / 6	40		IVI	Silt loa	<u> </u>	
1								2	
	Concentration, D=Depl	etion, RN	1=Reduced Matrix, (CS=Cover	ed or Coa	ated Sand	Grains.		n: PL=Pore Lining, M=Matrix.
Hyaric So	il Indicators:								ors for Problematic Hydric Soils ³ :
Histiso	I (A1)		Dark Su	face (S7)				2 cm	Muck (A10) (MLRA 147)
Histic E	Epipedon (A2)		Polyvalu	e Below S	Surface (S	8) (MLRA	147, 148)	Coas	st Prairie Redox (A16)
Black H	Histic (A3)		Thin Dar	k Surface	(S9) (ML	RA 147, 1	48)	(MLF	RA 147,148)
Hydrog	gen Sulfide (A4)		Loamy C	leyed Ma	trix (F2)			Piedi	mont Floodplain Soils (F19)
Stratifie	ed Layers (A5)		X Depleted	Matrix (F	3)			(N	ILRA 136, 147)
_	lucky Mineral (A10) (LI	RR N)	Redox D	ark Surfa	ce (F6)				Shallow Dark Surface (TF12)
_	ed Below Dark Suface				rface (F7)				r (Explain in Remarks)
_ `	Dark Surface (A12)	,		epressior				_	,
_	y Mucky Mineral (S1) (I RR N		•	, ,	12) (LRR I	J		
	RA 147, 148)			RA 136)	100000 (1	12) (L IXIX	•,		
					12\ /ML D	A 426 422	`		
	Gleyed Matrix (S4)			•		A 136,122	•		rs of hydrophytic vegetation and
	Redox (S5)					F19) (MLF			nydrology must be present,
	ed Matrix (S6)		Red Par	ent Mater	al (F21) (MLRA 127	', 147)	unless di	sturbed or problematic.
Restrictiv	e Layer (if observed):								
Type:	None								
Depth (i	inches): N/A					Hydric	soil present?		Yes X No
Remarks: This loca	ation met the deple	eted ma	atrix (F3) indicate	or. Som	e concre	etions we	ere observe	d in the	soil at a depth of 18 inches.
			, ,						
			, ,						

Project/Site: I-69 Ohio River (Crossing	(City/County: Hend	erson/Henders	on Sampling	Date:	7/26/2018
Applicant/Owner: INDOT (De	-		· · · · · · · · · · · · · · · · · · ·	State: KY			DP-6-1-OUT
Investigator(s): Luke Eggerii	ng; Lindsey Posta	aski s	Section, Township, F	Range:		N/A	
Landform (hillslope, terrace, etc.):	Flat		Local relief (concave	e, convex, none):	None	Slope (%):	0%
Subregion (LRR or MLRA): MLR	A 120A	Lat:	37.89539	Long:	-87.51844	Datum:	NAD-1983
Soil Map Unit Name: Ashton s	It loam, 0 to 4 pe	rcent slopes,	occasionally flo	oded	NWI classificat	ion:	NA
Are climatic / hydrologic condition	s on the site typical fo	or this time of the	e year? Yes	X No	(If no, explain ir	n Remarks.)	
Are vegetation X, Soil	, or Hydrology	significantly	y disturbed?	Are "normal circur	mstances" preser	nt? Yes _	X No
	, or Hydrology		roblematic? No	(If needed, explain	n any answers in	Remarks.)	
SUMMARY OF FINDINGS	– Attach site ma	ap showing s	sampling point	locations, tra	nsects, impo	rtant featu	res, etc.
Hydrophytic Vegetation Present	? Yes <u>X</u>	No	lo the Comple	d Area within a			
Hydric Soil Present?	Yes	No X		u Area Willilli a	Yes	No X	
Wetland Hydrology Present?	Yes	No X	_				
Remarks: This is an uplar upland point is adjacent to WOTUS 2018 ID: WTL-5	o an agricultural f		•		IIO RIVEI AIIG	GIEEIIIAVO	I #2 Noau. Till
HYDROLOGY							
Wetland Hydrology Indicators	:			Sec	condary Indicator	s (minimum of	two required)
Primary Indicators (minimum of	one is required; chec	k all that apply)		<u>X</u>	Surface Soil Cra	acks (B6)	
Surface Water (A1)	_	_ True Aquatic	Plants (B14)	_	Sparsely Vegeta	ated Concave	Surface (B8)
High Water Table (A2)	_	_ Hydrogen Su	ılfide Odor (C1)		Drainage Patter	rns (B10)	
Saturation (A3)	_	Oxidized Rhi	zospheres on Living	Roots (C3)	Moss Trim Line	s (B16)	
Water Marks (B1)	_	Presence of I	Reduced Iron (C4)	_	Dry-Season Wa	iter Table (C2))
Sediment Deposits (B2)	_	_ Recent Iron F	Reduction in Tilled S	soils (C6)	Crayfish Burrow	/s (C8)	
Drift Deposits (B3)	_	Thin Muck Su	• •	_	Saturation Visib	le on Aerial In	nagery (C9)
Algal Mat or Crust (B4)	_	Other (Explai	in in Remarks)	_	Geomorphic Po	sition (D2)	
Iron Deposits (B5)				_	Shallow Aquitar		
Inundation Visible on Aeria	Imagery (B7)			_	Microtopograph	, ,	
Water-Stained Leaves (B9)				_	FAC-Neutral Te	est (D5)	
Aquatic Fauna (B13)				7			
Field Observations:			,				
Surface water present?	Yes No						
Water table present?	Yes No				D 40	Vas	N. V
Saturation present? (includes capillary fringe)	Yes No	X Depth (inch	nes): >20	Wetland Hydrol	ogy Present?	Yes	No X
Describe Recorded Data (stream	n gauge, monitoring	well, aerial photo	os, previous inspecti	ons), if available:			
Remarks: Some surface shigher stream terrace, do moderately well drained.							

	·	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree	Stratum (Plot Size: 30' radius)	% Cover	Species?	Status	Number of Dominant Species That
1 _	Acer rubrum	40	<u> </u>	FAC	Are OBL, FACW, or FAC:3 (A)
2 _	Ulmus americana	30	<u> </u>	FACW	Total Number of Dominant Species
3 _					Across all Strata: 4 (B)
4 _					Percent of Dominant Species that
5					are OBL, FACW, or FAC: 75.00% (A/B)
6 _					
7_					Prevalence Index worksheet
		70	= Total Cover		Total % Cover of: Multiply by:
	50% of total cover: 35	20%	of total cover:	14	OBL species 0 x 1 = 0
Sapl	iing/Shrub Stratum (Plot Size: 15' radius)			FACW species 30 x 2 = 60
1_					FAC species 65 x 3 = 195
2 _					FACU species 55 x 4 = 220
3 _					UPL species 0 x 5 = 0
4 _					Column totals (A) (A) (B)
5					
6 _					Prevalence Index = B/A = 3.17
7_					Hydrophytic Vegetation Indicators:
8 _					1 -Rapid Test for Hydrophytic Vegetation
9 _					X 2 - Dominance Test is >50%
		0	= Total Cover		3 - Prevalence Index is ≤3.0 ¹
	50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting data
Herb	Stratum (Plot Size: 5' radius)				in Remarks or on a separate sheet)
1_	Chasmanthium latifolium	50	<u> </u>	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2 _	Campsis radicans	20	<u> </u>	FAC	
3 _	Toxicodendron radicans	5	N	FAC	¹ Indicators of hydric soil and wetland hydrology must be
4 _	Parthenocissus quinquefolia	5	<u>N</u>	FACU	present, unless disturbed or problematic
5_					Definitions of Four Vegetation Strata:
6_					Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
7_					
8 _					Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
9_					III. BBIT and greater than or equal to 0.25 it (111) tall.
10_					Herb - All herbaceous (non-woody) plants, regardless of
11_					size, and woody plants less than 3.28 ft tall.
		80	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in
	50% of total cover: 40	20%	of total cover:	16	height.
Woo	dy Vine Stratum (Plot Size: 30' radius)			
1_					
2 _					
3 _					
4 _					Hydrophytic
5					Vegetation
		0	= Total Cover		Present? Yes X No
	50% of total cover: 0	20%	of total cover:	0	
Rem	arks: (Include photo numbers here or on a separate	sheet.)			•
TL -		ocatation	is shoont T		rooted in the wetland, and the canony extends ever

The area has recently been tilled so natural vegetation is absent. Trees are rooted in the wetland, and the canopy extends over the soil core location.

Sampling Point:

DP-6-1-OUT

Sampling Point: DP-6-1-OUT

Profile De Depth	scription: (Describe Matrix	to the de		cument t		or or con	firm the abse	ence of indi	icators.)	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Text	ıre		Remarks
0-2	10YR 5 / 2	100	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		. ,,,,		Silt Ic			
2-8	10YR 5 / 3	95	10YR 6 / 6	5 5		M	Silt lo			
8-20	10YR 5 / 4	95	2.5Y 6 /		- C	M	Silt lo			
0-20	10111 374		2.51 0 7			IVI	- Ont ic	Jaiii		
						· ——	-			
					- —					
¹ Type: C=0	Concentration, D=Dep	letion, RM	1=Reduced Matrix,	CS=Cove	ered or Co	ated Sand	Grains.	² Location	: PL=Pore Lir	ning, M=Matrix.
Hydric So	il Indicators:							Indicato	ors for Proble	ematic Hydric Soils ³ :
Histiso	I (A1)		Dark Su	rface (S7	')			2 cm	Muck (A10) (MLRA 147)
	Epipedon (A2)		_		•	88) (MI RA	147, 148)	_	t Prairie Redo	
					e (S9) (ML		•	_	RA 147,148)	
	Histic (A3)					IXA 147, 1	170)			i= 0-il- (E40)
	en Sulfide (A4)			Gleyed M						in Soils (F19)
_	ed Layers (A5)		_	d Matrix (ILRA 136, 14	
	lucky Mineral (A10) (L	•		Dark Surfa						Surface (TF12)
Deplete	ed Below Dark Suface	(A11)	Deplete	d Dark Sเ	urface (F7))		Othe	r (Explain in R	Remarks)
Thick E	Oark Surface (A12)		Redox I	Depressio	ns (F8)					
Sand	y Mucky Mineral (S1)	(LRR N,	Iron-Ma	nganese	Masses (F	12) (LRR	N,			
— MLI	RA 147, 148)			LRA 136)						
	Gleyed Matrix (S4)				F13) (MLF	RA 136.12	2)	2		
	Redox (S5)				lain Soils (tic vegetation and
	d Matrix (S6)								nydrology mus sturbed or pro	
_			Red Pa	ent mate	rial (F21) (WILKA 12	7, 147)	uriless ur	sturbed or pro	DDIEMANC.
Restrictiv	e Layer (if observed)):								
Type:	None									
Depth (i	nches): N/A					Hydric	soil present	?	Yes	No X
	a lot of organic m								20110.	

Project/Site: I-69 Ohio River (Crossina		Cit	v/County: Hend	lerson/Hender	son Sampling	ı Date:	7/26/2018
Applicant/Owner: INDOT (De); KYT			State: K			DP-6-2-IN
Investigator(s): Luke Eggerii				ction, Township, F			N/A	_
Landform (hillslope, terrace, etc.)	Depressio	n	Loc	cal relief (concav	e, convex, none):	Concave	Slope (%):	2%
Subregion (LRR or MLRA): MLR	A 120A			7.89392	Long:	-87.51812	Datum:	NAD-1983
Soil Map Unit Name: Melvin si	Ity clay loam					NWI classificat	ion:	NA
Are climatic / hydrologic condition	s on the site ty	pical for	this time of the y	vear? Yes	X No	(If no, explain in	n Remarks.)	
Are vegetation , Soil	, or Hydrok	ogy	significantly di	isturbed? No	Are "normal circu	- umstances" prese	nt? Yes	X No
Are vegetation , Soil	, or Hydrok	ogy	naturally prob	lematic? No	(If needed, expla	nin any answers in	Remarks.)	
SUMMARY OF FINDINGS	– Attach si	te map	showing sa	mpling point	locations, tra	ansects, impo	rtant featu	ıres, etc.
Hydrophytic Vegetation Present	t? Yes	Х	No	le the Sample	d Area within a			
Hydric Soil Present?	Yes	Х	No	Wetland?	u Area within a	Yes X	No	
Wetland Hydrology Present?	Yes	X	No			_		
Remarks: This is a large	oredominate	lv botto	omland hardw	ood forest loc	ated in the Oh	nio River floodr	lain that is	bisected by and
parallel to a pipeline right- WOTUS 2018 ID: WTL-5	-	th of G	reen River #2	? Road. The la	and directly no	rth of the wetla	nd is farme	ed.
HYDROLOGY								
Wetland Hydrology Indicators):				Se	econdary Indicator	s (minimum o	f two required)
Primary Indicators (minimum of	one is required	t; check	all that apply)		<u>x</u>	•		
Surface Water (A1)		_	True Aquatic PI	ants (B14)		Sparsely Veget	ated Concave	e Surface (B8)
High Water Table (A2)		_	Hydrogen Sulfic	de Odor (C1)	<u>x</u>	Drainage Patte	rns (B10)	
Saturation (A3)		_	Oxidized Rhizos	spheres on Living	Roots (C3)	Moss Trim Line	s (B16)	
Water Marks (B1)		_	Presence of Re	duced Iron (C4)		Dry-Season Wa	ater Table (C2	2)
Sediment Deposits (B2)		_	Recent Iron Rec	duction in Tilled S	Soils (C6) X	Crayfish Burrov	vs (C8)	
Drift Deposits (B3)		_	Thin Muck Surfa			Saturation Visib	le on Aerial Ir	magery (C9)
Algal Mat or Crust (B4)		_	Other (Explain i	in Remarks)	<u>x</u>	Geomorphic Po	sition (D2)	
Iron Deposits (B5)						Shallow Aquitar		
Inundation Visible on Aeria						Microtopograph		
Water-Stained Leaves (B9)				<u>x</u>	FAC-Neutral Te	est (D5)	
Aquatic Fauna (B13)					_			
Field Observations:								
Surface water present?	Yes	No X	-		4			
Water table present?		No X	- ' '		-			
Saturation present? (includes capillary fringe)	Yes	No X	Depth (inches	s):>20	Wetland Hydro	logy Present?	Yes X	_ No
Describe Recorded Data (stream	m gauge, moni	toring we	ell, aerial photos,	previous inspect	tions), if available	<u> </u>		
Remarks:			•	•	•			
Crayfish burrows are pres	ent through	out the	wetland. The	area is inund	lated during se	easonal stormy	ater and O	hio River
flooding events.								

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius)	% Cover	Species?	Status	Number of Dominant Species That
1 Ulmus americana	55	<u>Y</u>	FACW	Are OBL, FACW, or FAC: 3 (A)
2 Quercus texana	40	<u> </u>	OBL	Total Number of Dominant Species
3 Acer rubrum	10	N	FAC	Across all Strata: 3 (B)
4 Quercus palustris	5	<u>N</u>	FACW	Percent of Dominant Species that
5		·		are OBL, FACW, or FAC:
6				Prevalence Index worksheet
·	110	T-tal Cover		
50% of total cover: 55	110	= Total Cover of total cover:		Total % Cover of: Multiply by: OBL species 100 x 1 = 100
	ZU /0	OI lolai covei.	22	· — — —
				FACW species 60 x 2 = 120 FAC species 10 x 3 = 30
2				FACU species 0 x 4 = 0
3				UPL species 0 x 5 = 0
				Column totals 170 (A) 250 (B)
5				Column totals 170 (A) 200 (S)
6				Prevalence Index = B/A = 1.47
7				Hydrophytic Vegetation Indicators:
8				X 1 -Rapid Test for Hydrophytic Vegetation
9				X 2 - Dominance Test is >50%
	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting data
Herb Stratum (Plot Size: 5' radius)		•		in Remarks or on a separate sheet)
1 Saururus cernuus	60	Y	OBL	Problematic Hydrophytic Vegetation (Explain)
2				
3				¹ Indicators of hydric soil and wetland hydrology must be
4				present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
7				III diameter at breast neight (DDH), regardess of neight.
8				Sapling/shrub - Woody plants, excluding vines, less than 3
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Herb - All herbaceous (non-woody) plants, regardless of
11				size, and woody plants less than 3.28 ft tall.
	60	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in
50% of total cover: 30	20%	of total cover:	12	height.
Woody Vine Stratum (Plot Size: 30' radius)	1			
1				
2				
3				
4				Hydrophytic
5				Vegetation
	0	= Total Cover		Present? Yes X No
50% of total cover: 0		of total cover:	0	
Remarks: (Include photo numbers here or on a separate				
Nuttall oak (Quercus texana) trees were quite	large.			

Sampling Point:

DP-6-2-IN

Sampling Point: DP-6-2-IN

			pth needed to docu			or or com	irm the abser	ice oi illui	cators.	
Depth (inches)	Matrix	%		x Featu		Last	Toutur		D	a ma a mira
(inches) 0-2	Color (moist) 10YR 3 / 1	100	Color (moist)	<u>%</u>	Type ¹	Loc2	Textur Silt loa			emarks natter present.
2-15	2.5YR 6 / 2	80	10YR 5 / 4	20		- N.4			Organich	iallei present.
				10	$\frac{c}{c}$	<u>M</u>	Silt loa			
15-20	2.5YR 6 / 1	90	10YR 6 / 6	10		M	Silt loa	<u>am</u>		
¹ Type: C=	Concentration, D=Dep	letion, RN	M=Reduced Matrix, CS	S=Cover	ed or Coa	ated Sand	Grains.	² Location	: PL=Pore Lining, M	1=Matrix.
Hydric So	il Indicators:							Indicato	rs for Problemation	: Hydric Soils ³ :
Histiso	l (A1)		Dark Surfa	ace (S7)				2 cm	Muck (A10) (MLRA	147)
Histic E	Epipedon (A2)		Polyvalue	Below S	Surface (S	8) (MLRA	147, 148)	Coas	t Prairie Redox (A1	6)
Black H	Histic (A3)		Thin Dark					(MLR	A 147,148)	
_	gen Sulfide (A4)		Loamy Gle			•	,		nont Floodplain Soi	ls (F19)
_	ed Layers (A5)		X Depleted I						ILRA 136, 147)	- \/
_	Mucky Mineral (A10) (L	BB NI	Redox Da						Shallow Dark Surfa	ce (TF12)
	ed Below Dark Suface		Depleted I						r (Explain in Remarl	, ,
		(A11)							(Explain in Remain	15)
_	Dark Surface (A12)	(I DD N	Redox De			40) // DD				
_	y Mucky Mineral (S1) (LKK N,	Iron-Mang		/lasses (F	12) (LRR	N,			
	RA 147, 148)			A 136)						
	Gleyed Matrix (S4)		Umbric Su					³ Indicator	rs of hydrophytic ve	getation and
Sandy	Redox (S5)		Piedmont	Floodpla	ain Soils (F19) (MLI	RA 148)		ydrology must be p	
Strippe	ed Matrix (S6)		Red Parer	nt Materi	al (F21) (MLRA 12	7, 147)	unless di	sturbed or problema	atic.
Restrictiv	e Layer (if observed):									
Typo										
Type:	None									
• •				-		Hvdric	soil present?	•	Yes X	No
Depth (i				- -		Hydric	soil present?	•	YesX	No
Depth (i	inches): N/A		1: (50)	-						
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					was present in the
Depth (i	inches): N/A		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- - leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- - leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- - leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- - leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- - leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- - leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- - leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	eted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					
Depth (i	inches): N/A ation met the deple		atrix (F3) and dep	- leted b	elow da					

Project/Site: I-69 Ohio River Cr	ossing	_ Cit	ty/County: He	enderson/Hend	lerson_	Sampling	Date:	7/26/2018
Applicant/Owner: INDOT (Des				State:		Sampling		DP-6-3-IN
Investigator(s): Luke Eggering			ction, Townsh	nip, Range:			N/A	
Landform (hillslope, terrace, etc.):	Depression	Lor	cal relief (con	ncave, convex, none	e): Co	oncave	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	120A	Lat: 37	7.89203	Long:	-87.	51787	Datum:	NAD-1983
Soil Map Unit Name: Belknap si	It loam, 0 to 2 per	rcent slopes, o	occasional	ly flooded	NW	l classificati	on:	NA
Are climatic / hydrologic conditions	on the site typical for	this time of the y	year? Ye	es X No	(If no	o, explain in	Remarks.)	
Are vegetation, Soil	, or Hydrology	significantly di	isturbed? N	lo Are "normal ci	ircumstan	ces" preser	nt? Yes _	X No
Are vegetation, Soil	, or Hydrology	naturally prob	lematic? N	(If needed, ex	plain any	answers in	Remarks.)	
SUMMARY OF FINDINGS -	- Attach site ma	p showing sa	ımpling po	oint locations,	transec	ts, impo	rtant featu	res, etc.
Hydrophytic Vegetation Present?	Yes X	No	le the San	mpled Area within	_			
Hydric Soil Present?	Yes X	No	Wetland?	•	a Yes	s X	No	
Wetland Hydrology Present?	Yes X	No					_	
Remarks: This is a large pr	redominately bott	omland hardw	vood forest	located in the	Ohio Riv	er floodp	lain that is	bisected by and
parallel to a pipeline right-c	•					-		-
This wetland point is not no		oundary, there	efore there	is no accompar	nying up	oland data	asheet.	
WOTUS 2018 ID: WTL-59.								
HYDROLOGY								
Wetland Hydrology Indicators:								f two required)
Primary Indicators (minimum of o	ne is required; check	• • • • • • • • • • • • • • • • • • • •		 .	_	ace Soil Cra	, ,	
Surface Water (A1)	_	True Aquatic Plant	, ,	,				Surface (B8)
High Water Table (A2)	_	Hydrogen Sulfid	, ,	•	_	nage Patter	, ,	
Saturation (A3)	_		•	iving Roots (C3)	_	s Trim Lines		
Water Marks (B1)	_	Presence of Re	•	· ·	_ `		ter Table (C2)
Sediment Deposits (B2)	_	Recent Iron Rec		led Soils (C6)	_ `	fish Burrow		(22)
Drift Deposits (B3)	_	Thin Muck Surfa	, ,		_		le on Aerial In	nagery (C9)
Algal Mat or Crust (B4)	_	Other (Explain i	in Remarks)		_	morphic Po	, ,	
Iron Deposits (B5)	> (D 7)				_	low Aquitar	, ,	
Inundation Visible on Aerial I Water-Stained Leaves (B9)	mayery (br)			•	_	Neutral Te	ic Relief (D4)	
Aquatic Fauna (B13)				•		-Neutral 16	St (D0)	
								
Field Observations: Surface water present?	Yes No X	Denth (inches	-)·					
Water table present?	Yes No X Yes No X			 				
Saturation present?	Yes No X		· ———	Wetland Hyd	drology Pi	resent?	Yes X	No
(includes capillary fringe)	103		,,, - 20				163 <u>X</u>	
Describe Recorded Data (stream				pections), if availab	ble:			
Remarks: Crayfish burrows	are present thro	ughout the we	etland.					

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius)	% Cover	Species?	Status	Number of Dominant Species That
1 Ulmus americana	50	Y	FACW	Are OBL, FACW, or FAC: 4 (A)
2 Acer rubrum	40	Υ	FAC	Total Number of Dominant Species
3				Across all Strata: 4 (B)
4				Description of Description that
5		·		Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)
6				(==-,
°				Prevalence Index worksheet
		- Total Cayor		Total IV Cover of Multiply by
	90	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 45	20%	of total cover:	18	OBL species 0 x 1 = 0
Sapliing/Shrub Stratum (Plot Size: 15' radius)			FACW species 50 x 2 = 100
1				FAC species 60 x 3 = 180
2				FACU species 0 x 4 = 0
3		. <u></u> .		UPL species 0 x 5 = 0
4				Column totals110 (A)280 (B)
5				
6				Prevalence Index = B/A = 2.55
7		·		Hydrophytic Vegetation Indicators:
0				1 -Rapid Test for Hydrophytic Vegetation
9				X 2 - Dominance Test is >50%
9				l
	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations 1 (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot Size: 5' radius)				
1 Lindera benzoin	15	<u> </u>	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
Laportea canadensis	5	<u> </u>	FAC	
3				¹ Indicators of hydric soil and wetland hydrology must be
4				present, unless disturbed or problematic
5		. <u></u> .		Definitions of Four Vegetation Strata:
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7				in diameter at breast height (DBH), regardless of height.
8				Sapling/shrub - Woody plants, excluding vines, less than 3
9		·		in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Herb - All herbaceous (non-woody) plants, regardless of
		 -		size, and woody plants less than 3.28 ft tall.
11				
50% 51.1.1	20	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in height.
50% of total cover: 10	20%	of total cover:	4	neight.
Woody Vine Stratum (Plot Size: 30' radius)			
1				
2				
3				
4				
5				Hydrophytic Vegetation
	0	= Total Cover		Present? Yes X No
50% of total cover: 0	20%	of total cover:	0	
Remarks: (Include photo numbers here or on a separate				
· · · ·	·	-l h £ (التادي السلا	a suppliciona cultura la la licada de la la la cultura de la la cultura de la cultura
Spicebush (<i>Lindera benzoin</i>) in this area is ap	proximat	ery two feet	tall, which	explains why it is listed in the nerb stratum.

Sampling Point:

DP-6-3-IN

Sampling Point: DP-6-3-IN

Profile Description: (Describe to the de		icator or confirn	the absence of inc	dicators.)
Depth Matrix (inches) Color (moist) %	Redox Features Color (moist) % Typ	pe ¹ Loc2	Texture	Remarks
0-3 2.5Y 3 / 1 100	70 1yp		Silt loam	
3-15 2.5YR 6 / 2 98	2.5Y 6 / 6 2 C		Silt loam	
15-20 2.5YR 5 / 3 100	2.01 0 7 0 2		Silt loam	Gravel inclusions at a depth of 18"
13-20 2.311(3 / 3 100			Silt loain	Graver inclusions at a deptit of to
				
				·
¹ Type: C=Concentration, D=Depletion, RM	=Reduced Matrix, CS=Covered or	Coated Sand Gr		n: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:				tors for Problematic Hydric Soils ³ :
Histisol (A1)	Dark Surface (S7)		2 cn	n Muck (A10) (MLRA 147)
Histic Epipedon (A2)	Polyvalue Below Surfac	e (S8) (MLRA 1 4	7, 148) Coa	st Prairie Redox (A16)
Black Histic (A3)	Thin Dark Surface (S9)	(MLRA 147, 148) (ML	RA 147,148)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F	2)	Pied	dmont Floodplain Soils (F19)
Stratified Layers (A5)	X Depleted Matrix (F3)			MLRA 136, 147)
2 cm Mucky Mineral (A10) (LRR N)	Redox Dark Surface (F6	5)	•	y Shallow Dark Surface (TF12)
X Depleted Below Dark Suface (A11)	Depleted Dark Surface (•		er (Explain in Remarks)
Thick Dark Surface (A12)	Redox Depressions (F8		_	(=
Sandy Mucky Mineral (S1) (LRR N,	Iron-Manganese Masse			
	MLRA 136)	5 (1 12) (LIXIX IX,		
MLRA 147, 148)	·	AL DA 400 400\		
Sandy Gleyed Matrix (S4)	Umbric Surface (F13) (N		³ Indicate	ors of hydrophytic vegetation and
Sandy Redox (S5)	Piedmont Floodplain So			hydrology must be present,
Stripped Matrix (S6)	Red Parent Material (F2	21) (MLRA 127, 1	47) unless d	disturbed or problematic.
Restrictive Layer (if observed):				
Type: None				
Depth (inches): N/A		Hydric so	il present?	Yes X No
Remarks: This location met the depleted ma gravel is included in the soil core.	trix (F3) and depleted below	dark surface	(A11) indicators	. At a depth of 18 inches, some

Project/Site: I-69 Ohio River Cr	ossina	Cit	tv/County: Hend	derson/Henderso	on Sampling	Date:	7/26/2018
Applicant/Owner: INDOT (Des				State: KY			DP-6-4-IN
Investigator(s): Luke Eggering		•	ction, Township,			N/A	-
Landform (hillslope, terrace, etc.):		•	•	ve, convex, none):	Concave	Slope (%):	2%
Subregion (LRR or MLRA): MLRA			7.89092	Long:	-87.51703	Datum:	NAD-1983
Soil Map Unit Name: Belknap si		_			NWI classificati		NA
Are climatic / hydrologic conditions				X No	(If no, explain in		
				Are "normal circun		•	X No
				· (If needed, explain		_	
SUMMARY OF FINDINGS -	_			='			res, etc.
Hydrophytic Vegetation Present?	Yes X	No					
Hydric Soil Present?	Yes X	No	Is the Sample Wetland?	ed Area within a	Yes X	No	
Wetland Hydrology Present?	Yes X	 No	***************************************		100	_ ''`	
Remarks: This is a large pr			wood forest lo	cated in the Ohio	n River floodo	lain that is	hisected by and
parallel to a pipeline right-c	•				•		•
forest. This point is near th	•						0 1110 0.5.0
WOTUS 2018 ID: WTL-59		·				•	
HYDROLOGY							•
Wetland Hydrology Indicators:				Sec	ondary Indicators	s (minimum o	f two required)
Primary Indicators (minimum of o	ne is required; chec	ck all that apply)			Surface Soil Cra	acks (B6)	
Surface Water (A1)	_	True Aquatic Pl	lants (B14)	_	Sparsely Vegeta	ated Concave	Surface (B8)
High Water Table (A2)	_	_ Hydrogen Sulfid	de Odor (C1)	<u>x</u>	Drainage Patter	ns (B10)	
Saturation (A3)	<u>x</u>	C Oxidized Rhizo	spheres on Livin	g Roots (C3)	Moss Trim Lines	s (B16)	
Water Marks (B1)	_	Presence of Re	educed Iron (C4)		Dry-Season Wa	ter Table (C2)
Sediment Deposits (B2)	_	_ Recent Iron Re	eduction in Tilled	Soils (C6) X	Crayfish Burrow	rs (C8)	
Drift Deposits (B3)	_	_ Thin Muck Surf	face (C7)	_	Saturation Visib	le on Aerial In	magery (C9)
Algal Mat or Crust (B4)	_	Other (Explain i	in Remarks)	<u>x</u>	Geomorphic Pos	sition (D2)	
Iron Deposits (B5)					Shallow Aquitare	d (D3)	
Inundation Visible on Aerial I	magery (B7)				Microtopographi	ic Relief (D4)	
Water-Stained Leaves (B9)				x	FAC-Neutral Te	st (D5)	
Aquatic Fauna (B13)							
Field Observations:				T			
Surface water present?	Yes No	X Depth (inches	s):				
Water table present?	Yes No_:	X Depth (inches	s): >20				ļ
Saturation present?	Yes No	X Depth (inches	s): >20	Wetland Hydrolo	gy Present?	Yes X	No
(includes capillary fringe) Describe Recorded Data (stream	gauge monitoring	well aerial photos	previous inspec	tions) if available:			
Remarks: Crayfish burrows					were present	<u> </u>	
Tromonius Graynon Danie	, are processes	ougheut all	Juane. 5	04 1111 <u>235</u>	Word process	•	

VEGETATION (Four Strata) - Use scientific n	ames of p	olants		Sampling Point:	DP-6-4-IN
Tree Stratum (Plot Size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1 Acer rubrum	70	Υ	FAC	Number of Dominant Species That Are OBL, FACW, or FAC:	5 (A)
2 Ulmus americana	15	N	FACW	Total Number of Dominant Species	
3 Liquidambar styraciflua	5	N	FAC	Across all Strata:	5 (B)
4				Percent of Dominant Species that	
5				are OBL, FACW, or FAC:	100.00% (A/B)
6				Prevalence Index worksheet	
7					Acatalan Inc. Inc
50% of total cover: 45	90	= Total Cover of total cover:	18	Total % Cover of: N OBL species 0 x 1 =	Multiply by: = 0
Sapliing/Shrub Stratum (Plot Size: 15' radius)	or total cover.	10	FACW species 35 x 2 =	
1				FAC species 80 x 3 =	
2				FACU species 0 x 4 =	
3			,	UPL species 0 x 5 =	= 0
4				Column totals 115 (A)	310 (B)
5					
6				Prevalence Index = B/A :	
7				Hydrophytic Vegetation Indicators:	
8				1 -Rapid Test for Hydrophytic Ve	getation
9				X 2 - Dominance Test is >50%	
	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹	
50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations ¹ (Find Remarks or on a separate sheet	
Herb Stratum (Plot Size: 5' radius) 1 Onoclea sensibilis	10	Υ	FACW	Problematic Hydrophytic Vegetati	•
2 Ulmus americana	5	· Y	FACW	Problematic Hydrophytic vegetati	on (⊏xpiaiii)
3 Toxicodendron radicans	5	<u> </u>	FAC	¹ Indicators of hydric soil and wetland	hydrology must be
4 Impatiens capensis	<u>5</u>	· <u> </u>	FACW	present, unless disturbed or problema	
5		· ·	.,	Definitions of Four Vegetation Stra	ta:
6		· — ·		Tree - Woody plants, excluding vines	, ,
7				in diameter at breast height (DBH), re	gardless of height.
9				Sapling/shrub - Woody plants, excluin. DBH and greater than or equal to 3	-
10				Herb - All herbaceous (non-woody) pl	ants regardless of
11			,	size, and woody plants less than 3.28	-
	25	= Total Cover		Woody vines - All woody vines great	er than 3.28 ft in
50% of total cover: 12.5	20%	of total cover:	5	height.	
Woody Vine Stratum (Plot Size: 30' radius)	•			
1					
2					
3					
4				Hydrophytic	
5				Vegetation	
	0	= Total Cover		Present? Yes X	No
50% of total cover: 0	20%	of total cover:	0		
Remarks: (Include photo numbers here or on a separate	choot)				

This is a typical bottomland hardwood forest for the Ohio River floodplain. The timber is smaller along the south boundary of this wetland, likely due to past logging.

Sampling Point: DP-6-4-IN

ches)	Matr			x Featu		1	- .		Б	
	Color (moist		Color (moist)	<u>%</u>	Type ¹	Loc2	Textu		Remarks	
-8 	2.5Y 5 /		10YR 6 / 1	5	<u>C</u>	<u>M</u>	Silt lo			
-15	2.5YR 6 /		7.5YR 6 / 6	10	<u>C</u>	M	Silt lo			
5-20	2.5YR 7 /	2 80	10YR 6 / 6	20	С	M	Silt lo	am		
e: C=	Concentration, D	=Depletion, RI	M=Reduced Matrix, CS	S=Cover	ed or Coa	ited Sand	Grains.	² Location	: PL=Pore Lining, M=Matrix.	
ric So	il Indicators:							Indicato	rs for Problematic Hydric So	ils³:
listiso	Ι (Δ1)		Dark Surfa	ace (S7)				2 cm	Muck (A10) (MLRA 147)	
	Epipedon (A2)			, ,		۵) (MI D ۸	147, 148)	_	t Prairie Redox (A16)	
			Thin Dark					_	A 147,148)	
	Histic (A3)					IXA 147, T	- -0)			
	gen Sulfide (A4)		Loamy Glo					_	nont Floodplain Soils (F19)	
	ed Layers (A5)	0) // == :::	X Depleted	•	•			•	LRA 136, 147)	
	lucky Mineral (A1		Redox Da						Shallow Dark Surface (TF12)	
	ed Below Dark Su		Depleted I					Other	(Explain in Remarks)	
	Dark Surface (A12		Redox De							
Sand	y Mucky Mineral	(S1) (LRR N,	Iron-Mang	anese M	lasses (F	12) (LRR	N,			
	RA 147, 148)		MLF	A 136)						
Sandy	Gleyed Matrix (S	4)	Umbric Su	ırface (F	13) (MLR	A 136,122	2)	3Indicator	s of hydrophytic vegetation an	Ч
Sandy	Redox (S5)		Piedmont	Floodpla	ain Soils (F19) (MLF	RA 148)		lydrology must be present,	u
Strippe	ed Matrix (S6)		Red Parer	nt Materi	al (F21) (MLRA 127	⁷ , 147)		sturbed or problematic.	
trictiv	e Layer (if obser	ved):								
Гуре:	None			_					., .,	
	None inches): N/A			_		Hydric	soil present	?	Yes X No	
epth (i				_		Hydric	soil present	?	Yes X No	
epth (i	inches): N/A	denleted ma	atriy (F3) indicator	-		Hydric	soil present	?	Yes X No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u> ·.		Hydric	soil present	?	Yes_X_ No	
epth (i	inches): N/A	depleted ma	atrix (F3) indicator	- :		Hydric	soil present	?	Yes <u>X</u> No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u> :		Hydric	soil present	?	Yes <u>X</u> No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u> :		Hydric	soil present	?	Yes <u>X</u> No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u> :		Hydric	soil present	?	Yes X No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u> 		Hydric	soil present	?	Yes X No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicato	<u>-</u>		Hydric	soil present	?	Yes X No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u>		Hydric	soil present	?	Yes X No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u>		Hydric	soil present	?	Yes X No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	-		Hydric	soil present	?	Yes X No	
epth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u>		Hydric	soil present	?	Yes X No	
epth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u>		Hydric	soil present	?	Yes X No	_
epth (i	inches): N/A	depleted ma	atrix (F3) indicator			Hydric	soil present	?	Yes X No	
epth (i	inches): N/A	depleted ma	atrix (F3) indicator			Hydric	soil present	?	Yes X No	
epth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u>		Hydric	soil present	?	Yes X No	
epth (i	inches): N/A	depleted ma	atrix (F3) indicato	·		Hydric	soil present	?	Yes X No	_
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u>		Hydric	soil present	?	Yes X No	_
marks:	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u>		Hydric	soil present	?	Yes X No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u>		Hydric	soil present	?	Yes X No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u>		Hydric	soil present	?	Yes X No	
Depth (i	inches): N/A	depleted ma	atrix (F3) indicator	<u>-</u>		Hydric	soil present	?	Yes X No	
epth (i	inches): N/A	depleted ma	atrix (F3) indicator			Hydric	soil present	?	Yes X No	
epth (i	inches): N/A	depleted ma	atrix (F3) indicator			Hydric	soil present	?	Yes X No	

Project/Site: I-69 Ohio River Cro	ossing	_ Ci	ty/County: Hend	lerson/Henders	SON Sampling	Date:	7/26/2018
Applicant/Owner: INDOT (Des#				State: K			DP-6-4-OUT
Investigator(s): Luke Eggering	; Lindsey Postas	ki Se	ction, Township, F	Range:		N/A	
Landform (hillslope, terrace, etc.):	Flat	Lo	cal relief (concave	e, convex, none):	Convex	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	120A	Lat: 37	7.89076	Long:	-87.51698	Datum:	NAD-1983
Soil Map Unit Name: Belknap silt	loam, 0 to 2 per	cent slopes,	occasionally fl	ooded	NWI classificati	ion:	NA
Are climatic / hydrologic conditions of			_	X No	(If no, explain ir	,	
	, or Hydrology						X No
Are vegetation, Soil	, or Hydrology	naturally prob	olematic? No	(If needed, explain	in any answers in	Remarks.)	
SUMMARY OF FINDINGS –	Attach site map	showing sa	ampling point	locations, tra	ınsects, impo	rtant featu	res, etc.
Hydrophytic Vegetation Present?	Yes	No X	le the Sample	ed Area within a			
Hydric Soil Present?	Yes X	No	Wetland?	a Area within a	Yes	No X	
Wetland Hydrology Present?	Yes	No X				_	
Remarks: This is an upland upslope from the wetland ar WOTUS 2018 ID: WTL-59 .	-						
HYDROLOGY							
Wetland Hydrology Indicators:				<u>Se</u>	condary Indicators	s (minimum of	ftwo required)
Primary Indicators (minimum of on	e is required; check	all that apply)			Surface Soil Cra	acks (B6)	
Surface Water (A1)	_	True Aquatic Pl	lants (B14)	_	Sparsely Vegeta	ated Concave	Surface (B8)
High Water Table (A2)	_	Hydrogen Sulfic	ulfide Odor (C1) Drainage Patterns (B10)				
Saturation (A3)	_	Oxidized Rhizo	spheres on Living	Roots (C3)	Moss Trim Lines	s (B16)	
Water Marks (B1)	_		educed Iron (C4)	_	Dry-Season Wa)
Sediment Deposits (B2)	_		eduction in Tilled S	Soils (C6)	Crayfish Burrow	, ,	
Drift Deposits (B3)	_	Thin Muck Surf		_	Saturation Visib		nagery (C9)
Algal Mat or Crust (B4)	_	Other (Explain	in Remarks)	<u>x</u>	•	` ,	
Iron Deposits (B5)				_	Shallow Aquitar		
Inundation Visible on Aerial In	nagery (B7)			_	Microtopograph	, ,	
Water-Stained Leaves (B9)				_	FAC-Neutral Te	st (D5)	
Aquatic Fauna (B13)							
Field Observations:							
Surface water present?	Yes No X	- · `		4			
Water table present?	Yes No X	- · `		-			N. V
Saturation present? (includes capillary fringe)	Yes No _X	Depth (inches	s):>20	Wetland Hydrol	logy Present?	Yes	_ NoX
Describe Recorded Data (stream of	gauge, monitoring we	ell, aerial photos	, previous inspect	tions), if available:			
Remarks:							

Tree Stratum (Plot Size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksneet:
1 Acer saccharum	80	Y	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2 Salix nigra	30	<u>Y</u>	OBL	
3				Total Number of Dominant Species Across all Strata: 4 (B)
5		· ·		Percent of Dominant Species that are OBL, FACW, or FAC: 25.00% (A/B)
6				Don't see to be a see to be a
7				Prevalence Index worksheet
	110	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 55	20%	of total cover:	22	OBL species 30 x 1 = 30
Sapliing/Shrub Stratum (Plot Size: 15' radius				FACW species 0 x 2 = 0
1				FAC species 0 x 3 = 0
2				FACU species 105 x 4 = 420
3				UPL species 0 x 5 = 0
4				Column totals <u>135</u> (A) <u>450</u> (B)
5				
6				Prevalence Index = B/A = 3.33
7				Hydrophytic Vegetation Indicators:
8				1 -Rapid Test for Hydrophytic Vegetation
9				2 - Dominance Test is >50%
	0	= Total Cover		3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0 Herb Stratum (Plot Size: 5' radius)	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
1 Urtica dioica	20	Υ	FACU	Problematic Hydrophytic Vegetation (Explain)
		· -		
3	1			¹ Indicators of hydric soil and wetland hydrology must be
4	1 1			present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
6	1			Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7	1			in diameter at breast height (DBH), regardless of height.
8		· ·		Sapling/shrub - Woody plants, excluding vines, less than 3
9		· ·		in. DBH and greater than or equal to 3.28 ft (1m) tall.
10	ı : 			Herb - All herbaceous (non-woody) plants, regardless of
11		· -		size, and woody plants less than 3.28 ft tall.
••	20	= Total Cover		Manda di Cara Allamanda di Car
50% of total cover: 10		of total cover:	4	Woody vines - All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot Size: 30' radius)	01 10101 00101.		
1 Smilax glauca	., 5	Y	FACU	
	-		17100	
		· —— ·		
5				Hydrophytic
·	5	= Total Cover		Vegetation Present? Yes No X
E0% of total cover: 2 E			1	riesent? TesNo
50% of total cover: 2.5		of total cover:	<u> </u>	<u> </u>
Remarks: (Include photo numbers here or on a separate				
Forest community is transitioning from a botto	omland ha	ardwood to n	nesic upla	and community in this area.

Sampling Point:

DP-6-4-OUT

Sampling Point: DP-6-4-OUT

oboo)		Matrix					x Featu					_
ches)		r (moist)	<u>%</u>	Colo	or (moi	ist)	%	Type	Loc2	Text		Remarks
0-2	2.5Y	6 / 1	100					-		Silt Ic		Duff layer present on surfac
2-12	2.5Y	4 / 2	100	4.53		, _				Silt lo		
2-20	2.5Y	7 / 4	90	10YR	6	/ 8	10	С	M	Silt lo	am	
						_						
pe: C=C	Concentra	ition, D=Dep	letion, RN	/I=Reduc	ed Ma	trix, C	S=Cove	red or Coa	ated Sand	Grains.	² Location	: PL=Pore Lining, M=Matrix.
iric Soi	I Indicate	ors:									Indicato	ors for Problematic Hydric Soils ³ :
Histisol	(A1)				Daı	rk Surfa	ace (S7)	ı			2 cm	Muck (A10) (MLRA 147)
	pipedon ((A2)		_	_				S8) (MI R4	A 147, 148)		t Prairie Redox (A16)
	listic (A3)			_					-RA 147,			RA 147,148)
	en Sulfide			_	_			trix (F2)		,	•	mont Floodplain Soils (F19)
	d Layers			_	_		eyeu wa Matrix (F					ILRA 136, 147)
		(A5) eral (A10) (L	DD MI	_^	_ '		rk Surfa	,			•	Shallow Dark Surface (TF12)
	•		•	_	_							r (Explain in Remarks)
		Dark Suface	(A11)	_	_			rface (F7)	,		Otriel	(Explain in Remarks)
	ark Surfa		(I DD ::	_	_		pression		10) (1 55	N		
		Mineral (S1)	(LKK N,	_	_ Iror			/iasses (F	12) (LRR	N,		
	RA 147, 1	•					RA 136)	-40) 4=====		•		
		atrix (S4)		_	_				RA 136,12		³ Indicator	rs of hydrophytic vegetation and
	Redox (S			_	_				(F19) (ML		wetland h	nydrology must be present,
Stripped	d Matrix (S6)		_	Re	d Parei	nt Mater	ial (F21) ((MLRA 12	7, 147)	unless di	sturbed or problematic.
trictive	Layer (i	f observed)										
		i obscived,	1.									
Гуре:	None):				_					
Depth (ir	nches):	N/A		rutting	in 20)17 sc	- - omewh	at distu		soil present		Yes X No
Depth (ir	nches):	N/A		rutting	in 20	017 sc	- omewh	at distu				
Depth (ir	nches):	N/A		rutting	in 20	017 sc	- omewh	at distu				

WETLAND FUNCTIONS & VALUES FORM

Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	4	This large wetland complex conveys and stores a substantial amount of floodwater. These waters are slowly released and dissipated through evapotranspiration.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	4	Water marks, sediment, and drift deposits were evident throughout the wetland. The size and vegetation present provide quality water quality enhancement.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	4	The area is flooded by stormwater and Ohio River flood events. The forest and woody understory provide quality stabilized habitat with virtually no erosion noticeable.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	4	Animal signs were observed within the wetland (tracks, scat, burrows). The size of the wetland could support large terrestrial species.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	1	Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes, however the area does dry out completely in most years.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	4	

Total Score 21

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River C	rossing	City	y/County: Hend	erson/Hende	erson	Sampling	J Date:	7/26/2018
Applicant/Owner: INDOT (De	s#:1601700); KYT	C (KYTC#:2-1	1088)	State:	KY	Sampling	Point	DP-7-IN
Investigator(s): Luke Eggerin	g; Lindsey Postas	ki Sec	ction, Township, F	Range:			N/A	
Landform (hillslope, terrace, etc.):	Flat	Loc	cal relief (concave	e, convex, none	e): <u>Co</u>	oncave	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	4 120A	Lat: 37	7.88546	Long:	-87.	51521	Datum:	NAD-1983
Soil Map Unit Name: Alford silt	loam, 20 to 30 per	cent slopes			NW	I classificat	ion:	NA
Are climatic / hydrologic conditions	• • • • • • • • • • • • • • • • • • • •	•		X No		-	n Remarks.)	
	, or Hydrology			Are "normal ci	rcumstan	ces" preser	nt? Yes _	X No
Are vegetation, Soil	, or Hydrology	naturally probl	lematic? No	(If needed, exp	plain any	answers in	Remarks.)	
SUMMARY OF FINDINGS	– Attach site map	showing sa	mpling point	locations, 1	transec	ts, impo	rtant featu	res, etc.
Hydrophytic Vegetation Present?	Yes <u>X</u>	No	Is the Sample	d Area within	•			
Hydric Soil Present?	YesX	No	Wetland?	u Alea wiliiii.	a Yes	s X	No	
Wetland Hydrology Present?	Yes X	No					_	
empty into and flow throug WOTUS 2018 ID: WTL-60	•	marily an eme	ergent herbac	eous wetlan	d surrou	unded by	trees.	
HYDROLOGY								
Wetland Hydrology Indicators:				_				f two required)
Primary Indicators (minimum of o	one is required; check	• • • • • • • • • • • • • • • • • • • •				ace Soil Cra	, ,	
Surface Water (A1)	_	True Aquatic Pla	<u> </u>				ated Concave	Surface (B8)
High Water Table (A2)	_	Hydrogen Sulfid		-		nage Patter		
Saturation (A3)	_		spheres on Living	Roots (C3)		s Trim Line	, ,	
Water Marks (B1)	_	Presence of Rec	. ,	•			ater Table (C2))
Sediment Deposits (B2)	_		duction in Tilled S	3oils (C6)		fish Burrow	, ,	(00)
Drift Deposits (B3)	_	Thin Muck Surfa		-			ole on Aerial In	nagery (C9)
Algal Mat or Crust (B4)	_	Other (Explain in	n Remarks)	-		morphic Po	` ,	
Iron Deposits (B5)	I 0 con / (D7)			-		low Aquitar		
Inundation Visible on Aerial Water-Stained Leaves (B9)	imagery (br)			-		οτοροgrapn -Neutral Te	nic Relief (D4)	
Aquatic Fauna (B13)				-	X FAC	-Neuliai io	ist (D9)	
Field Observations:				T				
Surface water present?	Yes No X	Depth (inches)	:).					
Water table present?	Yes No X	_		1				
Saturation present?	Yes No X	_	<i>′</i>	Wetland Hyd	Irology Pi	resent?	Yes X	No
(includes capillary fringe)	<u> </u>			1				- '
Describe Recorded Data (stream						! oot	···td for le	
Remarks: Although the da during the growing season		rea appears u	o temporarily	pond water	anu ren	าสเทร รสแ	Jřated IOI ic	ing durations
during the growing season								

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius) 1	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2				Total Number of Dominant Species
3				Across all Strata:1 (B)
4				Percent of Dominant Species that
5				are OBL, FACW, or FAC: 100.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species 90 x 1 = 90
Sapliing/Shrub Stratum (Plot Size: 15' radius)			FACW species0 x 2 =0
1		. <u></u>		FAC species 0 x 3 = 0
2				FACU species 0 x 4 = 0
3				UPL species 0 x 5 = 0
4				Column totals 90 (A) 90 (B)
5				
6				Prevalence Index = B/A = 1.00 Hydrophytic Vegetation Indicators:
7				
8				X 1 -Rapid Test for Hydrophytic Vegetation
9		- Total Causa		X 2 - Dominance Test is >50%
FOOV of total courses	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot Size: 5' radius)	90	Υ	OBL	
1 <u>Leersia oryzoides</u>	90		OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
3				1
3				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
5				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
°				in diameter at breast height (DBH), regardless of height.
0				Sapling/shrub - Woody plants, excluding vines, less than 3
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Harb All harbassaus (non woody) plants, regardless of
				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
11	90	= Total Cover		
50% of total cover: 45			18	Woody vines - All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot Size: 30' radius	20%	of total cover:	10	
	•			
1				
4				
				Hydrophytic
⁵	0			Vegetation Present? Yes X No
EON of total covers		= Total Cover		Present? Yes X No
50% of total cover: 0		of total cover:	0	
Remarks: (Include photo numbers here or on a separate			,	
Soil is bare in areas not covered in rice cutgra	iss (Leers	ia oryzoides	S).	

Sampling Point:

DP-7-IN

0-6 6-20	Color (mois	st) %	Color (moist)	x Features % Ty	/pe ¹ Loc2	Texture	Remarks
	10YR 4 /	<u> </u>	10YR 5 / 8		C M	Clay loam	Organic matter mixed througho
	101R 4 /		2.5YR 4 / 6		C M	Clay loam	Organic matter mixed througho
				<u> </u>		olaj lealli	-
							-
							-
							-
							-
							-
(DO: C=C	oncontration D		M=Reduced Matrix, CS	S=Covered e	or Coated Sand	Prains ² Location	on: PL=Pore Lining, M=Matrix.
		-Depletion, N	vi-Reduced Matrix, Co	5-Covered C	or Coaled Sand		
aric Soii	Indicators:					indica	tors for Problematic Hydric Soils ³ :
Histisol (Dark Surfa	ace (S7)			m Muck (A10) (MLRA 147)
Histic Ep	ipedon (A2)		Polyvalue	Below Surfa	ice (S8) (MLRA	· · ·	ast Prairie Redox (A16)
Black Hi	stic (A3)		Thin Dark	Surface (S9) (MLRA 147, 1	18) (ML	-RA 147,148)
-	n Sulfide (A4)		Loamy Gl	eyed Matrix ((F2)	Pie	dmont Floodplain Soils (F19)
Stratified	Layers (A5)		X Depleted	Matrix (F3)		((MLRA 136, 147)
2 cm Mu	cky Mineral (A	10) (LRR N)	Redox Da	rk Surface (F	- 6)	Ver	y Shallow Dark Surface (TF12)
Depleted	d Below Dark S	uface (A11)	Depleted	Dark Surface	e (F7)	Oth	er (Explain in Remarks)
Thick Da	ark Surface (A1	2)	Redox De	pressions (F	8)		
Sandy	Mucky Mineral	(S1) (LRR N,	Iron-Mang	anese Mass	es (F12) (LRR I	l,	
MLR	A 147, 148)		MLF	A 136)			
Sandy G	leyed Matrix (S	34)	Umbric Sı	ırface (F13)	(MLRA 136,122	3 _{Indicat}	ors of hydrophytic vegetation and
Sandy R	edox (S5)		Piedmont	Floodplain S	oils (F19) (MLR		I hydrology must be present,
Stripped	Matrix (S6)		Red Pare	nt Material (F	- 21) (MLRA 127		disturbed or problematic.
strictive	Layer (if obse	rved):					
	None	•					
Depth (in				_	Hydric	soil present?	Yes X No
marks:							
	ion met the	denleted m	atrix (F3) indicator	Organic	matter is mix	ed throughout the	soil core
iis iocat	ion met the	acpicted in	atrix (1 0) iridicator	. Organic	matter is mix	ca imoagnoai inc	Son core.

Project/Site: I-69 Ohio River C	rossing	Cit	y/County: Hende	erson/Henders	on Sampling	g Date:	7/26/2018
Applicant/Owner: INDOT (Des	s#: 1601700); KY7			State: KY		Point	DP-7-OUT
Investigator(s): Luke Eggerin	g; Lindsey Postas	ski Sec	ction, Township, R	Range:	-	N/A	
Landform (hillslope, terrace, etc.):	Hillside	Loc	cal relief (concave	e, convex, none):	Convex	Slope (%):	2%
Subregion (LRR or MLRA): MLRA	\ 120A	_Lat:37	7.88521	Long:	-87.51503	Datum:	NAD-1983
Soil Map Unit Name: Alford silt	loam, 20 to 30 per	rcent slopes			NWI classificat	tion:	NA
Are climatic / hydrologic conditions	on the site typical for	this time of the y	/ear? Yes	X No	(If no, explain i	n Remarks.)	
Are vegetation, Soil	, or Hydrology	significantly di	isturbed? No	Are "normal circur	mstances" prese	nt? Yes _	X No
Are vegetation, Soil	, or Hydrology	naturally probl	lematic? No	(If needed, explain	n any answers in	Remarks.)	
SUMMARY OF FINDINGS -	- Attach site map	showing sa	mpling point	locations, tra	nsects, impo	rtant featu	res, etc.
Hydrophytic Vegetation Present?	Yes X	No	la tha Carrenta	d A			
Hydric Soil Present?	Yes	No X	Wetland?	d Area within a	Yes	No X	
Wetland Hydrology Present?	Yes	No X			-		
Remarks: This upland data WOTUS 2018 ID: WTL-60	•	on a niliside.					
HYDROLOGY							
Wetland Hydrology Indicators:				Sec	condary Indicator	s (minimum o	f two required)
Primary Indicators (minimum of c	one is required; check	all that apply)			Surface Soil Cr	acks (B6)	
Surface Water (A1)	_	True Aquatic Pla	ants (B14)	_	Sparsely Veget	ated Concave	Surface (B8)
High Water Table (A2)	_	Hydrogen Sulfid	de Odor (C1)	_	Drainage Patte	rns (B10)	
Saturation (A3)	_	Oxidized Rhizos	spheres on Living	Roots (C3)	Moss Trim Line	s (B16)	
Water Marks (B1)	_	Presence of Re	educed Iron (C4)	_	Dry-Season Wa	ater Table (C2)
Sediment Deposits (B2)	_	Recent Iron Rec	duction in Tilled S	oils (C6)	Crayfish Burrov	vs (C8)	
Drift Deposits (B3)	_	Thin Muck Surfa	ace (C7)	_	Saturation Visit	ole on Aerial In	nagery (C9)
Algal Mat or Crust (B4)	_	Other (Explain in	n Remarks)	<u>X</u>	Geomorphic Po	sition (D2)	
Iron Deposits (B5)				_	Shallow Aquita	rd (D3)	
Inundation Visible on Aerial	Imagery (B7)			_	Microtopograph	nic Relief (D4)	
Water-Stained Leaves (B9)				_	FAC-Neutral Te	est (D5)	
Aquatic Fauna (B13)							
Field Observations:							
Surface water present?	Yes No X	_ Depth (inches	;):				
Water table present?	Yes No X	_ Depth (inches	s):>20				
Saturation present?	Yes No X	_ Depth (inches)	s): >20	Wetland Hydrolo	ogy Present?	Yes	No X
(includes capillary fringe) Describe Recorded Data (stream	gauge, monitoring we	ell, aerial photos,	previous inspecti	ons), if available:			
Remarks:				<i></i>			
This data point is very well	drained.						

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius)	% Cover	Species?	Status	Number of Dominant Species That
1 Acer rubrum	98	<u> </u>	FAC	Are OBL, FACW, or FAC: 2 (A)
2				Total Number of Dominant Species
3				Across all Strata: 2 (B)
4				Percent of Dominant Species that
5				are OBL, FACW, or FAC: 100.00% (A/B)
6				
7				Prevalence Index worksheet
	98	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 49		of total cover:		OBL species 0 x 1 = 0
Sapliing/Shrub Stratum (Plot Size: 15' radius)	or total cover.	10.0	FACW species 0 x 2 = 0
	,			FAC species 103 x 3 = 309
				<u> </u>
2				FACU species 0 x 4 = 0
3				UPL species 0 x 5 = 0
4				Column totals (A) (B)
5				
6				Prevalence Index = B/A = 3.00
7				Hydrophytic Vegetation Indicators:
8				1 -Rapid Test for Hydrophytic Vegetation
9				X 2 - Dominance Test is >50%
	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting data
Herb Stratum (Plot Size: 5' radius)				in Remarks or on a separate sheet)
1 Toxicodendron radicans	5	Υ	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
		<u> </u>	1710	
2				1
3				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
4				Definitions of Four Vegetation Strata:
5				
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
7				
8				Sapling/shrub - Woody plants, excluding vines, less than 3
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Herb - All herbaceous (non-woody) plants, regardless of
11				size, and woody plants less than 3.28 ft tall.
	5	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in
50% of total cover: 2.5	20%	of total cover:	1	height.
Woody Vine Stratum (Plot Size: 30' radius	1			
	,			
2				
3				
4				Hydrophytic
5				Vegetation
	0	= Total Cover		Present? Yes X No
50% of total cover: 0	20%	of total cover:	0	
Remarks: (Include photo numbers here or on a separate	sheet.)			
The herb stratum is minimally vegetated.	•			
norb cadam to minimally vegetated.				

Sampling Point: DP-7-OUT

Sampling Point: <u>DP-7-OUT</u>

epth	scription:	Matrix			-ui 116	Suel			κ Featι		·cato		-	aus	STICE UI	muic	atur	··,			
ches)		(moist)		%			noist)		%	Ту		Loc2		Text					R	emarks	3
-10	10YR	5 / 3			7.5Y		5 / 4	<u> </u>	20		<u>)</u> .	M		Silt lo	oam						
-20	7.5YR	6 / 6	9	<u> </u>	7.5Y	R	4 / 2	2	5		<u> </u>	M		Silt lo	oam						
pe: C=0	Concentrat	ion, D=De	epletion	n, RM:	=Redu	ıced	Matrix,	cs	=Cove	red or	Coat	ed San	d Grair	าร.	² Loca	ation:	PL=F	ore Lir	ning, N	л=Matı	ix.
iric So	il Indicato	rs:																			ic Soils ³
Histisol	I (A1)					[Dark S	urfa	ce (S7)					2	2 cm N	Ииск	(A10) (MLRA	A 147)	
	Epipedon (A	A2)			•	_					e (S8) (MLR	A 147	148)	_			ie Redo			
	Histic (A3)	-/			-		-					RA 147,		, ,				,148)	(-,	
	jen Sulfide	(Δ4)			-		Loamy					,	,					loodpla	in Sa	ile /F10	9)
-	ed Layers (-		Deplete				<u>~</u>)				— '			136, 14		11 I) GII	′ /
			/I DD 1	MA.	-						2)				١	•		•	•	000 /TF	12)
	lucky Mine		•	-	-		Redox											w Dark			12)
-	ed Below D		CE (ATT	')	-		Deplete								— (Juleľ	(⊏xbi	ain in R	cemar	NS)	
	Dark Surfac		4) /I BB		-	_	Redox	•		•	,	o) (===									
	y Mucky M		ı) (LKR	ίN,	-	'					s (F1	2) (LRF	ĸΝ,								
	RA 147, 14	•							A 136)												
	Gleyed Ma				-							136,1			³ Indi	cators	of h	drophy	tic ve	getatio	n and
	Redox (S5				-							19) (M L						gy mus			,
Strippe	d Matrix (S	6)				「	Red Pa	arent	Mater	rial (F 2	21) (N	ILRA 1	27, 14	7)	unles	ss dis	turbe	d or pro	blem	atic.	
strictive	e Layer (if	observe	d):																		
Type:	None																				
Depth (i	nches):	N/A										Hydri	c soil	presen	it?		Ye	es	_	No_	Х

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: Wetland 7 Project/Site: I-69 Ohio River Crossing
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Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	3	This old farm pond does slow water passing through the system, however the small size limits the benefits of this function.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	3	It is apparent that some sediment has dropped out in this small pond.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	2	Since the dam of this old pond has washed out, the area has continued to provide minimum erosion control benefits.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	3	There are some benefits to wildlife in this area, especially during wet periods. Otherwise, the area is primarily used by upland species such as white-tailed deer (Odocoileus virginianus).
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	1	The old pond may provide seasonal benefits to aquatic invertebrates and amphibians.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	4	The old pond surrounded by forest is an aesthetic habitat.

Total Score 16

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River (Crossina		City	y/County: Hend	erson/Hende	erson	Sampling	ı Date:	7/26/2018
Applicant/Owner: INDOT (De)); KYT(State:		Sampling		DP-8-IN
Investigator(s): Luke Eggeri		•	-	tion, Township, F	Range:			N/A	
Landform (hillslope, terrace, etc.)			,	cal relief (concave		e): Co	ncave	Slope (%):	2%
Subregion (LRR or MLRA): MLF	A 120A		Lat: 37	.88162	Long:	-87.5	51594	Datum:	NAD-1983
Soil Map Unit Name: Wakelan) to 2 pe	ercent slopes	, occasionally	flooded	NWI	classificat	ion:	NA
Are climatic / hydrologic condition					X No	(If no	, explain i	n Remarks.)	
Are vegetation , Soil	, or Hydrol	ogy	significantly di	sturbed? No	Are "normal ci	rcumstand	es" prese	nt? Yes	X No
Are vegetation , Soil	, or Hydrok	ogy	naturally probl	ematic? No	(If needed, exp	plain any a	answers in	Remarks.)	
SUMMARY OF FINDINGS	– Attach si	te map	showing sa	mpling point	locations,	transect	ts, impo	rtant featu	res, etc.
Hydrophytic Vegetation Presen	t? Yes	х	No	la tha Camula	d Avec within				
Hydric Soil Present?	Yes	X	No	Is the Sample Wetland?	d Area Within	a Yes	. X	No	
Wetland Hydrology Present?	Yes	Х	No					_	
Remarks: This is a narroy	v emergent :	wetland	l located in ar	n agricultural f	ield (farmed	with sov	vbeans a	t the time o	f survev). The
wetland likely receives ru			agnounde						
HYDROLOGY									
Wetland Hydrology Indicators	; :					Secondar	y Indicator	s (minimum o	two required)
Primary Indicators (minimum of	one is required	d; check a	all that apply)			X Surfa	ice Soil Cr	acks (B6)	
Surface Water (A1)		_	True Aquatic Pla		-			ated Concave	Surface (B8)
High Water Table (A2)		_	Hydrogen Sulfid	le Odor (C1)	-	X Drain	age Patte	rns (B10)	
Saturation (A3)		X	Oxidized Rhizos	spheres on Living	Roots (C3)	Moss	Trim Line	s (B16)	
Water Marks (B1)		_	Presence of Re	duced Iron (C4)	-	Dry-S	Season Wa	ater Table (C2)
Sediment Deposits (B2)		_	Recent Iron Rec	duction in Tilled S	Soils (C6)	X Crayf	fish Burrow	/s (C8)	
Drift Deposits (B3)		_	Thin Muck Surfa		-	Satur	ation Visib	le on Aerial In	nagery (C9)
Algal Mat or Crust (B4)			Other (Explain in	n Remarks)	-	X Geon	norphic Po	sition (D2)	
Iron Deposits (B5)					-		ow Aquitar	` ,	
Inundation Visible on Aeria					-			ic Relief (D4)	
Water-Stained Leaves (B9)				-	X FAC-	Neutral Te	est (D5)	
Aquatic Fauna (B13)					1				
Field Observations:									
Surface water present?	Yes	No X							
Water table present?	Yes	No X					40		
Saturation present? (includes capillary fringe)	Yes	No X	Depth (inches):>20	Wetland Hyd	Irology Pr	esent?	Yes X	
Describe Recorded Data (strea	m gauge, moni	toring we	II, aerial photos,	previous inspect	ions), if availab	ole:			
Remarks									
Oxidized root channels a	•			ea appears to	remain satu	rated for	· long du	rations duri	ng the growing
season. Deep tractor ruts	show how v	vet the	area can be.						

VEG	ETATION (Four Strata) - Use scientific na	ames of p	lants		Sampling Point:	DP-8-IN	
		Absolute	Dominant	Indicator	Dominance Test worksheet:	_	
Tree S	Stratum (Plot Size: 30' radius)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
2 3					Total Number of Dominant Species Across all Strata:	2	(B)
4 _					Percent of Dominant Species that are OBL, FACW, or FAC:		
5 <u> </u>						100.0070	(A/B)
7 _					Prevalence Index worksheet		
		0	= Total Cover			fultiply by:	
	50% of total cover: 0	20%	of total cover:	0	OBL species <u>85</u> x 1 =	85	
Saplii	ng/Shrub Stratum (Plot Size: 15' radius)			FACW species 0 x 2 =	0	
1 _					FAC species 10 x 3 =	30	
2 _					FACU species 20 x 4 =	80	
3 _					UPL species 0 x 5 =	0	
4 _					Column totals 115 (A)	195	(B)
5							
6 _					Prevalence Index = B/A =	1.70	
7 _					Hydrophytic Vegetation Indicators:		
8 _					1 -Rapid Test for Hydrophytic Veg	etation	
9					X 2 - Dominance Test is >50%		
		0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹		
Herb	50% of total cover: 0 Stratum (Plot Size: 5' radius)	20%	of total cover:	0	4 - Morphological Adaptations (Pr in Remarks or on a separate shee		ng data
1	Ammannia coccinea	60	Υ	OBL	Problematic Hydrophytic Vegetation	on ¹ (Explain)	
2	Leersia oryzoides	25		OBL	<u> </u>	(
3	Amaranthus spinosus	20		FACU	¹ Indicators of hydric soil and wetland h	nydrology must	he .
4	Xanthium strumarium	10		FAC	present, unless disturbed or problemat		00
· —					Definitions of Four Vegetation Strate	a:	
6 —			-		Tree - Woody plants, excluding vines		
7 —					in diameter at breast height (DBH), reg	jardless of heiç	ght.
8					Sapling/shrub - Woody plants, excludin. DBH and greater than or equal to 3	-	
9 10					Herb - All herbaceous (non-woody) pla	` '	
11					size, and woody plants less than 3.28	ft tall.	
		115	= Total Cover		Woody vines - All woody vines greate	er than 3 28 ft ii	n
	50% of total cover: 57.5	20%	of total cover:	23	height.	, than 0.20 it ii	
Wood	ly Vine Stratum (Plot Size: 30' radius)	-				
1		,					
2							
- <u>-</u>							
<u> </u>							
- <u>-</u> 5					Hydrophytic		
٦ _		0	= Total Cover		Vegetation Present? Yes X	No	
	EOO/ of total covery		•		Present? 1es_X	No	•
	50% of total cover: 0	20%	of total cover:	0			
	arks: (Include photo numbers here or on a separate	,	10 0 may 14 10 \	The lend	directly adjacent to the watland i	ia farmad wi	:4h

The wetland is bordered by sawtooth blackberry (Rubus argutus). The land directly adjacent to the wetland is farmed with soybeans (Glycine max).

Sampling Point: DP-8-IN

oth :hes)	Color	Matri (moist)		%	Colo	or (mo		ox Featu %	Type ¹	Loc2	Textu	ire		D	emarks
0-6	10YR	4 /		95	7.5YF	•	/ 8	5	C	PL	Silt lo			110	errar No
-20	2.5Y	6 / :		85	10YR		/ 6	15	$\frac{c}{c}$		Silt lo				
	2.01	5 / /	<u> </u>	- 55	1011	. 0	, 0				Ont 10	<u> </u>			
					-										
	-														
	-		—												
									-						
	-														
									-						
				5.								2, ,,			
			Deple	tion, RI	I=Reduc	ed M	atrix, C	S=Cove	red or Co	ated Sand (irains.		: PL=Pore		
ric So	il Indicato	rs:										Indicato	rs for Prol	blematic	Hydric Soils
listisol	(A1)				_	_ Da	ark Surf	ace (S7))			2 cm	Muck (A10) (MLRA	147)
istic E	pipedon (\ 2)				Po	olyvalue	Below S	Surface (S	88) (MLRA	147, 148)	Coas	t Prairie Re	edox (A16	6)
lack F	Histic (A3)				_	Th	nin Dark	Surface	(S9) (MI	LRA 147, 1	4 8)	(MLR	A 147,148)	
ydrog	en Sulfide	(A4)			_	Lo	amy Gl	eyed Ma	atrix (F2)			Piedr	nont Flood	plain Soil	ls (F19)
tratifie	ed Layers (A5)			>	_ 	epleted	Matrix (F	- 3)			(M	LRA 136,	147)	
	lucky Mine		0) (LR	R N)		Re	edox Da	ırk Surfa	ice (F6)			Very	Shallow Da	ark Surfa	ce (TF12)
	ed Below D					De	epleted	Dark Su	rface (F7)			(Explain ir		
hick D	ark Surfac	e (A12)			_		pression							
	y Mucky M			RR N,	_	-		•		12) (LRR I	١,				
	, RA 147, 14			•	_	_		, RA 136)		. •					
andy	Gleved Ma	trix (S4	1)			Ur	mbric Sı	urface (F	13) (MLF	RA 136,122)	3			
	Gleyed Ma		1)		_					RA 136,122 (F19) (MLR					getation and
andy	Redox (S5)	1)		_	Pi	edmont	Floodpla	ain Soils ((F19) (MLR	A 148)	wetland h	ydrology m	nust be p	resent,
Sandy Strippe	Redox (S5 d Matrix (S) 66)			-	Pi	edmont	Floodpla	ain Soils (A 148)	wetland h		nust be p	resent,
Sandy Strippe trictive	Redox (S5 d Matrix (S e Layer (if) 66)			- - -	Pi	edmont	Floodpla	ain Soils ((F19) (MLR	A 148)	wetland h	ydrology m	nust be p	resent,
Sandy Strippe trictive	Redox (S5 d Matrix (S e Layer (if None) 66) observ			- - -	Pi	edmont	Floodpla	ain Soils ((F19) (MLR (MLRA 127	A 148) , 147)	wetland h unless di	nydrology m sturbed or p	nust be p problema	resent, atic.
Sandy Strippe trictive ype: epth (i narks: s loca	Redox (S5 d Matrix (S e Layer (if None nches):	observing N/A	ved):		•	_ Pi _ Re 	edmont ed Pare	Floodplant Mater	ain Soils (ial (F21)	(F19) (MLR (MLRA 127 Hydric	A 148) , 147) soil present	wetland h unless di	ydrology n sturbed or p Yes	nust be p problema	resent,
Sandy Strippe trictive ype: epth (i narks: s loca	Redox (S5 d Matrix (S e Layer (if None nches):	observing N/A	ved):		•	_ Pi _ Re 	edmont ed Pare	Floodplant Mater	ain Soils (ial (F21)	(F19) (MLR (MLRA 127 Hydric	A 148) , 147) soil present	wetland h unless di	ydrology n sturbed or p Yes	nust be p problema	resent, atic.
Sandy Strippe trictive ype: epth (i narks: s loca	Redox (S5 d Matrix (S e Layer (if None nches):	observing N/A	ved):		•	_ Pi _ Re 	edmont ed Pare	Floodplant Mater	ain Soils (ial (F21)	(F19) (MLR (MLRA 127 Hydric	A 148) , 147) soil present	wetland h unless di	ydrology n sturbed or p Yes	nust be p problema	resent, atic.
Sandy Strippe trictive /pe: epth (i earks:	Redox (S5 d Matrix (S e Layer (if None nches):	observing N/A	ved):		•	_ Pi _ Re 	edmont ed Pare	Floodplant Mater	ain Soils (ial (F21)	(F19) (MLR (MLRA 127 Hydric	A 148) , 147) soil present	wetland h unless di	ydrology n sturbed or p Yes	nust be p problema	resent, atic.

Project/Site: I-69 Ohio River Cr	ossing	City/County: Hend	erson/Henderson	Sampling Date:	7/26/2018
Applicant/Owner: INDOT (Des	:#: 1601700); KYTC (#2-10	088)	State: KY	Sampling Point:	DP-8-OUT
Investigator(s): Luke Eggering	g; Lindsey Postaski	Section, Township, R	Range:	N/A	
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave	e, convex, none):	Convex Slope (9	%):10%
Subregion (LRR or MLRA): \underline{MLRA}	\ 120A Lat:	37.88165	Long: -87	7.51608 Datum	n: NAD-1983
Soil Map Unit Name: Alford silt I	oam, 12 to 20 percent slop	oes, severely erode	ed NV	VI classification:	NA
Are climatic / hydrologic conditions	on the site typical for this time of	the year? Yes _	X No (If r	no, explain in Remarks.	.)
	, or Hydrologysignificar	· —	Are "normal circumsta	•	
Are vegetation, Soil	, or Hydrologynaturally	problematic? No	(If needed, explain any	answers in Remarks.)	
SUMMARY OF FINDINGS -	- Attach site map showing	g sampling point	locations, transe	cts, important fea	atures, etc.
Hydrophytic Vegetation Present?	Yes NoX		d American		
Hydric Soil Present?	Yes NoX	Wetland?	d Area within a Ye	es No	X
Wetland Hydrology Present?	Yes No X				<u>~</u>
Remarks: This upland data WOTUS 2018 ID: WTL-62.	point was taken on a farme				
HYDROLOGY					
Wetland Hydrology Indicators:			Seconda	ary Indicators (minimun	n of two required)
Primary Indicators (minimum of or	ne is required; check all that apply	y)		face Soil Cracks (B6)	
Surface Water (A1)		itic Plants (B14)		arsely Vegetated Conca	ave Surface (B8)
High Water Table (A2)	_ ·	Sulfide Odor (C1)	_ ·	inage Patterns (B10)	, ,
Saturation (A3)		Rhizospheres on Living		ss Trim Lines (B16)	
Water Marks (B1)		of Reduced Iron (C4)	• • •	-Season Water Table (C2)
Sediment Deposits (B2)		n Reduction in Tilled S		yfish Burrows (C8)	- ,
Drift Deposits (B3)	-	Surface (C7)	<u> </u>	uration Visible on Aeria	al Imagery (C9)
Algal Mat or Crust (B4)		olain in Remarks)		omorphic Position (D2)	
Iron Deposits (B5)	_ ` `	,	-	allow Aquitard (D3)	
Inundation Visible on Aerial I	magery (B7)			rotopographic Relief (D	04)
Water-Stained Leaves (B9)			— FAC	C-Neutral Test (D5)	,
Aquatic Fauna (B13)			_	. ,	
Field Observations:					
Surface water present?	Yes No X Depth (in	nches):			
Water table present?	Yes No X Depth (in				
Saturation present? (includes capillary fringe)	Yes No X Depth (in	nches): >20	Wetland Hydrology I	Present? Yes	NoX
Describe Recorded Data (stream	gauge, monitoring well, aerial pho	otos, previous inspection	ons), if available:		
Remarks:					

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius) 1	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
2				Total Number of Dominant Species
3				Across all Strata:1 (B)
4				Percent of Dominant Species that
5				are OBL, FACW, or FAC: 0.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cover		Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species 0 x 1 = 0
Sapliing/Shrub Stratum (Plot Size: 15' radius)			FACW species 0 x 2 = 0
1				FAC species 0 x 3 = 0
2				FACU species0 x 4 =0
3				UPL species0 x 5 =0
4				Column totals 0 (A) 0 (B)
5				
6				Prevalence Index = B/A = Hydrophytic Vegetation Indicators:
7				
8				1 -Rapid Test for Hydrophytic Vegetation
9				2 - Dominance Test is >50%
	0	= Total Cover		3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0 Herb Stratum (Plot Size: 5' radius)	20%	of total cover:	0	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1 Glycine max	90	Υ	NI	Problematic Hydrophytic Vegetation ¹ (Explain)
2		<u> </u>		
3				¹ Indicators of hydric soil and wetland hydrology must be
4				present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7				in diameter at breast height (DBH), regardless of height.
8				Sapling/shrub - Woody plants, excluding vines, less than 3
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Herb - All herbaceous (non-woody) plants, regardless of
11				size, and woody plants less than 3.28 ft tall.
	90	= Total Cover		
50% of total cover: 45				Woody vines - All woody vines greater than 3.28 ft in height.
	20%	of total cover:	18	nogh.
)			
1				
2				
3				
4				Hydrophytic
5				Vegetation
	0	= Total Cover		Present? Yes No
50% of total cover: 0	20%	of total cover:	0	
Remarks: (Include photo numbers here or on a separate	sheet.)			
This data point was taken in a field farmed with	th soybea	ns (Glycine	max).	

Sampling Point:

DP-8-OUT

Sampling Point: DP-8-OUT

Depth	Matrix		opin noodod i	Redox			or or confi	iiii tile abse	noc or mai	,	
(inches)	Color (moist)	%	Color (mo		%	Type ¹	Loc2	Textu	ire		Remarks
0-12	7.5YR 5 / 4	95	<u> </u>	/ 2	5	C		Silt lo			<u> </u>
12-20	10YR 5 / 2	98		/ 6	2	С	М	Silt lo			
	101111 0 7 2			 -				0			
			-								
			-				· 				
Type: C=0	Concentration, D=De	epletion, RN	/I=Reduced M	atrix, CS=	Covere	ed or Coa	ated Sand	Grains.	² Location	: PL=Pore Lini	ng, M=Matrix.
lydric So	il Indicators:								Indicato	rs for Probler	natic Hydric Soils ³ :
Histisol	l (A1)		Da	ark Surface	e (S7)				2 cm	Muck (A10) (N	/ILRA 147)
Histic E	Epipedon (A2)		Po	lyvalue Be	elow Si	urface (S	88) (MLRA	147, 148)		t Prairie Redox	
_	Histic (A3)			•		•	-RA 147, 1			A 147,148)	. ,
_	gen Sulfide (A4)			amy Gley				,		nont Floodplair	n Soils (F10)
									_	-	, ,
	ed Layers (A5)			epleted Ma						LRA 136, 147	
_	lucky Mineral (A10)			edox Dark					_		Surface (TF12)
Deplete	ed Below Dark Sufac	ce (A11)	De	epleted Da	ark Surf	face (F7))		Other	(Explain in Re	emarks)
_ Thick D	Dark Surface (A12)		Re	edox Depre	essions	s (F8)					
Sand	y Mucky Mineral (S1) (LRR N,	Iro	n-Mangar	nese M	lasses (F	12) (LRR I	١,			
- MLF	RA 147, 148)		· <u></u>	MLRA	136)						
	Gleyed Matrix (S4)		Ur	nbric Surfa	ace (F1	13) (MLR	RA 136,122)	3		
	Redox (S5)						F19) (MLR				ic vegetation and
_	ed Matrix (S6)									lydrology must sturbed or prob	
Suippe	u Mali X (30)										
				u Faieiii	Materia	al (F21) (MLRA 127	, 147)	uniess dis	sturbed or prot	nematic.
_	e Layer (if observed	d):		eu Faieiit	wateria	al (F21) (MLRA 127	, 147)	uniess dis	sturbed or proc	DEMAILC.
		d):		eu Falent	Materia	al (F21) (MLRA 127	, 147)	uniess dis	starbed or proc	nematic.
Restrictive Type: Depth (i	None None None						Hydric	soil present	?	Yes	No X
estrictive Type: Depth (i	e Layer (if observed						Hydric	soil present	?	Yes	
estrictive Type: Depth (i	None None None						Hydric	soil present	?	Yes	
estrictive Type: Depth (i	None None None						Hydric	soil present	?	Yes	
estrictive Type: Depth (i	None None None						Hydric	soil present	?	Yes	
estrictive Type: Depth (i	None None None						Hydric	soil present	?	Yes	

WETLAND FUNCTIONS & VALUES FORM

Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	1	A channel forms at the southern edge of the wetland that dries that area, thereby eliminating wetland hydrology to the southeast.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	2	The small size of this wetland limits this function. The herbaceous vegetation does filter stormwater runoff.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	1	The wetland helps stabilize soils in this small valley, but an eroded channel starts on the downstream end of the wetland.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	1	This very small area has minimal wildlife benefits, but does provide some habitat for upland species including white-tailed deer (Odocoileus virginianus) and small mammals.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	0	This wetland does not provide this function.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	1	The small size limits the aesthetics and benefits of the area.

Total Score 6

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River Cross	ing		City	y/County: Hender	son/Henderson	Sampling I	Date: October 2, 2018
Applicant/Owner: INDOT (Des#:	.1601700); KYT	C (KY	TC#:2-1088)		State: KY	Sampling I	Point: DP-9-IN
Investigator(s): L. Postaski			Secf	tion, Township, R	ange: NA		
Landform (hillslope, terrace, etc.):	Roadside dito	:h	Loc	cal relief (concave	, convex, none): _	Concave	Slope (%): 2
Subregion (LRR or MLRA): MLRA	.120A		Lat: 37.82992		Long: <u>-87.56</u>	6735	Datum: NAD-1983
Soil Map Unit Name: Dekoven silt	t loam					_ NWI classification	on: NA
Are climatic / hydrologic conditions	s on the site typ	ical for	this time of the ye	ear? Yes _	X No	(If no, explain in	Remarks.)
Are vegetation, Soil	, or Hydrolo	gy	significantly dis	sturbed? No	Are "normal circur	mstances" present	? Yes <u>X</u> No
Are vegetation, Soil	, or Hydrolo	gy	naturally proble	ematic? No	(If needed, explain	n any answers in F	Remarks.)
SUMMARY OF FINDINGS	– Attach sit	e mar	p showing sai	mpling point	locations, tra	nsects, impor	tant features, etc.
Hydrophytic Vegetation Present?	? Yes _	Х	No	Is the Sampled	l Aroa within a		
Hydric Soil Present?	Yes _	Х	No	Wetland?	Alea within a	Yes X	No
Wetland Hydrology Present?	Yes	Х	No				
Remarks: This is a small roadsid	10 ance:		<u></u>				
HYDROLOGY							
Wetland Hydrology Indicators:	:		-		Sec	condary Indicators	(minimum of two required)
Primary Indicators (minimum of o	one is required;	check	all that apply)			Surface Soil Crac	cks (B6)
Surface Water (A1)	·	_	True Aquatic Pla	ants (B14)	_	Sparsely Vegetat	ted Concave Surface (B8)
High Water Table (A2)			Hydrogen Sulfide	e Odor (C1)	_	Drainage Pattern	ns (B10)
Saturation (A3)			Oxidized Rhizos	spheres on Living	Roots (C3)	Moss Trim Lines	(B16)
Water Marks (B1)			Presence of Rec	duced Iron (C4)	_	Dry-Season Wate	er Table (C2)
X Sediment Deposits (B2)			Recent Iron Red	duction in Tilled So	oils (C6) <u>X</u>	Crayfish Burrows	s (C8)
X Drift Deposits (B3)			Thin Muck Surfa	ace (C7)	_	Saturation Visible	e on Aerial Imagery (C9)
Algal Mat or Crust (B4)		_	Other (Explain in	n Remarks)	_	Stunted or Stress	sed Plants (D1)
Iron Deposits (B5)					<u>x</u>	Geomorphic Pos	ition (D2)
Inundation Visible on Aerial	Imagery (B7)				_	Shallow Aquitard	I (D3)
X Water-Stained Leaves (B9)						Microtopographic	c Relief (D4)
Aquatic Fauna (B13)					<u> </u>	FAC-Neutral Tes	et (D5)
Field Observations:							
Surface water present?		No X	_ ' ' '				
Water table present?	Yes	No X	Depth (inches)):>20			
Saturation present? (includes capillary fringe)	Yes	No X	Depth (inches)):>20	Wetland Hydrol	ogy Present?	Yes X No
Describe Recorded Data (stream	n gauge, monito	oring w	ell, aerial photos,	previous inspectic	ns), if available:		
Remarks: Crayfish burrows and sediment of	deposits were c	bserve	d in this small prir	narily emergent w	etland. This wetla	and receives runoff	f from US 41.

		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree	Stratum (Plot Size: 30' diameter)	% Cover	Species?	Status	Number of Dominant Species That
1_	Catalpa speciosa	10	<u> </u>	FAC	Are OBL, FACW, or FAC: 4 (A)
2 3	Fraxinus pennsylvanica	10	<u> </u>	FACW	Total Number of Dominant Species Across all Strata: 5 (B)
4					Percent of Dominant Species that
5					are OBL, FACW, or FAC: 80.00% (A/B)
6					
7					Prevalence Index worksheet
-		20	= Total Cover	 r	Total % Cover of: Multiply by:
	50% of total cover: 10	20%	of total cover:	4	OBL species 0 x 1 = 0
Sapl	iing/Shrub Stratum (Plot Size: 15' diameter)		•		FACW species 30 x 2 = 60
1	Rhus glabra	10	Υ	NI	FAC species 55 x 3 = 165
· - 2					FACU species 35 x 4 = 140
3					UPL species 0 x 5 = 0
- ا					Column totals 120 (A) 365 (B)
 5					Column totals 120 (A) 303 (B)
6					Prevalence Index = B/A = 3.04
7					Hydrophytic Vegetation Indicators:
8					1 -Rapid Test for Hydrophytic Vegetation
9					X 2 - Dominance Test is >50%
		10	= Total Cover	r	3 - Prevalence Index is ≤3.0 ¹
Uarh	50% of total cover: 5 Stratum (Plot Size: 5' diameter)	20%	of total cover:	2	4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
1	Echinochloa crus-galli	45	Υ	FAC	Problematic Hydrophytic Vegetation (Explain)
' - 2	Persicaria pensylvanica	15	<u>'</u> Y	FACW	
3	Schedonorus arundinaceus	10			The first constitution of the desired control of the desired constitution of the desired control of the desired co
-				FACU	¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
4 _	Lonicera japonica		N	FACU	Definitions of Four Vegetation Strata:
5_	Dipsacus fullonum	5	<u>N</u>	FACU	Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
6_	Glechoma hederacea	5	<u>N</u>	FACU	in diameter at breast height (DBH), regardless of height.
7 -	Sorghum halepense	5	<u>N</u>	FACU	Sanling/abouth Woody plants evaluding vines less than 2
8 <u>-</u> 9	Carex grayi	5	<u> </u>	FACW	Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
10					Herb - All herbaceous (non-woody) plants, regardless of
11					size, and woody plants less than 3.28 ft tall.
_		100	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in
	50% of total cover: 50	20%	of total cover:	20	height.
Woo	dy Vine Stratum (Plot Size: 30' diameter)				
1					
2					
4					
5					Hydrophytic Vegetation
_		0	= Total Cover		Present? Yes X No
	50% of total cover: 0	20%	of total cover:	0	
Rem	arks: (Include photo numbers here or on a separate	sheet)	•		
	and the second of the second o	/			

Sampling Point: DP-9-IN

Sampling Point: DP-9-IN

hes) Color 2.5Y pe: C=Concentrat	(moist) 3 / 2	90 7.	Color (m	4 / 6	10	Type ¹	Loc2	Textu		Remarks
pe: C=Concentrat							<u>M</u>	Silty clay	loam	Gravel inclusion
pe: C=Concentrat										
pe: C=Concentrat										·
e: C=Concentrat										·
pe: C=Concentrat										
oe: C=Concentrat										
pc. o-concential	ion D=Denle	tion RM=R	aduced N	Matrix C	S=Cover	ed or Cos	ted Sand	Graine	² l ocatio	n: PL=Pore Lining, M=Matrix.
ric Soil Indicato		don, rawi–ra	Sudocu II	natrix, O	3-00vci	<u> </u>	ilca Garia	Jianis.		tors for Problematic Hydric Soils ³ :
Histisol (A1)			_ □	ark Surfa	ace (S7)				2 cr	n Muck (A10) (MLRA 147)
Histic Epipedon (A	\ 2)		_ P	olyvalue	Below S	urface (S	8) (MLRA	147, 148)	Coa	st Prairie Redox (A16)
Black Histic (A3)			_				RA 147, 1	48)		RA 147,148)
Hydrogen Sulfide				oamy Gl						dmont Floodplain Soils (F19)
Stratified Layers (2 cm Mucky Mine		P N)	_	Depleted I Redox Da	•	,				MLRA 136, 147) y Shallow Dark Surface (TF12)
Depleted Below D						face (F7)				er (Explain in Remarks)
Thick Dark Surfac		,	_	· Redox De						,
Sandy Mucky M	ineral (S1) (L	.RR N,	Ir	on-Manç	janese M	lasses (F	12) (LRR	١,		
MLRA 147, 14					RA 136)					
Sandy Gleyed Ma							A 136,122		³ Indicate	ors of hydrophytic vegetation and
Sandy Redox (S5							F19) (MLF		wetland	hydrology must be present,
Stripped Matrix (S				led Parei	nt Materia	al (F21) (l	MLRA 127	, 147)	uniess	listurbed or problematic.
strictive Layer (if	observed):									
ype: <u>Gravel</u> Depth (inches):	6"				_		Lludria	soil present	2	Yes X No
Deptit (inches).					_		Tiyunc	son present	•	Yes X No
marks: s location met the	redox dark s	urface matri	x (F6) ind	dicator. C	Gravel wa	as restrict	ive at a de	oth of six incl	nes.	

Project/Site: I-69 Ohio River Crossi	ng	C	City/County: Henders	on/Henderson	Sampling	Date: October	2, 2018
Applicant/Owner: INDOT (Des#:	1601700); KYTC (#2-	-1088)		State: KY	Sampling	Point: DP-9-OL	JT
Investigator(s): L. Postaski		Se	ection, Township, Ra	nge: NA	<u> </u>		
Landform (hillslope, terrace, etc.):	Hillslope	L	ocal relief (concave,	convex, none): C	Convex	Slope (%): 2	2
Subregion (LRR or MLRA): MLRA	120A	Lat: 37.82993	3	Long: -87.56	735	Datum: NA	AD-1983
Soil Map Unit Name: Dekoven silt	loam				NWI classificati	ion: NA	
Are climatic / hydrologic conditions	on the site typical for	this time of the	year? Yes	(No	(If no, explain in	n Remarks.)	
Are vegetation, SoilX	, or Hydrology	significantly	disturbed? A	re "normal circun	nstances" presen	nt? Yes	X No
Are vegetation , Soil	, or Hydrology	naturally pro	oblematic? No (I	f needed, explain	n any answers in	Remarks.)	
SUMMARY OF FINDINGS -	- Attach site maլ	p showing s	sampling point lo	ocations, trai	nsects, impo	rtant feature	es, etc.
Hydrophytic Vegetation Present?	Yes	No X	Is the Sampled	Aroa within a			
Hydric Soil Present?	Yes	No X	Wetland?	Alea Willillia	Yes	No X	
Wetland Hydrology Present?	Yes	No X					_
WOTUS 2018 ID: WTL-43							
HYDROLOGY							
Wetland Hydrology Indicators:				Sec	condary Indicators	s (minimum of t	wo required)
Primary Indicators (minimum of o	ne is required; check	all that apply)			Surface Soil Cra	acks (B6)	
Surface Water (A1)	_	True Aquatic F	Plants (B14)		Sparsely Vegeta	ated Concave S	Surface (B8)
High Water Table (A2)	_	Hydrogen Sulf	lfide Odor (C1)		Drainage Patter	ns (B10)	
Saturation (A3)	_	Oxidized Rhize	zospheres on Living R	toots (C3)	Moss Trim Lines	s (B16)	
Water Marks (B1)	_	Presence of R	Reduced Iron (C4)	_	Dry-Season Wa	iter Table (C2)	
Sediment Deposits (B2)	_	Recent Iron Re	Reduction in Tilled Soi	ls (C6)	Crayfish Burrow	/s (C8)	
Drift Deposits (B3)	_	Thin Muck Sur	ırface (C7)		Saturation Visib	le on Aerial Ima	agery (C9)
Algal Mat or Crust (B4)	_	Other (Explain	n in Remarks)		Stunted or Stres	ssed Plants (D1)
Iron Deposits (B5)				_	Geomorphic Po	sition (D2)	
Inundation Visible on Aerial I	magery (B7)				Shallow Aquitar	d (D3)	
Water-Stained Leaves (B9)					Microtopograph	ic Relief (D4)	
Aquatic Fauna (B13)				_	FAC-Neutral Te	st (D5)	
Field Observations:							
Surface water present?	Yes No X	Depth (inche	es):				
Water table present?	Yes No X	Depth (inche	es): >20				
Saturation present?	Yes No X	Depth (inche	es): >20	Wetland Hydrolo	ogy Present?	Yes	No No
(includes capillary fringe)	aavaa manitarina w	all assistabates	a pravious inspection	a) if available.			
Describe Recorded Data (stream Remarks:	gauge, monitoring we	eli, aeriai priotos	s, previous inspection	s), if available:			
The upland area is frequently ma	intained.						

		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree 1	Stratum (Plot Size: 30' diameter)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: (A)
2 _					Total Number of Dominant Species Across all Strata: 1 (B)
4					Percent of Dominant Species that
5					are OBL, FACW, or FAC: 0.00% (A/B)
6					
7					Prevalence Index worksheet
		0	= Total Cover	r	Total % Cover of: Multiply by:
	50% of total cover:0	20%	of total cover:	0	OBL species 0 x 1 = 0
Sapli	ing/Shrub Stratum (Plot Size: 15' diameter)				FACW species 0 x 2 = 0
1 _					FAC species 0 x 3 = 0
2					FACU species x 4 = 400
3					UPL species 0 x 5 = 0
4					Column totals (A) (B)
5					
6					Prevalence Index = B/A = 4.00 Hydrophytic Vegetation Indicators:
′ -					
۰ –					1 -Rapid Test for Hydrophytic Vegetation
9 _					2 - Dominance Test is >50%
	50% - 51-1-1	0	= Total Cover		3 - Prevalence Index is ≤3.0 ¹
11	50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
-	Stratum (Plot Size: 5' diameter)	0.5	v	E4.011	
1_	Cynodon dactylon	85	<u> </u>	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2 _	Schedonorus arundinacea		N	FACU	1
3 _	Sorghum halepense	5	<u> </u>	FACU	¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
4 - 5					Definitions of Four Vegetation Strata:
° –					Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
٥ _					in diameter at breast height (DBH), regardless of height.
′ –					Sapling/shrub - Woody plants, excluding vines, less than 3
° <u>-</u>					in. DBH and greater than or equal to 3.28 ft (1m) tall.
9_					Hark All bark account (and worsh) plants according of
10_					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
11 _		400			
	50% - 51-1-1	100	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in height.
	50% of total cover: 50	20%	of total cover:	20	neight.
	dy Vine Stratum (Plot Size: 30' diameter)				
2 _					
_					
4 _					Hydrophytic
5_					Vegetation
		0	= Total Cover		Present? Yes NoX
	50% of total cover:0	20%	of total cover:	0	
Rem	arks: (Include photo numbers here or on a separate	sheet.)			
Vege	tation in this area appears to be frequently maintain	ed.			

Sampling Point: DP-9-OUT

Sampling Point: <u>DP-9-OUT</u>

nohoo\	Matrix			Features V Type ¹	1000	Tout	ro		Domorko
ches) 0-12	Color (moist) 10YR 5 / 3		Color (moist)	% Type ¹	Loc2	Textu Silt loam	ie		Remarks
-12 2-20	10YR 5 / 3	<u>100</u> _	10YR 5 / 2	15 C	М	Silt loam		Gravel inclus	ion
	10110 3 7 3		10110 3 7 2			Ont loans		Oraver inicias	ion
		:							
/pe: C=Co	oncentration, D=D	epletion, RM=	=Reduced Matrix, CS=0	Covered or Coa	ated Sand	Grains.	² Location	n: PL=Pore Lini	ng, M=Matrix.
dric Soil	Indicators:						Indicate	ors for Probler	natic Hydric Soils ³ :
Histisol (A1)		Dark Surface	e (S7)			2 cm	Muck (A10) (N	ILRA 147)
Histic Ep	ipedon (A2)		Polyvalue Be	elow Surface (S	88) (MLRA	147, 148)	Coas	st Prairie Redox	(A16)
Black His	stic (A3)		Thin Dark Sι	ırface (S9) (ML	RA 147, 1	48)	(MLF	RA 147,148)	
	n Sulfide (A4)			ed Matrix (F2)			Pied	mont Floodplair	n Soils (F19)
	Layers (A5)		Depleted Ma				•	/ILRA 136, 147	
	cky Mineral (A10)		Redox Dark					Shallow Dark S	
	Below Dark Sufa	ice (A11)		rk Surface (F7))		Othe	r (Explain in Re	emarks)
	rk Surface (A12)	A) (I B5 ::	Redox Depre		:40) // ===				
	Mucky Mineral (S	1) (LKR N,		ese Masses (F	12) (LRR I	Ν,			
	A 147, 148)		MLRA		A 426 422	`			
	leyed Matrix (S4) edox (S5)			ace (F13) (MLR					ic vegetation and
	Matrix (S6)			oodplain Soils (hydrology must isturbed or prob	
		- al\.	Red Falenti	Material (F21) (WILKA 121	, 147)	unicoo u	isturbed or proc	nomatic.
	Layer (if observe None	∌u).							
Type: <u>I</u> Depth (inc					Lludria	soil present?	•	Yes	No X
Jeptii (iiid	11/A				Tiyunc	son present		163	
Remarks: Gravel was p	present in the soil	core at a dep	oth of twelve inches.						

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: Wetland 9 Project/Site: I-69 Ohio River Crossing
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Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	1	Small wetland size limits this function.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	1	Small wetland size limits this function.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	1	Small wetland size limits this function.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	1	Small wetland size limits this function.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	0	This wetland does not provide this function.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	1	The proximity to US 41 limits this function.

Total Score 5

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River Crossir	ng	С	City/County: Hender	son/Henderso	n Sam	pling Date: October 2, 2018
Applicant/Owner: INDOT (Des#:1			<u> </u>	State:		pling Point DP-10-IN
Investigator(s): L. Postaski			ection, Township, R	ange: NA		. • • <u></u>
Landform (hillslope, terrace, etc.):	Roadside ditch	_	ocal relief (concave		e): Concave	Slope (%): 2
Subregion (LRR or MLRA): MLRA 1		Lat: 37.82807	•	Long: -87		Datum: NAD-1983
Soil Map Unit Name: Uniontown sil						ification: NA
Are climatic / hydrologic conditions		•	year? Yes	X No		ain in Remarks.)
, ,	• •	significantly	· —		rcumstances" p	,
	-	naturally pro			plain any answe	
SUMMARY OF FINDINGS –	<u> </u>		<u></u>	locations,	transects, in	nportant features, etc.
Hydrophytic Vegetation Present?	Yes X	. No	Is the Sampled	- Aros within	2	
Hydric Soil Present?	Yes X	No	Wetland?	l Alea Widini		X No
Wetland Hydrology Present?	Yes X	No				
Remarks: This is a small roadside US 41. WOTUS 2018 ID: WTL-44	e ditch emergent	wetland east of US	41 south of Zion R	oad. The area	appears to hav	re been disturbed by construction of
HYDROLOGY						
Wetland Hydrology Indicators:					Secondary India	cators (minimum of two required)
Primary Indicators (minimum of or	ne is required; ch	eck all that apply)			Surface So	oil Cracks (B6)
Surface Water (A1)		True Aquatic F	Plants (B14)		Sparsely V	egetated Concave Surface (B8)
High Water Table (A2)		Hydrogen Sulf	fide Odor (C1)		X Drainage P	Patterns (B10)
Saturation (A3)		X Oxidized Rhize	ospheres on Living	Roots (C3)	Moss Trim	Lines (B16)
Water Marks (B1)		Presence of R	Reduced Iron (C4)		Dry-Seaso	n Water Table (C2)
X Sediment Deposits (B2)		Recent Iron Re	eduction in Tilled So	oils (C6)	X Crayfish Bu	urrows (C8)
Drift Deposits (B3)		Thin Muck Sui	rface (C7)	_	Saturation	Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)		Other (Explain	ı in Remarks)	•	Stunted or	Stressed Plants (D1)
Iron Deposits (B5)		_			X Geomorph	ic Position (D2)
Inundation Visible on Aerial II	magery (B7)			•	Shallow Ac	quitard (D3)
Water-Stained Leaves (B9)				-	Microtopog	graphic Relief (D4)
Aquatic Fauna (B13)				-	FAC-Neutr	al Test (D5)
Field Observations:						
Surface water present?	Yes No	X Depth (inche	es):			
Water table present?	Yes X No	Depth (inche	es): 19"			
Saturation present?	Yes X No	Depth (inche	es): 15"	Wetland Hyd	rology Present	t? Yes X No
(includes capillary fringe) Describe Recorded Data (stream	cauge monitorin	aprial photo	a provious inspecti	one) if availah	do:	
Remarks:	gauge, monitoring	g well, aeriai priotos	s, previous inspection	ons), ii avallab	ne.	
There is one inch of water within t	the soil pit. Soils a	are saturated at this	s location.			

		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree 1	Stratum (Plot Size: 30' diameter)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2 3					Total Number of Dominant Species Across all Strata: 1 (B)
4					Percent of Dominant Species that
5					are OBL, FACW, or FAC: 100.00% (A/B)
6					<u></u>
7					Prevalence Index worksheet
		0	= Total Cover	 r	Total % Cover of: Multiply by:
	50% of total cover: 0	20%	of total cover:	0	OBL species 0 x 1 = 0
Sapli	ing/Shrub Stratum (Plot Size: 15' diameter)		•		FACW species 0 x 2 = 0
1					FAC species 90 x 3 = 270
2					FACU species 10 x 4 = 40
- -					UPL species 0 x 5 = 0
4					Column totals 100 (A) 310 (B)
- <u>-</u> 5					(1)
6					Prevalence Index = B/A = 3.10
7 _	_				Hydrophytic Vegetation Indicators:
8 _	_				1 -Rapid Test for Hydrophytic Vegetation
9 _					X 2 - Dominance Test is >50%
		0	= Total Cover	r	3 - Prevalence Index is ≤3.0 ¹
Herb	50% of total cover: 0 Stratum (Plot Size: 5' diameter)	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
1	Echinochloa crus-galli	80	Υ	FAC	Problematic Hydrophytic Vegetation (Explain)
2	Setaria pumila	10		FAC	
3	Poa pratensis	5		FACU	¹ Indicators of hydric soil and wetland hydrology must be
4	Schedonorus arundinaceus	5		FACU	present, unless disturbed or problematic
· _	onougher at an annuous			17.00	Definitions of Four Vegetation Strata:
6	_				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7					in diameter at breast height (DBH), regardless of height.
, _ 8	_				Sapling/shrub - Woody plants, excluding vines, less than 3
9					in. DBH and greater than or equal to 3.28 ft (1m) tall.
10					Herb - All herbaceous (non-woody) plants, regardless of
_					size, and woody plants less than 3.28 ft tall.
11 _		400	= Total Cover		
	50% - 51-1-1	100			Woody vines - All woody vines greater than 3.28 ft in height.
14/	50% of total cover:50	20%	of total cover:	20	neight.
	dy Vine Stratum (Plot Size: 30' diameter)				
1 _					
2 _					
_					
4 _					Hydrophytic
5 _					Vegetation
		0	= Total Cover		Present? Yes X No
	50% of total cover:0	20%	of total cover:	0	
Rema	arks: (Include photo numbers here or on a separate	sheet.)			

Sampling Point: DP-10-IN

1	nches)	Matrix				x Featur			_		
Dee: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Dec: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Dec: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Dec: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Indicators for Problematic Hydric Soils 3: Indicators for Problematic Hydric Soils 3: Deceived Matrix (F3) Deceived Matrix (F3) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Depleted Matrix (F3) Depleted Matrix (F3) Depleted Matrix (F3) Depleted Matrix (F3) Depleted Matrix (F3) Depleted Matrix (F3) Depleted Matrix (F3) Depleted Matrix (F4) Depleted Matrix (F4) Depleted Matrix (F4) Depleted Matrix (F4) Depleted Matrix (F5) Depleted Matrix (F4) Depleted Matrix (F5) Depleted Matrix (F6		Color (moist)				<u> %</u>	Type ¹	Loc2			Remarks
De: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Pric Soil Indicators: Histisc Soil Indicators: Histisc Epipedon (A2) Black Histis (A3) Thin Dark Surface (S7) Thin Dark Surface (S8) (MLRA 147, 148) Black Histis (A3) Thin Dark Surface (S9) (MLRA 147, 148) Coast Prairie Redox (A16) (MLRA 147,148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N, MLRA 136, 122) Sandy Mucky Mineral (S1) (LRR N, MLRA 136) MIRA 136) Bandy Gleyed Matrix (S4) Sandy Gleyed Matrix (S4) Bandy Gleyed Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 136, 122) Bandy Macky Mineral (S1) (LRR N, MLRA 136) MIRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Bandy Gleyed Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Problematic Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Problematic Matrix (S6)											
Indicators for Problematic Hydric Soils 3: Ississol (A1)	-20	2.5Y 4 / 2	85	7.5YR	4 / 5	15	С	M	Silty clay	loam	
Indicators for Problematic Hydric Soils 3: Ississol (A1)											
Indicators for Problematic Hydric Soils 3: Ississol (A1)											
Indicators for Problematic Hydric Soils 3: Ississol (A1)	·										
Indicators for Problematic Hydric Soils 3: Isistisol (A1)											
Indicators for Problematic Hydric Soils 3: distisol (A1)											
Indicators for Problematic Hydric Soils 3: distisol (A1)											
Indicators for Problematic Hydric Soils 3: Histisol (A1)	·							· ——			
Indicators for Problematic Hydric Soils 3: Histisol (A1)					 .					2	
Dark Surface (S7)			Depletion, RM	I=Reduce	d Matrix, C	S=Cover	ed or Coa	ated Sand	Grains.		
Polyvalue Below Surface (S8) (MLRA 147, 148) Coast Prairie Redox (A16) (MLRA 147, 148) Piedmont Floodplain Soils (F19) Com Mucky Mineral (A10) (LRR N) Pepleted Below Dark Surface (A11) Pepleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) And A147, 148) Depleted Dark Surface (F7) Pick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Piedmont Floodplain Soils (F19) (MLRA 148) Piedmont Floodplain Soils (F19) (MLRA 147) Piedmont Floodplain Soils (F19) (MLRA 148) Piedmont Floodplain Soils (F19) (MLRA 147) Piedmont Floodplain Soils (F19) (MLRA 148) Piedmont Floodplain Soils (F19) (MLRA 148) Piedmont Floodplain Soils (F19) Piedmont Floodplain Soi	ric Soil	Indicators:								Indicato	ors for Problematic Hydric Soils*:
Alack Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Alydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Per Mucky Mineral (A10) (LRR N) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Per Mucky Mineral (A10) (LRR N) Piedmont Floodplain Soils (F7) Other (Explain in Remarks) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Piedmont Floodplain Soils (F12) (LRR N, MLRA 136) Piedmont Floodplain Soils (F19) (MLRA 148) Piedmont Floodplain Soils (F19) (MLRA 148) Piedmont Floodplain Soils (F19) (MLRA 147, 147) Piedmont Floodplain Soils (F19) (MLRA 127, 147) Piedmont Floodplain Soils (F19) (MLRA 127, 147)		, ,		_	Dark Surf	ace (S7)					
All Loamy Gleyed Matrix (F2) Piedmont Floodplain Soils (F19) Attratified Layers (A5) At Depleted Matrix (F3) Redox Dark Surface (F6) Poepleted Below Dark Surface (A11) Poepleted Below Dark Surface (A11) Poepleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 136) Poepleted Matrix (S4) Piedmont Floodplain Soils (F19) MLRA 136, Iron-Manganese Masses (F12) (LRR N, MLRA 136,122) Piedmont Floodplain Soils (F13) (MLRA 136,122) Piedmont Floodplain Soils (F19) (MLRA 148) Attrictive Layer (if observed): Arrictive	listic Er	oipedon (A2)		_	Polyvalue	Below S	Surface (S	88) (MLRA	147, 148)	Coas	t Prairie Redox (A16)
Stratified Layers (A5) It cm Mucky Mineral (A10) (LRR N) Pepleted Below Dark Surface (A11) Pepleted Below Dark Surface (A11) Pepleted Dark Surface (F7) Redox Depressions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 136) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 127, 147) Prictive Layer (if observed): Prictive Layer (if observed): Prictive N/A Pepth (inches): N/A Phydric soil present? Yes X No Nervice (TF12) Other (Explain in Remarks) In Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks)	Black Hi	istic (A3)		_	Thin Dark	Surface	(S9) (ML	-RA 147, 1	48)	(MLF	RA 147,148)
Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR N, MLRA 136) Depleted Dark Surface (F7) Depleted Dark Surface (F7) Depleted Dark Surface (F7) Depleted Dark Surface (F7) Depleted Dark Surface (F7) Depleted Dark Surface (F7) Depleted Dark Surface (F7) Depleted Dark Surface (F7) Depleted Dark Surface (F8) Depleted Dark Surface (F7) Depleted Dark Surface (F8)	Hydroge	en Sulfide (A4)		_	Loamy Gl	eyed Ma	trix (F2)			Piedr	mont Floodplain Soils (F19)
Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Redox Depressions (F8) Iron-Manganese Masses (F12) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Bright Matrix (S6) MICHA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Thick Dark Surface (A12) MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 136) Umbric Surface (F13) (MLRA 136,122) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 136) Umbric Surface (F13) (MLRA 148) Piedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Thick Dark Surface (F7) Thick Dark Surface (F7) MLRA 136, 122) Sandy Redox (S5) Findicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Thick Dark Surface (F13) (MLRA 127, 147) Thick Dark Surface (F12) (MLRA 127, 147) Thick Dark Surface (F13) (MLRA 136,122) Piedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Thick Dark Surface (F13) (MLRA 127, 147) Thick Dark Surface (F13) (MLRA 136,122) Thick Dark Surface (F1	Stratified	d Layers (A5)		X	Depleted	Matrix (F	3)			(N	ILRA 136, 147)
Redox Depressions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Directive Layer (if observed): When the content of the conte	cm Mu	ucky Mineral (A10) (LRR N)	_	Redox Da	rk Surfac	ce (F6)			Very	Shallow Dark Surface (TF12)
Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Crictive Layer (if observed): Sype: N/A Pieth (inches): N/A Iron-Manganese Masses (F12) (LRR N, MLRA 136) Umbric Surface (F13) (MLRA 136,122) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Wetland hydrology must be present, unless disturbed or problematic. Hydric soil present? Yes X No No Pieth (inches): N/A No Pieth (inches): N/A	Depleted	d Below Dark Suf	ace (A11)	_	Depleted	Dark Sur	face (F7))		Othe	r (Explain in Remarks)
MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) MIRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Wetland hydrology must be present, unless disturbed or problematic. Why a septh (inches): N/A MIRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) MIRA 148, 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. MIRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. MIRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) MIRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Pie	Thick Da	ark Surface (A12)		_	Redox De	pression	s (F8)				
Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) Extripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Strictive Layer (if observed): The peth (inches): M/A Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Wetland hydrology must be present, unless disturbed or problematic. Hydric soil present? Yes X No Parks:	Sandy	Mucky Mineral (S	S1) (LRR N,	_	Iron-Mang	janese M	lasses (F	12) (LRR	٧,		
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Priedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Priedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Priedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Priedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Priedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Priedmont Floodplain Soils (F19) (MLRA 148) Wetland hydrology must be present, unless disturbed or problematic. Priedmont Floodplain Soils (F19) (MLRA 127, 147)	MLR	A 147, 148)			MLF	RA 136)					
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present, unless disturbed or problematic. trictive Layer (if observed): type: N/A Piedmont Floodplain Soils (F19) (MLRA 127, 147) wetland hydrology must be present, unless disturbed or problematic. Hydric soil present? Yes X No No	Sandy G	Sleyed Matrix (S4))	_	Umbric St	ırface (F	13) (MLF	RA 136,122)	3Indicato	re of hydrophytic vegetation and
Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. Strictive Layer (if observed): Sype: N/A Depth (inches): N/A Hydric soil present? Yes X No	Sandy F	Redox (S5)			Piedmont	Floodpla	in Soils (F19) (MLF	A 148)		
Popth (inches): N/A Hydric soil present? Yes X No Parks:	Stripped	l Matrix (S6)			Red Pare	nt Materia	al (F21) (MLRA 127	', 147)		
Depth (inches): N/A Hydric soil present? Yes X No	trictive	Layer (if observ	ed):								
narks:											
narks:	Гуре:	N/A									
	Depth (in	iches): N/A	e depleted ma	trix (F3) a	nd deplete	- d below o	dark surfa				Yes X No

Project/Site: I-69 Ohio River Crossi	ng		City/County: Hender	son/Henderson	Sampling	g Date: October	r 2, 2018	
Applicant/Owner: INDOT (Des#:	1601700); KYTC (#2-	1088)		State: KY	Sampling	Point: DP-10-0	OUT	
Investigator(s): L. Postaski		8	Section, Township, R	ange: NA				
Landform (hillslope, terrace, etc.):	Hillslope		Local relief (concave	, convex, none):	Convex	Slope (%):	2	
Subregion (LRR or MLRA): MLRA	120A	Lat: <u>37.8280</u>	9	Long: <u>-87.56</u>	6662	Datum: N	AD-1983	
Soil Map Unit Name: Uniontown si	ilt loam, 2 to 6 percen	t slopes, rarely	y flooded		_ NWI classificat	ion: NA		
Are climatic / hydrologic conditions	on the site typical for	this time of the	e year? Yes _	X No	(If no, explain in	n Remarks.)		
Are vegetation X, Soil	, or Hydrology	significantly	y disturbed?	Are "normal circu	mstances" preser	nt? Yes	X No	
Are vegetation, Soil	, or Hydrology	naturally pr	roblematic? No	(If needed, explai	n any answers in	Remarks.)		
SUMMARY OF FINDINGS -	- Attach site mar	showing :	sampling point	locations, tra	nsects, impo	rtant featu	res, etc.	
Hydrophytic Vegetation Present?	Yes	No X	Is the Sampled	I Δrea within a				
Hydric Soil Present?	Yes	No X	Wetland?	Area within a	Yes	No X		
Wetland Hydrology Present?	Yes	No X						
Remarks: This upland area is ea WOTUS 2018 ID: WTL-44								
HYDROLOGY								
Wetland Hydrology Indicators:				Se	condary Indicator	s (minimum of	two require	ed)
Primary Indicators (minimum of o	ne is required; check	all that apply)			Surface Soil Cra	acks (B6)		
Surface Water (A1)	_	True Aquatic	Plants (B14)		Sparsely Veget	ated Concave	Surface (B	8)
High Water Table (A2)	_	Hydrogen Su	ulfide Odor (C1)		Drainage Patter	rns (B10)		
Saturation (A3)	_	Oxidized Rhi	izospheres on Living	Roots (C3)	Moss Trim Line	s (B16)		
Water Marks (B1)	_	Presence of	Reduced Iron (C4)	_	Dry-Season Wa	ater Table (C2)		
Sediment Deposits (B2)	_	Recent Iron F	Reduction in Tilled So	oils (C6)	Crayfish Burrov	vs (C8)		
Drift Deposits (B3)	_	Thin Muck Si	urface (C7)		Saturation Visib	ole on Aerial Im	agery (C9))
Algal Mat or Crust (B4)	_	Other (Explai	in in Remarks)		Stunted or Stre	ssed Plants (D	1)	
Iron Deposits (B5)					Geomorphic Po	sition (D2)		
Inundation Visible on Aerial I	magery (B7)				Shallow Aquitar	d (D3)		
Water-Stained Leaves (B9)					Microtopograph	ic Relief (D4)		
Aquatic Fauna (B13)				<u> </u>	FAC-Neutral Te	est (D5)		
Field Observations:								
Surface water present?	Yes No X	- ' `	nes):					
Water table present?	Yes No X	Depth (inch	nes): >20					
Saturation present? (includes capillary fringe)	Yes No <u>X</u>	Depth (inch	nes): >20	Wetland Hydrol	ogy Present?	Yes	No	No
Describe Recorded Data (stream	gauge, monitoring we	ell, aerial photo	os, previous inspection	ns), if available:				
Remarks:		•						
The upland area is frequently ma	intained.							

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' diameter) 1	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: (A)
2				Total Number of Dominant Species
3				Across all Strata: (B)
5				Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cover	r	Total % Cover of: Multiply by:
50% of total cover:	20%	of total cover:	0	OBL species
Sapliing/Shrub Stratum (Plot Size: 15' diameter)				FACW species 0 x 2 = 0
1				FAC species 0 x 3 = 0
2				FACU species x 4 = 420
3				UPL species 0 x 5 = 0
4				Column totals (A) (B)
5				
6				Prevalence Index = B/A = 4.00 Hydrophytic Vegetation Indicators:
0				
8				1 -Rapid Test for Hydrophytic Vegetation
9				2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹
500/ of total occurs	0	= Total Cove		-
50% of total cover: 0	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
Herb Stratum (Plot Size: 5' diameter)	00	V	FAOU	
1 Cynodon dactylon	90	<u>Y</u> N	FACU FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2 Schedonorus arundinacea				1
3 Sorghum halepense	5	<u>N</u>	FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
				Definitions of Four Vegetation Strata:
5				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
				in diameter at breast height (DBH), regardless of height.
				Sapling/shrub - Woody plants, excluding vines, less than 3
8				in. DBH and greater than or equal to 3.28 ft (1m) tall.
9				
10				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
11				
	105	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in
50% of total cover: 52.5	20%	of total cover:	21	height.
Woody Vine Stratum (Plot Size: 30' diameter)				
1				
2				
· -				
4				Hydrophytic
5				Vegetation
	0	= Total Cover		Present? Yes NoX
50% of total cover:		of total cover:	0	
Remarks: (Include photo numbers here or on a separate	sheet.)			
Vegetation in this area appears to be frequently maintain	ed.			

Sampling Point: DP-10-OUT

Sampling Point: DP-10-OUT

10 10 10 10 10 10 10 10	nches)	Color (Matrix (moist)	%	Color	(moist)	ox Featu %	Type ¹	Loc2	Textu	re		Remarks
1-20 10YR 5 / 3 90 10YR 5 / 4 10 C M Silt loam Gravel inclusion Dec. C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Dec. C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Dec. C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Dec. C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Dec. C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Dec. C=Concentration, D=Depletion, RM=Reduced Matrix. Indicators for Problematic Hydric Soils ² : Loam (Sepidential Matrix, 148)	0-14					(,,,	.,,,,,				Gravel inclus	
De: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Indicators: Indicators for Problematic Hydric Soils ¹ : Indicators for Problematic Hydric Soils F19: Indicators for Problematic Hydric Soils F19: Indicators for Problematic Hydric Soils F19: Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.					10YR	5 / 4	10	С	М				
Indicators: Indicators for Problematic Hydric Soils 3: Histisol (A1) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Below Dark Surface (A11) Thick Dark Surface (A11) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Matrix (F3) Umbric Surface (F13) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Thick Dark Surface (A12) Iron-Manganese Masses (F12) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Matrix (S6) Red Parent Material (F21) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Red Parent Material (F21) (MLRA 127, 147) Hydric soil present? Yes No X No X No Marks:													
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Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. Strictive Layer (if observed): Type: None Depth (inches): N/A Hydric soil present? Yes No X Paranases:													
trictive Layer (if observed): Type: None Depth (inches): N/A	-				-								
Type: None Depth (inches): N/A Hydric soil present? Yes No X								. ,		•			
Depth (inches): N/A Hydric soil present? Yes No X narks:		•											
narks:	Туре:	None	,										
vel was present in the soil core at a depth of eight inches.	•						- -		Hydric	soil present?	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A				_		Hydric	soil present?	?	Yes	NoX
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	- -		Hydric	soil present	?	Yes	No X
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	-		Hydric	soil present?	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	- -		Hydric	soil present	?	Yes	NoX
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	<u>-</u>		Hydric	soil present	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	-		Hydric	soil present	?	Yes	NoX
	epth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	-		Hydric	soil present	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	-		Hydric	soil present	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	-		Hydric	soil present	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	-		Hydric	soil present	?	Yes	
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	_		Hydric	soil present	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	-		Hydric	soil present	?	Yes	No <u>X</u>
	epth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	-		Hydric	soil present	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.			Hydric	soil present	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.			Hydric	soil present	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.	_		Hydric	soil present	?	Yes	No X
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.			Hydric	soil present	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.			Hydric	soil present	?	Yes	No X
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.			Hydric	soil present	?	Yes	No X
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.			Hydric	soil present	?	Yes	No <u>X</u>
	Depth (in	ches): <u>N</u>	I/A	re at a de	pth of eig	ht inches.			Hydric	soil present	?	Yes	No X

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.:	Wetland 10	Project/Site:	I-69 Ohio River Crossing

Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	1	Small wetland size limits this function.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	1	Small wetland size limits this function.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	1	Small wetland size limits this function.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	1	Small wetland size limits this function.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	0	This wetland does not support this function.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	1	Small wetland size limits this function.

Total Score 5

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River Crossing	City/County: Henderson/Henderson Sampling Date: October 2, 2018
Applicant/Owner: INDOT (Des#:1601700); KYTC (KYTC#:2-	088) State: KY Sampling Point: DP-11-IN
Investigator(s): L. Postaski	Section, Township, Range: NA
Landform (hillslope, terrace, etc.): Roadside ditch	Local relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR or MLRA): MLRA 120A Lat:	87.82723 Long: <u>-87.56650</u> Datum: <u>NAD-1983</u>
Soil Map Unit Name: Hosmer silt loam, 2 to 6 percent slopes	NWI classification: NA
Are climatic / hydrologic conditions on the site typical for this tir	ne of the year? Yes X No (If no, explain in Remarks.)
Are vegetation X, Soil , or Hydrology sig	
Are vegetation, Soil, or Hydrologynat	urally problematic? No (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map sho	wing sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes X No	Is the Sampled Area within a
Hydric Soil Present? Yes X No	Wetland? Yes X No
Wetland Hydrology Present? Yes X No	
Remarks: This is a small roadside ditch emergent wetland so construction of US 41. WOTUS 2018 ID: WTL-45	uth of Zion Road, east of US-41 Historically, the area appears to have been disturbed by
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that	apply) Surface Soil Cracks (B6)
<u> </u>	Aquatic Plants (B14) Sparsely Vegetated Concave Surface (B8)
- -	ogen Sulfide Odor (C1) X Drainage Patterns (B10)
	zed Rhizospheres on Living Roots (C3) Moss Trim Lines (B16)
<u> </u>	ence of Reduced Iron (C4) Dry-Season Water Table (C2)
-	nt Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8) Crayfish Burrows (C8)
<u> </u>	Muck Surface (C7) Saturation Visible on Aerial Imagery (C9)
<u> </u>	(Explain in Remarks) Stunted or Stressed Plants (D1)
Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7)	X Geomorphic Position (D2)
Water-Stained Leaves (B9)	Shallow Aquitard (D3) Microtopographic Relief (D4)
Aquatic Fauna (B13)	X FAC-Neutral Test (D5)
Field Observations:	A FACTIEURALIEST (D3)
	oth (inches):
· — —	oth (inches): >20
· — —	oth (inches): >20 Yes X No
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aer Remarks:	al photos, previous inspections), if available:
Drainage patterns were observed within the wetlands. This w	etland receives runoff from US 41.

		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree	Stratum (Plot Size: 30' diameter)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
2					Total Number of Dominant Species
3					Across all Strata: 2 (B)
4			·		Percent of Dominant Species that
5					are OBL, FACW, or FAC: 100.00% (A/B)
6					
7					Prevalence Index worksheet
-		0	= Total Cover		Total % Cover of: Multiply by:
	50% of total cover:0	20%	of total cover:	0	OBL species 60 x 1 = 60
Sap	iing/Shrub Stratum (Plot Size: 15' diameter)				FACW species 0 x 2 = 0
1					FAC species 15 x 3 = 45
2					FACU species 15 x 4 = 60
3					UPL species
4					Column totals 90 (A) 165 (B)
5			·		
6					Prevalence Index = B/A = 1.83 Hydrophytic Vegetation Indicators:
7					
8 -					X 1 -Rapid Test for Hydrophytic Vegetation
9 _					X 2 - Dominance Test is >50%
		0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
Herb	50% of total cover: 0 Stratum (Plot Size: 5' diameter)	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
1	Typha angustifolia	60	Υ	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
2	Echinochloa crus-galli	15		FAC	
3	Dipsacus fullonum	10	N	FACU	¹ Indicators of hydric soil and wetland hydrology must be
4	Poa pratensis	5		FACU	present, unless disturbed or problematic
5					Definitions of Four Vegetation Strata:
6					Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7					in diameter at breast height (DBH), regardless of height.
8					Sapling/shrub - Woody plants, excluding vines, less than 3
9					in. DBH and greater than or equal to 3.28 ft (1m) tall.
10					Herb - All herbaceous (non-woody) plants, regardless of
11					size, and woody plants less than 3.28 ft tall.
-		90	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in
	50% of total cover: 45	20%	of total cover:	18	height.
Woo	dy Vine Stratum (Plot Size: 30' diameter)		-		
1					
2			·		
•					
4					
5			·-		Hydrophytic Vegetation
•		0	= Total Cover		Present? Yes X No
	50% of total cover:0	20%	of total cover:	0	
Rem	arks: (Include photo numbers here or on a separate	sheet.)	•		<u> </u>
	•	•			

Sampling Point: DP-11-IN

Sampling Point: ______DP-11-IN

	Matrix		Redox Fea		1 - : 0	.		B 1 .	
hes)	Color (moist)		olor (moist) %	Type ¹	Loc2	Textu		Remarks	
10	10YR 4 / 2 10YR 4 / 3	95 7.5		_ <u>c</u>	M	Silty clay			
-20	10YR 4 / 3	90 7.5	<u>R 4 / 6 10</u>		M	Silty clay	IUaili		
e: C=Cor	ncentration, D=Deple	etion, RM=Red	uced Matrix, CS=Cov	ered or Co	ated Sand	Grains.	² Location	n: PL=Pore Lining, M=Matrix.	
ric Soil I	ndicators:						Indicate	ors for Problematic Hydric Soil	ls³:
Histisol (A	A1)		Dark Surface (S	7)			2 cm	Muck (A10) (MLRA 147)	
Histic Epip	pedon (A2)		Polyvalue Below	Surface (S	88) (MLRA	147, 148)	Coas	st Prairie Redox (A16)	
Black Hist	tic (A3)		Thin Dark Surface	ce (S9) (ML	_RA 147, 1	48)	(MLF	RA 147,148)	
	Sulfide (A4)		Loamy Gleyed N	latrix (F2)			Pied	mont Floodplain Soils (F19)	
	Layers (A5)		X Depleted Matrix					ILRA 136, 147)	
	ky Mineral (A10) (LF	•	Redox Dark Sur					Shallow Dark Surface (TF12)	
	Below Dark Suface	(A11)	Depleted Dark S)		Othe	r (Explain in Remarks)	
	k Surface (A12)		Redox Depressi		-40\ (1 == 1				
	Mucky Mineral (S1) (I	LRR N,	Iron-Manganese		·12) (LRR I	١,			
	. 147, 148)		MLRA 136		A 426 422	`			
Sandy Re	eyed Matrix (S4)		Umbric Surface Piedmont Flood					rs of hydrophytic vegetation and	
	Matrix (S6)		Red Parent Mate					hydrology must be present, sturbed or problematic.	
	.ayer (if observed):			211ai (1 2 1)	(MILION 12)	, 147)	4	otalizati di problemator	
	lone								
Depth (inch					Hydric	soil present	2	Yes X No	
	<u> </u>				,				
emarks: oils at this lo	ocation meet the dep	oleted matrix (F	3) indicator. Clay con	tent increas	ses with de	oth.			

Lact: 37.82723 Long: 87.595653 Datum: NAD-1983 Subregion (LRR or MLRA): MLRA 120A Lat: 37.82723 Long: 87.595653 Datum: NAD-1983 Solid Map Unit Name: Hosmers till boam; 2 to 6 percent slopes Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.) Are vegetation X, Soli X, or Hydrology significantly disturbed? Are "normal circumstances" present? Yes X No (If no, explain in Remarks.) Are vegetation X, Soli X, or Hydrology inaturally problematic? No (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Secondary Indicators (minimum of two required; check all that apply) Surface Water (A1) True Aquatic Plants (B14) Sarace Water (A1) True Aquatic Plants (B14) Sarace Water (A1) Phydropen Sulfide Odor (C1) Drainage Patterns (B10) Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16) Weter Marks (B1) Presence of Reduced from (C4) Drainage Patterns (B10) Saturation (A3) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9) Agaid Mat or Crust (B4) Other (Explain in Remarks) Shallow Aquatard (D3) Mater Saland Laces (B9) Microlopographic Relief (D4) Aquatic Falance (B13) Face No X Depth (inches): Naturation present? Yes No X Depth (inches): Solid Reliable Present? Yes No X Depth (inches): Naturation present? Yes No X Depth (inches): Solid Reliable Present? Yes No X Depth (inches): Naturation present? Yes No X Depth (inches): Solid Reliable Present? Yes No X Depth (inches): Solid Reliable Present? Yes No X Depth (inches): Solid Reliable Present? Yes No X Depth (inches): Solid Reliable Present? Yes No X Depth (inches): Solid Reliable Present? Yes No X Depth (inches): Solid Reliable Present? Yes N	Project/Site: I-69 Ohio River Crossin	ng		City/County: Hender	rson/Henderson	Sampling	Date: Octobe	r 2, 2018	
Local relief (concave, convex, none): Convex Slope (%): 2 Subregion (LRR or MLRA) MLRA 120A	Applicant/Owner: INDOT (Des#:	1601700); KYTC (#2-1	1088)		State: KY	Sampling	Point: DP-11-	OUT	
Solid Map Unit Name: Hosmer silt Dam, 2 to 6 percent Stopes Name	Investigator(s): L. Postaski			Section, Township, R	tange: NA				
Soil Map Unit Name: Hosmer silt loam, 2 to 6 percent slopes	Landform (hillslope, terrace, etc.):	Hillslope		Local relief (concave	, convex, none):	Convex	Slope (%):	2	
Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.) Are vegetation X, Soil X, or hydrology significantly disturbed? Are "normal circumstances" present? Yes X No Are "normal circumstances" present? Yes X No (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No X Is the Sampled Area within a Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Surface Soil Cracks (B6) Finding Sufface Water (A1) True Aqualic Plants (B14) Square Water Mater Able (A2) Hydrogen Sulfide Odor (C1) Diagnost Finding Sulface Water Marks (B1) Presence of Reduced Iron (C4) Dry-Season Water Table (C2) Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Square Crays (B3) Mater Marks (B1) Secondary (B7) Square (B7) Squar	Subregion (LRR or MLRA): MLRA 1	20A	Lat: 37.8272	3	Long: <u>-87.56</u>	66503	Datum: N	AD-1983	
Are vegetation X Soil X or Hydrology significantly disturbed? Are 'normal circumstances' present? Yes X No Are vegetation Soil or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No X Wetland? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Wetland? Yes No X Wetland? Yes No X Wetland? Yes No X Wetland Hydrology Indicators: Remarks: This upland area is east of US 41 and south of Zion Road. Historically, the area appears to have been disturbed by construction of US 41. WOTUS 2018 ID: WTL-45 HYDROLOGY Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Surface Water (A1) Surface Soil Cracks (B6) Surface Water (A1) Hydrology Sulfide Odor (C1) Drainage Patterns (B10) Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16) Water Marks (B1) Presence of Reduced Iron (C4) Dry-Season Water Table (C2) Sediment Deposits (B2) Recent Iron Reduction in Titled Soils (C6) Crayfish Burrows (C8) Drift Deposits (B3) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9) Agal Mat or Crust (B4) Other (Explain in Remarks) Sturtled or Stressed Plants (D1) Water-Stained Leaves (B9) Microtopographic Relief (D4) Aquatic Fauna (B13) FAC-Neutral Test (D5) Field Observations: Surface water present? Yes No X Depth (inches): >20 Wetland Hydrology Present? Yes No X Depth (inches): >20 Wetland Hydrology Present? Yes No X Depth (inches): >20 Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	Soil Map Unit Name: Hosmer silt lo	oam, 2 to 6 percent slo	opes			NWI classificati	on: NA		
Are vegetation, Soil, or Hydrology naturally problematic? No (if needed, explain any answers in Remarks.) SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present?	Are climatic / hydrologic conditions	on the site typical for	this time of the	e year? Yes _	X No	(If no, explain in	Remarks.)		
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Wetland? Wetland? Wetland? Wetland? Yes No X Wetland? Wetland? Wetland? Wetland? Wes No X Wetland? Wes No X Wetland? Wes No X Wetland? Wes No X Wetland? Wes No X No X Wes No X No X Wes No X Wes No X Depth (inches): Secondary Indicators (minimum of two required) Presence of Reduced from (C4) Drainage Patterns (B10) Drainage Patter		_			Are "normal circur	mstances" presen	t? Yes _	X No_	
Hydrophytic Vegetation Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Indicators: This upland area is east of US 41 and south of Zion Road. Historically, the area appears to have been disturbed by construction of US 41. WOTUS 2018 ID: WTL-45 HYDROLOGY Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Surface Soil Cracks (B6) Moss Trim Lines (B16) Drift Deposits (B1) Presence of Reduced Iron (C4) Dry-Season Water Table (C2) Sediment Deposits (B2) Recent Iron Reduction in Tiled Soils (C6) Crayfish Burrows (C8) Drift Deposits (B3) Thin Muck Surface (C7) Sutured of Stressed Plants (D1) Iron Deposits (B5) Iron Deposits (Are vegetation, Soil	, or Hydrology	naturally pr	roblematic? No	(If needed, explain	n any answers in	Remarks.)		
Hydric Soil Present? Wetland Hydrology Present? Yes No X Wetland? **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Yes No X **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Yes No X **Wetland?* **Yes No X **Wetland?* **Yes No X **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No X **Wetland?* **Wetland?* **Yes No No No No No No No No No No No No No	SUMMARY OF FINDINGS -	· Attach site map	showing	sampling point	locations, tra	nsects, impo	rtant featu	res, etc.	
HYDROLOGY Wetland Hydrology Present? Yes No X Remarks: This upland area is east of US 41 and south of Zion Road. Historically, the area appears to have been disturbed by construction of US 41. WOTUS 2018 ID: WTL-45 HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) High Water Table (A2) Hydrogen Sulfide Odor (C1) Saturation (A3) Oxidized Rhizospheres on Living Roats (C3) Moss Trim Lines (B16) Water Marks (B1) Presence of Reduced Iron (C4) Drift Deposits (B2) Recent Iron Reduction in Titled Soils (C6) Drift Deposits (B3) Thin Muck Surface (C7) Algal Mat or Crust (B4) Aquatic Fauna (B13) Water table Leaves (B9) Aquatic Fauna (B13) Field Observations: Surface water present? Yes No X Depth (inches): Saturation No Inches): Solface water present? Yes No X Depth (inches): Solface water previous inspections), if available: Wetland? Wetland? Yes No X Depth (inches): Solface water previous inspections), if available: Wetland? Yes No X Depth (inches): Solface water previous inspections), if available:	Hydrophytic Vegetation Present?	Yes	No X	Is the Sample	d Δrea within a				
Remarks: This upland area is east of US 41 and south of Zion Road. Historically, the area appears to have been disturbed by construction of US 41. WOTUS 2018 ID: WTL-45 Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) High Water Table (A2) Hydrogen Sulfide Odor (C1) Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Water Marks (B1) Presence of Reduced Iron (C4) Dry-Season Water Table (C2) Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Drift Deposits (B3) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13) This Muck Depth (inches): Surface Water (D4) Presence of Reduced Iron (C4) Dry-Season Water Table (C2) Crayfish Burrows (C8) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13) FAC-Neutral Test (D5) Factor-Neutral Test (D5) Factor-Neutral Test (D5) Tincludes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Hydric Soil Present?	Yes	No X	•	a Alca Witimi a	Yes	No X		
### Wortus 2018 ID: WTL-45 ### Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Wetland Hydrology Present?	Yes	No X	_					
Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Surface Water (A1) High Water Table (A2) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13) Field Observations: Surface Water (A1) Surface Soil Cracks (B6) Surface Soil Cracks (B6) Surface Soil Cracks (B6) Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) Dry-Season Water Table (C2) Crayfish Burrows (C8) Dry-Season Water Table (C2) Crayfish Burrows (C8) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Water-Stained Leaves (B9) Aquatic Fauna (B13) FAC-Neutral Test (D5) Saturation present? Yes No X Depth (inches): Surface water present? Yes No X Depth (inches): Surface water present? Yes No X Depth (inches): Surface water present? Yes No X Depth (inches): Saturation present? Yes No X Depth (inches): Surface water present? Yes No X Depth (inches): Surface water present? Yes No No No Includes capillary fringe)		at of US 41 and South	oi Zion Road.	. misiorically, the are	a appears to nave	been disturbed b	y construction	101 05 41.	
Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) High Water Table (A2) Hydrogen Sulfide Odor (C1) Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16) Dry-Season Water Table (C2) Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Drift Deposits (B3) Thin Muck Surface (C7) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13) Field Observations: Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Saturation Visible on Aerial Imagery (B7) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5) Field Observations: Surface water present? Yes No X Depth (inches): Water table present? Yes No X Depth (inches): >20 Saturation present? Yes No X Depth (inches): >20 Wetland Hydrology Present? Yes No No No No Incomplete Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	HYDROLOGY								
Surface Water (A1)	Wetland Hydrology Indicators:				Sec	condary Indicators	s (minimum of	two require	ed)
High Water Table (A2)	Primary Indicators (minimum of or	ne is required; check a	all that apply)			Surface Soil Cra	acks (B6)		
Saturation (A3)	Surface Water (A1)	_	True Aquatio	Plants (B14)	_	Sparsely Vegeta	ated Concave	Surface (B	38)
Water Marks (B1)	_ ,	_	Hydrogen Su	ılfide Odor (C1)	_	-			
Sediment Deposits (B2)	_	_	Oxidized Rhi	izospheres on Living	Roots (C3)	Moss Trim Lines	3 (B16)		
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13) Field Observations: Surface water present? Water table present? Yes No X Depth (inches): Saturation Visible on Aerial Imagery (C9) Staturation Present? Yes No X Depth (inches): Saturation Present? Yes No No No No No No No No No N		_		` ,	_	•		1	
Algal Mat or Crust (B4)		_			oils (C6)	•	, ,		
Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13) Field Observations: Surface water present? Water table present? Yes No X Depth (inches): Saturation present? Yes No X Depth (inches): >20 Saturation present? Yes No X Depth (inches): >20 Seturation present? Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:		_		, ,	_)
Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13) FAC-Neutral Test (D5) Field Observations: Surface water present? Water table present? Yes No X Depth (inches): Saturation present? Yes No X Depth (inches): Saturation present? Yes No X Depth (inches): Saturation present? Yes No X Depth (inches): Saturation present? Yes No X Depth (inches): Saturation present? Yes No No No No No Remarks:	_ ` `		Other (Expla	in in Remarks)	_		•	1)	
Water-Stained Leaves (B9) Aquatic Fauna (B13) FAC-Neutral Test (D5) Field Observations: Surface water present? Yes No X Depth (inches): Water table present? Yes No X Depth (inches): >20 Saturation present? Yes No X Depth (inches): >20 Wetland Hydrology Present? Yes No No No Cincludes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	_	(D7)			_	-			
Aquatic Fauna (B13) FAC-Neutral Test (D5) Field Observations: Surface water present? Yes No X Depth (inches): Water table present? Yes No X Depth (inches): >20 Saturation present? Yes No X Depth (inches): >20 Wetland Hydrology Present? Yes No No No No No No No No No No No No No	_	magery (B7)			_				
Field Observations: Surface water present? Yes No X Depth (inches): Water table present? Yes No X Depth (inches): >20 Saturation present? Yes No X Depth (inches): >20 Wetland Hydrology Present? Yes No No No No No No No No No No No No No					_		` ,		
Surface water present? Yes No X Depth (inches): Water table present? Yes No X Depth (inches): >20 Saturation present? Yes No X Depth (inches): >20 Wetland Hydrology Present? Yes No No No No No No No No No No No No No	_				<u> </u>	FAC-Neutral Te	St (D5)		
Water table present? Yes No X Depth (inches): >20 Saturation present? Yes No X Depth (inches): >20 Wetland Hydrology Present? Yes No No No No No No No No No No No No No		Van Na V	Donth (inch						
Saturation present? Yes No X Depth (inches): >20 Wetland Hydrology Present? Yes No No No Sincludes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	•			· 					
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	·		•	′ 	Wotland Hydrol	ogy Prosent?	Voc	No	No
Remarks:	(includes capillary fringe)	103 NO_X	_ Deptit (inci	103).	Wettand Trydron	ogy i resent:			110
		gauge, monitoring we	ll, aerial photo	os, previous inspection	ons), if available:				
		ntained.							

		Absolute	Dominant	Indicator	Dominance Test worksheet:	٦
Tree 1	Stratum (Plot Size: 30' diameter)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: (A)	
2 _					Total Number of Dominant Species Across all Strata: 1 (B)	
4					Percent of Dominant Species that	
5					are OBL, FACW, or FAC: 0.00% (A/B)	
6						
7					Prevalence Index worksheet	
		0	= Total Cover	r	Total % Cover of: Multiply by:	
	50% of total cover: 0	20%	of total cover:	0	OBL species	
Sapli	ing/Shrub Stratum (Plot Size: 15' diameter)		•		FACW species 0 x 2 = 0	
1					FAC species 0 x 3 = 0	
2					FACU species 105 x 4 = 420	
3					UPL species 0 x 5 = 0	
4					Column totals 105 (A) 420 (B)	
5						
6					Prevalence Index = B/A = 4.00 Hydrophytic Vegetation Indicators:	
7 _						
8 _					1 -Rapid Test for Hydrophytic Vegetation	
9_					2 - Dominance Test is >50%	
		0	= Total Cover		3 - Prevalence Index is ≤3.0 ¹	
Herb	50% of total cover: 0 Stratum (Plot Size: 5' diameter)	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting dat in Remarks or on a separate sheet)	а
1	Cynodon dactylon	95	Υ	FACU	Problematic Hydrophytic Vegetation (Explain)	
2	Schedonorus arundinacea	5	N	FACU		
3	Sorghum halepense	5	N	FACU	¹ Indicators of hydric soil and wetland hydrology must be	
4					present, unless disturbed or problematic	
5					Definitions of Four Vegetation Strata:	
6					Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more	÷
7					in diameter at breast height (DBH), regardless of height.	
8					Sapling/shrub - Woody plants, excluding vines, less than 3	3
9					in. DBH and greater than or equal to 3.28 ft (1m) tall.	
10					Herb - All herbaceous (non-woody) plants, regardless of	
11					size, and woody plants less than 3.28 ft tall.	
_		105	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in	
	50% of total cover: 52.5	20%	of total cover:	21	height.	
Wood	dy Vine Stratum (Plot Size: 30' diameter)		•			
	, , , , , , , , , , , , , , , , , , , ,					
· <u>-</u>	_					٦
	_					
4	_					
· <u> </u>	_				Hydrophytic	
Ŭ -		0	= Total Cover		Vegetation Present? Yes No X	
	50% of total cover: 0		of total cover:	0	11636Ht: 163 NO	
Dam			or total cover.			_
	arks: (Include photo numbers here or on a separate					
vege	tation in this area appears to be frequently maintain	eu.				

Sampling Point: DP-11-OUT

Sampling Point: DP-11-OUT

	Matr	rix		Redo	ment the ox Featur							
Depth (inches)	Color (moist		Color	(moist)	%	Type ¹	Loc2	Textur	re		Remarks	
0-12	10YR 5 /	4 100		,				Silt loam		Gravel inclus	sion	
12-20	10YR 5 /	3 90	10YR	5 / 4	10		М	Silt loam		Gravel inclus	sion	
Type: C=C	oncentration, D=	Depletion, RM	1=Reduced	d Matrix, C	S=Cover	ed or Coa	ated Sand	Grains.	² Location	n: PL=Pore Lini	ing, M=Matri	х.
lydric Soil	Indicators:								Indicato	ors for Proble	matic Hydri	c Soils³:
Histisol ((A1)			Dark Surfa	ace (S7)				2 cm	Muck (A10) (N	MLRA 147)	
Histic Ep	pipedon (A2)			Polyvalue	Below S	Surface (S	88) (MLRA	147, 148)	_	t Prairie Redo		
- Black Hi	stic (A3)			Thin Dark	Surface	(S9) (ML	RA 147, 1	48)	— (MLF	RA 147,148)		
_	en Sulfide (A4)		_	Loamy GI	eyed Ma	trix (F2)			Piedr	mont Floodplai	n Soils (F19)
	d Layers (A5)			Depleted						ILRA 136, 147		
	ıcky Mineral (A1	0) (LRR N)		Redox Da						Shallow Dark		12)
	d Below Dark Su			Depleted		, ,)		_	r (Explain in Re		
Thick Da	ark Surface (A12	2)		Redox De	pression	ıs (F8)						
 Sandy	Mucky Mineral ((S1) (LRR N,	_	Iron-Mang	anese M	lasses (F	12) (LRR	N,				
MLR	A 147, 148)			MLF	RA 136)							
Sandy G	Gleyed Matrix (S	4)		Umbric St	ırface (F	13) (MLF	RA 136,122	2)	3 Indicate	no of budroubud	ia vasatatian	
Sandy R	Redox (S5)			Piedmont	Floodpla	ain Soils (F19) (MLF	RA 148)		rs of hydrophyt nydrology must		
Stripped	Matrix (S6)			Red Pare	nt Materi	al (F21) (MLRA 12	', 14 7)		sturbed or prol		
Restrictive	Layer (if obser	ved):										
	Layer (if obser	ved):	_									
	None	ved):			-		Hydric	soil present?	,	Yes	No _	<u>x</u>
Type: Depth (in Remarks:	None		pth of eigh	at inches.	<u>-</u>		Hydric	soil present?	,	Yes	No	х
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	_		Hydric	soil present?		Yes	No	х
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	- -		Hydric	soil present?	,	Yes	No	х
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?	,	Yes	No	x
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?		Yes	No	x
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?		Yes	No	x
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?		Yes	No_	x
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?		Yes	No	x
Type: Depth (in	None ches): N/A		pth of eigh	at inches.	-		Hydric	soil present?	•	Yes	No	<u>x</u>
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?		Yes	No	x
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?		Yes	No	x
Type: Depth (in	None ches): N/A		pth of eigh	at inches.	-		Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in Remarks:	None ches): N/A		pth of eigh	at inches.			Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in	None ches): N/A		pth of eigh	at inches.	-		Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in Remarks:	None ches): N/A		pth of eigh	at inches.	-		Hydric	soil present?		Yes	No	X
Type: Depth (in	None ches): N/A		pth of eigh	it inches.	-		Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in	None ches): N/A		pth of eigh	at inches.			Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in	None ches): N/A		pth of eigh	at inches.			Hydric	soil present?		Yes	No	<u>x</u>

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.:	Wetland 11	Project/Site:	I-69 Ohio River Crossing
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Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	1	Small wetland size limits this function.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	1	Small wetland size limits this function.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	1	Small wetland size limits this function.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	1	Small wetland size limits this function.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	0	This wetland does not support this function.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	1	Small wetland size limits this function.

Total Score 5

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

Project/Site: I-69 Ohio River Cross	ing		City/County: Henders	on/Henderson	Sampling Date:	October 2, 2018
Applicant/Owner: INDOT (Des#:	1601700); KYTC	(KYTC#:2-1088)		State: KY	Sampling Point:	DP-12-IN
Investigator(s): L. Postaski			Section, Township, Ra	nge: NA		
Landform (hillslope, terrace, etc.):	Roadside ditch		Local relief (concave,	convex, none): Cor	ncave Slo	ppe (%): 2
Subregion (LRR or MLRA): MLRA	120A	Lat: 37.825	597	Long: <u>-87.5658</u>	.7 Da	atum: NAD-1983
Soil Map Unit Name: Dekoven silt	loam			N	NWI classification: NA	Α
Are climatic / hydrologic conditions	on the site typic	al for this time of t	the year? Yes	K No (l	If no, explain in Rema	arks.)
Are vegetation, Soil				re "normal circumst	•	Yes <u>X</u> No
Are vegetation, Soil	, or Hydrology	/naturally	problematic? No (I	f needed, explain ar	ny answers in Remar	rks.)
SUMMARY OF FINDINGS	– Attach site	map showing	g sampling point l	ocations, trans	ects, important	features, etc.
Hydrophytic Vegetation Present?	Yes	X No	Is the Sampled	Aros within s		
Hydric Soil Present?	Yes	X No	Wetland?		Yes X No	
Wetland Hydrology Present?	Yes	X No				
Remarks: This is a small roadside construction of US 41. WOTUS 2018 ID: WTL-46	_	l Welldilu Sodili Si	I Ziuii Nuau, cast oi oo	41. Historicany, tro	атеа арреато то поч	e been distalbed by
HYDROLOGY						
Wetland Hydrology Indicators:				Secon	dary Indicators (mini	mum of two required)
Primary Indicators (minimum of c	one is required; c	heck all that apply	/)	S	urface Soil Cracks (B	36)
Surface Water (A1)		_	tic Plants (B14)	-	parsely Vegetated Co	
High Water Table (A2)			Sulfide Odor (C1)		rainage Patterns (B1	•
Saturation (A3)			hizospheres on Living F	Roots (C3) M	loss Trim Lines (B16))
Water Marks (B1)			of Reduced Iron (C4)		ry-Season Water Tal	` '
X Sediment Deposits (B2)		_	n Reduction in Tilled So	· · · —	crayfish Burrows (C8)	
Drift Deposits (B3)			Surface (C7)		aturation Visible on A	
Algal Mat or Crust (B4)		Other (Exp	lain in Remarks)		tunted or Stressed Pl	` '
Iron Deposits (B5) Inundation Visible on Aerial	Imagany (P7)				Geomorphic Position (
—	illagery (B7)				hallow Aquitard (D3)	
X Water-Stained Leaves (B9) Aquatic Fauna (B13)				_	licrotopographic Relie AC-Neutral Test (D5)	
Field Observations:)
Surface water present?	Yes N	o X Depth (in	ches):			
Water table present?		o X Depth (in				
Saturation present?		o X Depth (in			Yes	X No
(includes capillary fringe)	' <u></u>	<u> </u>		Y francisco		
Describe Recorded Data (stream Remarks:	i gauge, monitori	ng well, aeriai pno	otos, previous inspection	is), if available:		
This area receives runoff from U	•		ved within the wetland.	Water-stained leave	es were present in lov	w-lying areas. Two
ephemeral tributaries to North Fo	ork Canoe drain i	nto this wetland.				

EGETATION (Four Strata) - Use scientific n	ames of p	lants		Sampling Point: DP-12-IN
	Absolute	Dominant	Indicator	Dominance Test worksheet:
ree Stratum (Plot Size: 30' diameter)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
2				
3				Total Number of Dominant Species Across all Strata: (B)
1				
5		. ———		 Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)
5 6		. ———		. 100000000000000000000000000000000000
6 7				Prevalence Index worksheet
'		= Total Cove		Total % Cover of: Multiply by:
50% of total cover: 0		of total cover:	0	OBL species 0 x 1 = 0
appliing/Shrub Stratum (Plot Size: 15' diameter)	2070	Or total octor.		FACW species 90 x 2 = 180
				FAC species 15 x 3 = 45
				FACU species 0 x 4 = 0
2				
<u> </u>				<u> </u>
4				Column totals (A) (B)
5				
6				Prevalence Index = B/A = 2.14 Hydrophytic Vegetation Indicators:
7				
8				1 -Rapid Test for Hydrophytic Vegetation
9				X 2 - Dominance Test is >50%
	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0	20%	of total cover:	0	4- Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
lerb Stratum (Plot Size: 5' diameter)				
1 Phalaris arundinacea	80	<u> </u>	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2 Toxicodendron radicans	10	<u>N</u>	FAC	.
3 Persicaria pensylvanica	10	<u>N</u>	FACW	¹ Indicators of hydric soil and wetland hydrology must be
4 Echinochloa crus-galli	5	<u>N</u>	FAC	present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or mor in diameter at breast height (DBH), regardless of height.
7	·	· 		III didineter at preast neight (ppri), regardess of hoght.
8				Sapling/shrub - Woody plants, excluding vines, less than
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
0				Herb - All herbaceous (non-woody) plants, regardless of
11				size, and woody plants less than 3.28 ft tall.
	105	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in
50% of total cover: 52.5		of total cover:	21	height.
Voody Vine Stratum (Plot Size: 30' diameter)			· ·	•
<u> </u>				
2				
				·
				·
4				Hydrophytic
-				Vegetation
5	_			Present? Yes X No
5 50% of total cover: 0	0	= Total Cover of total cover:		Tresent: TCSNO

	95 90 90 90 90 90 90 90 90 90 90 90 90 90	Dark Sur	% Type 5 C 10 C	M Silty M Silty	Texture clay loam clay loam	Remarks
ype: C=Concentration dric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)	4 / 2 90	7.5YR 4 / 6	10 C	M Silty	clay loam	
pe: C=Concentration dric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)	ı, D=Depletion, R	M=Reduced Matrix, (
Iric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)		Dark Sur	S=Covered or C	oated Sand Grains.	² Location: PI =Pc	
ric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)		Dark Sur	S=Covered or C	oated Sand Grains.	² Location: PI =Po	
ric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)		Dark Sur	S=Covered or C	oated Sand Grains.	² Location: PI =Po	
ric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)		Dark Sur	S=Covered or C	oated Sand Grains.	² Location: PI =Po	
Iric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)		Dark Sur	S=Covered or C	oated Sand Grains.	² Location: PI =Po	
dric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)		Dark Sur	S=Covered or C	oated Sand Grains.	² Location: PI =Po	
dric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)		Dark Sur	S=Covered or C	oated Sand Grains.	² Location: PI =Po	
dric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)		Dark Sur	S=Covered or C	oated Sand Grains.	² Location: PI =Pe	
dric Soil Indicators: Histisol (A1) Histic Epipedon (A2) Black Histic (A3)		Dark Sur				ore Lining, M=Matrix.
Histisol (A1) Histic Epipedon (A2) Black Histic (A3)						Problematic Hydric Soils ³ :
Histic Epipedon (A2) Black Histic (A3))		face (C7)			-
Black Histic (A3)	1		• •	(CO) (MI DA 447, 44)		A10) (MLRA 147)
				(S8) (MLRA 147, 14	· —	e Redox (A16)
	4)		k Surface (S9) (N Javed Matrix (E2)		(MLRA 147,	
Stratified Layers (A5			leyed Matrix (F2) Matrix (F3)	•	Pleamont Fig.	oodplain Soils (F19)
2 cm Mucky Mineral	•		ark Surface (F6)		•	Dark Surface (TF12)
Depleted Below Dark			Dark Surface (F0)	7)		in in Remarks)
Thick Dark Surface (epressions (F8)	')	Other (Explo	iii iii recinance)
Sandy Mucky Mine			ganese Masses	(F12) (I RR N		
MLRA 147, 148)	, a. (01) (211111)		RA 136)	(1 12) (211111)		
Sandy Gleyed Matrix	(S4)		urface (F13) (ML	RA 136.122)	2	
Sandy Redox (S5)	(0.)			(F19) (MLRA 148)		drophytic vegetation and gy must be present,
Stripped Matrix (S6)		_		(MLRA 127, 147)	unless disturbed	
strictive Layer (if ob		_	(•
Type: None	,501 vou).					
Depth (inches): N//	^		_	Hydric soil pre	cont? Va	s X No
Deput (menes). 14/7	1		_	Tiyunc son pre	Sent: 10.	, <u>x</u> No

Project/Site: I-69 Ohio River Crossing	City/County: Henderson/Henderson Sampling Date: October 2, 2018
Applicant/Owner: INDOT (Des#: 1601700); KYTC (#2-1088)	State: KY Sampling Point: DP-12-OUT
Investigator(s): L. Postaski	Section, Township, Range: NA
Landform (hillslope, terrace, etc.): Hillslope	Local relief (concave, convex, none): Convex Slope (%): 2
Subregion (LRR or MLRA): MLRA 120A Lat: 37.82	723 Long: <u>-87.566503</u> Datum: <u>NAD-1983</u>
Soil Map Unit Name: Hosmer silt loam, 2 to 6 percent slopes	NWI classification: NA
Are climatic / hydrologic conditions on the site typical for this time of	the year? Yes X No (If no, explain in Remarks.)
Are vegetation, SoilX_, or Hydrologysignifican	ntly disturbed? Are "normal circumstances" present? Yes X No
Are vegetation, Soil, or Hydrologynaturally	problematic? No (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing	g sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes NoX	In the Sampled Area within a
Hydric Soil Present? Yes NoX	Is the Sampled Area within a Wetland? Yes No X
Wetland Hydrology Present? Yes No X	
Remarks: This upland area is east of US 41 and south of Zion Roa WOTUS 2018 ID: WTL-46	ad. Historically, the area appears to have been disturbed by construction of US 41.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply	y) Surface Soil Cracks (B6)
Surface Water (A1) True Aqua	tic Plants (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Hydrogen	Sulfide Odor (C1) Drainage Patterns (B10)
Saturation (A3) Oxidized F	Rhizospheres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1) Presence	of Reduced Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2) Recent Iro	n Reduction in Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3) Thin Muck	Surface (C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Exp	olain in Remarks) Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface water present? Yes No _X Depth (ir	nches):
Water table present? Yes No _X Depth (in	nches): >20
Saturation present? Yes No _X Depth (includes capillary fringe)	nches): >20 Wetland Hydrology Present? Yes No No
Describe Recorded Data (stream gauge, monitoring well, aerial pho	otos, previous inspections), if available:
Remarks:	

		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree 1	Stratum (Plot Size: 30' diameter)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: (A)
2 _					Total Number of Dominant Species Across all Strata: 1 (B)
4					Percent of Dominant Species that
5					are OBL, FACW, or FAC: (A/B)
6					
7					Prevalence Index worksheet
		0	= Total Cove	r	Total % Cover of: Multiply by:
	50% of total cover: 0	20%	of total cover:	0	OBL species 0 x 1 = 0
Sapli	ing/Shrub Stratum (Plot Size: 15' diameter)		•		FACW species 0 x 2 = 0
1					FAC species 0 x 3 = 0
2					FACU species 105 x 4 = 420
3					UPL species 0 x 5 = 0
4					Column totals 105 (A) 420 (B)
5					(,
6					Prevalence Index = B/A = 4.00
7_					Hydrophytic Vegetation Indicators:
8 _					1 -Rapid Test for Hydrophytic Vegetation
9 _					2 - Dominance Test is >50%
		0	= Total Cover	r	3 - Prevalence Index is ≤3.0 ¹
Herb	50% of total cover: 0 Stratum (Plot Size: 5' diameter)	20%	of total cover:	0	4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
1	Cynodon dactylon	85	Υ	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2	Schedonorus arundinacea	15		FACU	
- -	Sorghum halepense	5		FACU	¹ Indicators of hydric soil and wetland hydrology must be
4	- Congression				present, unless disturbed or problematic
· <u> </u>	_				Definitions of Four Vegetation Strata:
6					Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7					in diameter at breast height (DBH), regardless of height.
. <u> </u>	_				Sapling/shrub - Woody plants, excluding vines, less than 3
9	_				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10					Herb - All herbaceous (non-woody) plants, regardless of
11					size, and woody plants less than 3.28 ft tall.
''-		105	= Total Cover		
	FOO/ of total covery FO F				Woody vines - All woody vines greater than 3.28 ft in height.
\\/oo	50% of total cover: 52.5 dv Vine Stratum (Plot Size: 30' diameter)	20%	of total cover:	21	
	,				
	_				
2 _	_				
. –	_				
4 _					Hydrophytic
5_					Vegetation
		0	= Total Cover		Present? Yes NoX
	50% of total cover:0		of total cover:	0	
Rema	arks: (Include photo numbers here or on a separate	sheet.)			
Vege	tation in this area appears to be frequently maintain	ed.			

Sampling Point: DP-12-OUT

Sampling Point: DP-12-OUT

Depth		Matrix		th needed to docu Red	ox Featu							
(inches)	Color (n		%	Color (moist)	%	Type ¹	Loc2	Textur	е		Remarks	
0-14	10YR	4 / 3	100	,	. ———			Silt loam				
14-20	10YR	5 / 4	100		· ——			Silt loam				
					. ——							
					. ——							
Type: C=C	Concentration	n. D=Depl	etion. RM=	Reduced Matrix, C	S=Cove	red or Coa	ted Sand	Grains.	² Location	: PL=Pore Lini	ng. M=Matri	Х.
	I Indicators		<u> </u>	. toddood matiix, o	0 00.0.					rs for Proble	_	
Histisol	(Λ1)			Dark Surf	ace (S7)					Muck (A10) (N	-	
	, ,	١,					0) /841 54	447 440				
_	pipedon (A2)				•	8) (MLRA			Prairie Redox	K (A 10)	
_	istic (A3)						RA 147, 1	48)		A 147,148)		
Hydroge	en Sulfide (A	A4)		Loamy G	eyed Ma	atrix (F2)			Piedn	nont Floodplai	n Soils (F19)
Stratifie	d Layers (A	5)		Depleted	Matrix (F	- 3)			(M	LRA 136, 147)	
2 cm Mı	ucky Mineral	l (A10) (Li	RR N)	Redox Da	ırk Surfa	ce (F6)			Very	Shallow Dark	Surface (TF1	12)
_	d Below Dar		-			rface (F7)				(Explain in Re	,	•
_	ark Surface		,	Redox De						, , ,	,	
_			I DD N		•		10) // DD 1					
	Mucky Mine		LKK N,			viasses (F	12) (LRR I	٧,				
	A 147, 148)				RA 136)							
_ Sandy C	Gleyed Matri	x (S4)					A 136,122		3Indicator	s of hydrophyt	ic vegetation	n and
Sandy F	Redox (S5)			Piedmont	Floodpla	ain Soils (I	-19) (MLR	A 148)		ydrology must		
Stripped	d Matrix (S6))		Red Pare	nt Mater	ial (F21) (I	MLRA 127	, 147)		sturbed or prob		
estrictive	Laver (if a					. , , ,		•				
	Laver (II O	pservea):										
		oservea):										
Type:	None				_		l le caleda	!! 40		Vaa	NI-	v
	None				-		Hydric	soil present?		Yes	No	x
Type: Depth (ir Remarks:	None nches): N/	Ά			<u>-</u>		Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (ir Remarks:	None	Ά			<u>-</u>		Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in Remarks:	None nches): N/	Ά			<u>-</u>		Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in Remarks:	None nches): N/	Ά			- -		Hydric	soil present?		Yes	No	<u>x</u>
Type: Depth (in Remarks:	None nches): N/	Ά			-		Hydric	soil present?		Yes	No	x
Type: Depth (in Remarks:	None nches): N/	Ά			_		Hydric	soil present?		Yes	No	x
Type: Depth (in Remarks:	None nches): N/	Ά			-		Hydric	soil present?		Yes	No	x
Type: Depth (in Remarks:	None nches): N/	Ά			<u>-</u>		Hydric :	soil present?		Yes	No	x
Type: Depth (ir Remarks:	None nches): N/	Ά			<u>-</u>		Hydric :	soil present?		Yes	No	X
Type: Depth (in Remarks:	None nches): N/	Ά			-		Hydric :	soil present?		Yes	No	<u>x</u>
Type: Depth (in Remarks:	None nches): N/	Ά			-		Hydric :	soil present?		Yes	No	<u>x</u>
Type: Depth (in temarks:	None nches): N/	Ά			-		Hydric :	soil present?		Yes	No	X
Type: Depth (in temarks:	None nches): N/	Ά			-		Hydric	soil present?		Yes	No	X
Type: Depth (in emarks:	None nches): N/	Ά			-		Hydric	soil present?		Yes	No	X
Type: Depth (in emarks:	None nches): N/	Ά			-		Hydric	soil present?		Yes	No	X
Type: Depth (in temarks:	None nches): N/	Ά			-		Hydric	soil present?		Yes	No	X
Type: Depth (in Remarks:	None nches): N/	Ά			-		Hydric	soil present?		Yes	No	X
Type: Depth (ir Remarks:	None nches): N/	Ά			-		Hydric	soil present?		Yes	No	X
Type: Depth (ir Remarks:	None nches): N/	Ά			<u>-</u>		Hydric	soil present?		Yes	No	X
Type: Depth (ir Remarks:	None nches): N/	Ά			-		Hydric	soil present?		Yes	No	X
Type: Depth (ir Remarks:	None nches): N/	Ά			<u>-</u>		Hydric	soil present?		Yes	No	X
Type: Depth (ir Remarks:	None nches): N/	Ά			<u>-</u>		Hydric	soil present?		Yes	No	X
Type: Depth (ir Remarks:	None nches): N/	Ά			<u>-</u>		Hydric	soil present?		Yes	No	X
Type: Depth (in Remarks:	None nches): N/	Ά					Hydric	soil present?		Yes	No	X
Type: Depth (ir Remarks:	None nches): N/	Ά					Hydric	soil present?		Yes	No	X
Type: Depth (ir emarks:	None nches): N/	Ά					Hydric	soil present?		Yes	No	X

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.:	Wetland 12	Project/Site:	I-69 Ohio River Crossing
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Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	1	Small wetland size limits this function.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	1	Small wetland size limits this function.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	1	Small wetland size limits this function.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	1	Small wetland size limits this function.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	0	This wetland does not provide this function.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	1	Small wetland size limits this function.

Total Score 5

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossin	ıg	City	//County: Henderson/He	lenderson	Sampling Date:	October 2, 2018
Applicant/Owner: INDOT (Des#:10	601700); KYTC (KYTC	C#:2-1088)		State: KY	Sampling Point:	DP-13-IN
Investigator(s): L. Postaski		Sect	tion, Township, Range:	NA		
Landform (hillslope, terrace, etc.):	Roadside ditch	Loca	al relief (concave, conve	/ex, none): Co	ncave Slo	ppe (%): 2
Subregion (LRR or MLRA): MLRA 1	20A	Lat: <u>37.82465</u>	L	Long: <u>-87.5678</u>	39 Da	atum: NAD-1983
Soil Map Unit Name: Dekoven silt l	oam			1	NWI classification: N	A
Are climatic / hydrologic conditions of	on the site typical for th	nis time of the ye	ear? Yes X	No (If no, explain in Rema	arks.)
	, or Hydrology			normal circums	stances" present?	Yes X No
Are vegetation, Soil	, or Hydrology	_naturally proble	ematic? No (If nee	eded, explain a	any answers in Rema	rks.)
SUMMARY OF FINDINGS –	Attach site map	showing sar	mpling point locat	tions, trans	sects, important	features, etc.
Hydrophytic Vegetation Present?	Yes X	No	Is the Sampled Area	- within a		
Hydric Soil Present?	Yes X	No	Wetland?		Yes X No	
Wetland Hydrology Present?	Yes X	No	ı			
WOTUS 2018 ID: WTL-47						
HYDROLOGY						
Wetland Hydrology Indicators:				Secor	ndary Indicators (mini	imum of two required)
Primary Indicators (minimum of on	ne is required; check al	il that apply)			Surface Soil Cracks (E	•
Surface Water (A1)	_	True Aquatic Pla	ants (B14)	<u> </u>	Sparsely Vegetated C	oncave Surface (B8)
X High Water Table (A2)	'	Hydrogen Sulfide	e Odor (C1)		Orainage Patterns (B1	•
X Saturation (A3)		Oxidized Rhizos	pheres on Living Roots	(C3) N	Moss Trim Lines (B16)
Water Marks (B1)		Presence of Red	• •		Ory-Season Water Tal	• •
X Sediment Deposits (B2)			luction in Tilled Soils (C		Crayfish Burrows (C8)	
Drift Deposits (B3)		Thin Muck Surface	• •	_	Saturation Visible on A	
Algal Mat or Crust (B4)	_ '	Other (Explain in	ı Remarks)		Stunted or Stressed P	, ,
Iron Deposits (B5)	(27)			_	Geomorphic Position (
Inundation Visible on Aerial Ir	nagery (B1)				Shallow Aquitard (D3)	
X Water-Stained Leaves (B9)				·	Microtopographic Reli	
Aquatic Fauna (B13)				<u>X</u> F	FAC-Neutral Test (D5))
Field Observations:	No. V	District (in almost)				
Surface water present?	Yes Y No X	Depth (inches): Depth (inches):				
Water table present? Saturation present?	Yes X No	,		and Hudrolog	Bracont? Voe	V No
(includes capillary fringe)	Yes <u>X</u> No	Depth (inches):	. 5 Wella	and Hydrolog	y Presentr 1es	XNo
Describe Recorded Data (stream	gauge, monitoring well	l, aerial photos, r	previous inspections), if	f available:		
Remarks:	rook drains into this we	offend A 2' v 5' h	ear inlat is present on th	ho wastern hai	undary of this wetland	<u> </u>
A tributary to North Fork Canoe Cr	eek uranis into tins we	Allanu. A o x o b	OX lillet is present on th	He western bot	JIIdary Or triis wettario	J.

VEGETATION (Four Strata) - Use scientific names of plants

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' diameter) 1	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
2				
3				Total Number of Dominant Species Across all Strata: 4 (B)
4				Percent of Dominant Species that
5				are OBL, FACW, or FAC: 100.00% (A/B)
6				
7				Prevalence Index worksheet
	0	= Total Cove	-	Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species 80 x 1 = 80
Sapliing/Shrub Stratum (Plot Size: 15' diameter)		•		FACW species 30 x 2 = 60
1 Fraxinus pennsylvanica	5	Υ	FACW	FAC species 0 x 3 = 6
2 Salix interior	2	Υ	FACW	FACU species
3 Acer saccharinum	2	Υ	FACW	UPL species
4				Column totals 110 (A) 146 (B)
5				
6				Prevalence Index = B/A = 1.33
7				Hydrophytic Vegetation Indicators:
8				X 1 -Rapid Test for Hydrophytic Vegetation
9				X 2 - Dominance Test is >50%
	9	= Total Cove	•	X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 4.5	20%	of total cover:	1.8	4 - Morphological Adaptations (Provide supporting data
Herb Stratum (Plot Size: 5' diameter)		•		in Remarks or on a separate sheet)
1 Typha angustifolia	80	Υ	OBL	Problematic Hydrophytic Vegetation (Explain)
2 Phalaris arundinacea	15	N	FACW	
3				¹ Indicators of hydric soil and wetland hydrology must be
4				present, unless disturbed or problematic
5				Definitions of Four Vegetation Strata:
6				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
7				in diameter at breast height (DBH), regardless of height.
8				Sapling/shrub - Woody plants, excluding vines, less than 3
9				in. DBH and greater than or equal to 3.28 ft (1m) tall.
10				Herb - All herbaceous (non-woody) plants, regardless of
11				size, and woody plants less than 3.28 ft tall.
	95	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in
50% of total cover: 47.5	20%	of total cover:	19	height.
Woody Vine Stratum (Plot Size: 30' diameter)				
1				
2				
4				Hydrophytic
5				Hydrophytic Vegetation
	0	= Total Cover		Present? Yes X No
50% of total cover:0	20%	of total cover:	0	
Remarks: (Include photo numbers here or on a separate	sheet.)			1
The area is predominantly emergent with minimal sapling	growth.			

Sampling Point:

DP-13-IN

SOIL

Sampling Point: DP-13-IN

ches)		Matrix	0/	0.1		ox Feature		1 - : 0	-			_	
	Color (r		<u>%</u>		(moist)	<u>%</u>	Type ¹	Loc2	Textu		-	Re	marks
-5		3 / 2	85	10YR	4 / 4	15	<u> </u>	M	Silty clay				
20	10YR	4 / 1	70	10YR	4 / 6	30	С	M	Silty clay	ioam			
		_											
		_											
											-		
o: C=C	`oncontratio	n D=Donk	otion DM	-Doduco	d Matrix C	S=Covere	d or Co	tod Cond	Craina	² l continu	: PL=Pore	Lining M	I-Motrix
	Concentration		elion, Rivi	-Reduce	u Mali IX, C	3-Covere	eu or Coa	aleu Sanu	Giallis.				
	I Indicators	; :											Hydric Soils
listisol					Dark Surf					_	Muck (A10		-
listic E	pipedon (A2	2)							147, 148)	Coas	t Prairie R	edox (A16	6)
	istic (A3)				Thin Dark			.RA 147, 1	48)		RA 147,148	•	
-	en Sulfide (A				Loamy Gl						mont Flood		s (F19)
tratifie	d Layers (A	5)		X	Depleted	Matrix (F3	3)			•	ILRA 136,	•	
	ucky Minera				Redox Da						Shallow D		
	d Below Da		(A11)		Depleted					Othe	r (Explain i	n Remark	(s)
Thick D	ark Surface	(A12)			Redox De	•							
Sandy	Mucky Min	eral (S1) (I	LRR N,		Iron-Mang		asses (F	12) (LRR	N,				
	A 147, 148)					RA 136)							
	Gleyed Matri	ix (S4)			Umbric St	urface (F1	(MLR	A 136,12	2)	3Indicato	rs of hvdro	ohvtic ved	getation and
Sandy F	Redox (S5)				Piedmont	Floodplai	in Soils (F19) (ML I	RA 148)		nydrology r		
Stripped	d Matrix (S6))			Red Pare	nt Materia	al (F21) (MLRA 12	7, 147)	unless d	sturbed or	problema	tic.
strictive	Layer (if o	h a a m (a d).											
		bservea):											
	None	bserved):				_							
Type: Depth (ir marks:	None nches): N/	/A		matrix (F3	3) and deple	eted belov	v dark sı		soil present	?	Yes_	<u>x</u>	No
Type: Depth (ir marks:	None nches): N/	/A		matrix (F:	3) and deple	eted belov	w dark su			?	Yes_	<u>x</u>	No

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossin	ng	C	City/County: Henderson/Henderson Sampling Date: October 2, 2018					
Applicant/Owner: INDOT (Des#: 1601700); KYTC (#2-1088)			State: KY Sampling Point DP-13-OUT					
Investigator(s): L. Postaski		So	Section, Township, Range: NA					
Landform (hillslope, terrace, etc.):	Hillslope	L	ocal relief (concave	, convex, none): (Convex	Slope (%):	2	
Subregion (LRR or MLRA): MLRA 1	120A	Lat: 37.82467	7	Long: <u>-87.56</u>	791	Datum: N	IAD-1983	
Soil Map Unit Name: Dekoven silt	loam				NWI classificati	ion: NA		
Are climatic / hydrologic conditions	on the site typical for	this time of the	e year? Yes _	X No	(If no, explain in	Remarks.)		
	, or Hydrology			Are "normal circur	nstances" preser	nt? Yes _	X No	
Are vegetation, Soil	, or Hydrology	naturally pro	oblematic? No	(If needed, explair	n any answers in	Remarks.)		
SUMMARY OF FINDINGS -	· Attach site mar	showing s	sampling point	locations, trai	nsects, impo	rtant featu	res, etc.	
Hydrophytic Vegetation Present?	Yes	No X	Is the Sampled	 N ∆rea within a				
Hydric Soil Present?	Yes	No X	Wetland?	I Alea within a	Yes	No X		
Wetland Hydrology Present?	Yes	No X						
Remarks: This upland is west of WOTUS 2018 ID: WTL-47	00 +1 and 300th 0. 2	JUIT IVOGG. 1 HOC	oneany, the area ap	pears to have bee	III disturbed by 33	Jisti dellon e.		J3 41.
HYDROLOGY		_			_	_	_	_
Wetland Hydrology Indicators:				Sec	condary Indicators	s (minimum of	f two requir	ed)
Primary Indicators (minimum of o	ne is required; check	all that apply)			Surface Soil Cra	acks (B6)		
Surface Water (A1)		True Aquatic I	Plants (B14)	_	Sparsely Vegeta	ated Concave	Surface (B	i8)
High Water Table (A2)	_	Ifide Odor (C1)	_	Drainage Patter	ns (B10)			
Saturation (A3)	_		zospheres on Living	Roots (C3)	Moss Trim Lines	s (B16)		
Water Marks (B1)	_	Presence of R	of Reduced Iron (C4) Dry-Season Water Table (C2)					
Sediment Deposits (B2)	_		Reduction in Tilled S	oils (C6)	Crayfish Burrow	, ,		
Drift Deposits (B3)	_	Thin Muck Su		_	Saturation Visib)
Algal Mat or Crust (B4)	_	Other (Explain	n in Remarks)	_	Stunted or Stres	•)1)	
Iron Deposits (B5)	<u>-</u> -			_	Geomorphic Pos	` ,		
Inundation Visible on Aerial I	magery (B7)			_	Shallow Aquitar			
Water-Stained Leaves (B9)				_	Microtopographi	, ,		
Aquatic Fauna (B13)				<u> </u>	FAC-Neutral Te	st (D5)		
Field Observations:	V No V	Dth /inch						
Surface water present?	Yes No X	- ' '	· -					
Water table present? Saturation present?	Yes No X		· 	Watland Hydrol	any Dracant?	Voe	No	No
(includes capillary fringe)	Yes No_X	Depth (inche	es): >20	Wetland Hydrolo	ogy Present?	Yes	_ No	No
Describe Recorded Data (stream	gauge, monitoring we	ell, aerial photo	os, previous inspecti	ons), if available:				
Remarks:								

VEGETATION (Four Strata) - Use scientific names of plants

		Absolute	Dominant	Indicator	Dominance Test	worksheet:			
	ot Size: 30' diameter)	% Cover	Species?	Status	Number of Domina	•	Γhat	•	(4)
1					Are OBL, FACW, o			0	(A)
					Total Number of D Across all Strata:	ominant Spe	ecies	1	(B)
4						. (0		•	_ (=)
5					Percent of Domina are OBL, FACW, of	•	nat	0.00%	(A/B)
0									_ ` ´
7		0.5			Prevalence Index	worksheet			
'		0	= Total Cove	r	Total % Cov	ver of:	Mul	tiply by:	_
	50% of total cover: 0	20%	of total cover:	0	OBL species	0	x 1 =	0	_
Sapliing/Shrub Stratur	m (Plot Size: 15' diameter)				FACW species	0	x 2 =	0	_
1		· ·			FAC species	0	x 3 =	0	_
2					FACU species	105	x 4 =	420	_
3					UPL species	0	x 5 =	0	_
4					Column totals	105	(A)	420	(B)
5									
6						lence Index		4.00	
7					Hydrophytic Vege				
8		·			1 -Rapid Test			ation	
9					2 - Dominance				
		0	= Total Cove		3 - Prevalence				
	50% of total cover:	20%	of total cover:	0	4 - Morphologi in Remarks or			ide suppor	ting data
	ot Size: 5' diameter)		v	E4.011				1 /=	
1 Cynodon dacty		80	<u> </u>	FACU	Problematic H	yaropnytic v	egetation	(Explain)	
2 Schedonorus a Sorghum halei		15		FACU	1	9	. 0 1 1		
3 Sorghum hale	perise	10	<u>N</u>	FACU	¹ Indicators of hydri present, unless dis				st be
F					Definitions of Fou				
					Tree - Woody plan	_		n. (7.6 cm)	or more
7		. ———			in diameter at brea				
8					Sapling/shrub - V	Voody plants	, excludin	g vines, les	s than 3
9					in. DBH and greate				
10					Herb - All herbace	ous (non-wo	odv) plan	ts regardle	ss of
11					size, and woody pl	•			
-		105	= Total Cover		Woody vines - All	woody vines	s areater t	han 3 28 ft	in
_	50% of total cover: 52.5	20%	of total cover:	21	height.	woody vinc.	s greater t		
Woody Vine Stratum	(Plot Size: 30' diameter)	•	•						
1	· · · · · · · · · · · · · · · · · · ·								
2		0.5							
4					l				
5					Hydrophytic Vegetation				
		0	= Total Cover		Present?	Yes	·	No X	_
	50% of total cover: 0	20%	of total cover:	0					_
Remarks: (Include pho	oto numbers here or on a separate	sheet.)							
Vegetation in this area	a appears to be frequently maintain	ned.							

Sampling Point: DP-13-OUT

SOIL

Sampling Point: DP-13-OUT

		Matrix	0/	<u> </u>		ox Featu		1	- ,			D	
hes)	Color (m		<u>%</u>	Colo	(moist)	%	Type	Loc2	Textu	re		Remarks	
12		5 / 3	100	403/5					Silt loam				
-20	10YR 5	5 / 3	85	10YR	5 / 2	15	C	M	Silt loam				
										2			
	oncentration		etion, RM	=Reduce	ed Matrix, C	S=Cove	red or Coa	ated Sand	Grains.		: PL=Pore Lin		
dric Soil	Indicators:									Indicato	rs for Proble	matic Hydric	Soils*:
Histisol				_	Dark Surf	ace (S7))			_	Muck (A10) (I		
Histic Ep	pipedon (A2))			Polyvalue	Below S	Surface (S	8) (MLRA	147, 148)	Coas	Prairie Redo	x (A16)	
Black Hi	stic (A3)			_	Thin Dark	Surface	(S9) (ML	.RA 147, 1	48)	(MLR	A 147,148)		
Hydroge	n Sulfide (A	4)			Loamy GI	eyed Ma	atrix (F2)			Piedn	nont Floodplai	n Soils (F19)	
Stratified	d Layers (A5)			Depleted	Matrix (F	- 3)			(M	LRA 136, 147	')	
2 cm Mu	icky Mineral	(A10) (LF	RR N)		Redox Da	ırk Surfa	ce (F6)			Very	Shallow Dark	Surface (TF1:	2)
Deplete	d Below Darl	k Suface ((A11)	_	Depleted	Dark Su	rface (F7)			Other	(Explain in R	emarks)	
Thick Da	ark Surface (A12)		_	Redox De	pression	ns (F8)						
Sandy	Mucky Mine	ral (S1) (I	LRR N,		Iron-Mano	ganese N	Лasses (F	12) (LRR	٧,				
MLR	A 147, 148)				MLI	RA 136)							
Sandy G	Sleyed Matrix	(S4)			Umbric S	urface (F	13) (MLR	A 136,122)	3Indicator	s of hydrophy	tic vegetation	and
Sandy F	Redox (S5)				Piedmont	Floodpla	ain Soils (F19) (MLF	A 148)		ydrology mus		anu
Stripped	Matrix (S6)				Red Pare	nt Mater	ial (F21) (MLRA 127	, 147)		sturbed or pro		
strictive	Layer (if ob	served):			<u> </u>								
Туре:	None												
Depth (in								Hydric	soil present?	>	Yes	No	X
	ches): N/A	4										_	
	ches): N/A	4				_							
marks:			ocation.										
marks:	ches): N/A		ocation.										
marks:			ocation.			<u>-</u>							
narks:			ocation.										
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WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.:	Wetland 13	Project/Site:	I-69 Ohio River Crossing

Function/Value	Score	Comments
Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events.	1	Small wetland size limits this function.
Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants.	1	Small wetland size limits this function.
Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself.	1	Small wetland size limits this function.
Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals.	1	Small wetland size limits this function.
Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals.	0	This wetland does not provide this function.
Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland.	1	Small wetland size limits this function.

Total Score 5

Score	Potential to Provide Desirable Wetland Functions and Values
0	None
1	Poor
2	Low
3	Moderate
4	High
5	Very High

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Cr	ossing	City/County: Evansvill	le/Vanderburgh	Sampling Date:	4/23/2019
Applicant/Owner: INDOT (Des	#:1601700); KYTC (#2-108	38)	State: IN	Sampling Point:	UPL-05
Investigator(s): Luke Eggering]	Section, Township, Rang	je:	N/A	
Landform (hillslope, terrace, etc.):	Road ditch/swale	Local relief (concave, co	nvex, none):	Convex Slope (%):1%
Subregion (LRR or MLRA): MLRA	. 120A Lat:	37.81527 L	_ong:	7.5628 Datum:	NAD-1983
Soil Map Unit Name: Uniontown	silt loam, 0 to 2 percent slo	opes, rarely flooded	NW	/I classification:	NA
Are climatic / hydrologic conditions				no, explain in Remarks.)	
· · · · · · · · · · · · · · · · · · ·	_, or Hydrologysignificant				X No
Are vegetation, Soil	, or Hydrologynaturally p	problematic? No (If n	needed, explain any	answers in Remarks.)	
SUMMARY OF FINDINGS -	Attach site map showing	sampling point loc	ations, transe	cts, important feat	ures, etc.
Hydrophytic Vegetation Present?	Yes <u>X</u> No	_			
Hydric Soil Present?	Yes No X	Is the Sampled Ar Wetland?		es No 2	x
Wetland Hydrology Present?	Yes X No				<u>~</u>
Remarks: This datanoint is	located at the downstream	end of a roadside su	wale located ear	st of the Edward T	Breathitt Pennyrile
	d in, causing the swale to po				•
WOTUS 2018 ID: NA.					
HYDROLOGY					
Wetland Hydrology Indicators:			Seconda	ary Indicators (minimum	of two required)
Primary Indicators (minimum of or	ne is required; check all that apply)	Surf	face Soil Cracks (B6)	
X Surface Water (A1)	True Aquati	ic Plants (B14)	Spa	rsely Vegetated Concav	e Surface (B8)
High Water Table (A2)	Hydrogen S	Sulfide Odor (C1)	Drai	inage Patterns (B10)	
X Saturation (A3)	Oxidized Rh	hizospheres on Living Roo	ots (C3) Mos	ss Trim Lines (B16)	
Water Marks (B1)	Presence of	f Reduced Iron (C4)	Dry-	-Season Water Table (C	2)
Sediment Deposits (B2)		Reduction in Tilled Soils	· · · —	yfish Burrows (C8)	
Drift Deposits (B3)		Surface (C7)		uration Visible on Aerial	Imagery (C9)
Algal Mat or Crust (B4)	Other (Expla	ain in Remarks)		omorphic Position (D2)	
Iron Deposits (B5)				Illow Aquitard (D3)	
Inundation Visible on Aerial II	nagery (B7)			rotopographic Relief (D4	·)
Water-Stained Leaves (B9)			FAC	C-Neutral Test (D5)	
Aquatic Fauna (B13)					
Field Observations:					
Surface water present?	Yes X No Depth (inc				
Water table present?	Yes No X Depth (inc				
Saturation present? (includes capillary fringe)	Yes X No Depth (inc	ches): 0 We	etland Hydrology F	Present? Yes X	No
Describe Recorded Data (stream	gauge, monitoring well, aerial pho	tos, previous inspections)	, if available:		
Remarks: The hydrology of	this swale would be lost wi	ith routine maintenar	nce of the roads	ide swale. The swa	le had water from
recent stormwater events.					

VEGETATION (Four Strata) - Use scientific names of plants Sampling Point:

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot Size: 30' radius)	% Cover	Species?	Status	Number of Dominant Species That
1	_			Are OBL, FACW, or FAC:1 (A)
2				Total Number of Dominant Species
3	_			Across all Strata: 2 (B)
4				Percent of Dominant Species that
5				are OBL, FACW, or FAC:
6				
7				Prevalence Index worksheet
	0	= Total Cover	•	Total % Cover of: Multiply by:
50% of total cover: 0	20%	of total cover:	0	OBL species 0 x 1 = 0
Sapliing/Shrub Stratum (Plot Size: 15' radius)			FACW species 30 x 2 = 60
1	_			FAC species 0 x 3 = 0
2				FACU species 20 x 4 = 80
2				UPL species 5 x 5 = 25
				Column totals 55 (A) 165 (B)
5			_	
5	-			Prevalence Index = B/A = 3.00
0				Hydrophytic Vegetation Indicators:
8				1 -Rapid Test for Hydrophytic Vegetation
0	-	· 	_	2 - Dominance Test is >50%
* <u></u>	0	= Total Cover		X 3 - Prevalence Index is ≤3.0 ¹
50% of total cover: 0		of total cover:	0	4 - Morphological Adaptations ¹ (Provide supporting data
Herb Stratum (Plot Size: 5' radius)		or total cover.		in Remarks or on a separate sheet)
1 Ludwigia alternifolia	30	Υ	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2 Schedonorus arundinacea	20	<u> </u>	FACU	
3 Daucus carota	5	<u> </u>	UPL	
Daucus carota			OI L	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
				Definitions of Four Vegetation Strata:
5				Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more
0				in diameter at breast height (DBH), regardless of height.
				Sapling/shrub - Woody plants, excluding vines, less than 3
°				in. DBH and greater than or equal to 3.28 ft (1m) tall.
9				Harbanda and Allahaman and National American
10	-	· 		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
11		T.1.1.0.		
	55	= Total Cover		Woody vines - All woody vines greater than 3.28 ft in height.
50% of total cover: 27.5	_ 20%	of total cover:	11	neight.
Woody Vine Stratum (Plot Size: 30' radius	_)			
1				
2				
2	-			
3				
4				Hydrophytic
4				Hydrophytic Vegetation
4	0	= Total Cover		

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

Vegetation at this data point is routinely mowed and approximately 40% of the area is unvegetated. Carex spp. was present at this data point (10%), however, it was mowed and not possible to identify to the species level. Seedbox (Ludwigia alternifolia) was dominant in the wettest portion of the swale. The tall fescue (Schedonorus arundinacea) became dominant near the drier edges of the swale.

UPL-05

SOIL

Sampling Point: UPL-05

Profile Description: (Describe to the depth nee	eded to document the indic	cator or confirm the a	bsence of indicators.)
	or (moist) % Type	e ¹ Loc2 T	exture Remarks
0-8 2.5Y 4 / 3 100	<u> </u>		t loam
8-15 10YR 6 / 4 90 2.5Y	5 / 2 10 C		t loam
15-20 10YR 4 / 3 100			t loam
¹ Type: C=Concentration, D=Depletion, RM=Redu	ced Matrix, CS=Covered or C	Coated Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:			Indicators for Problematic Hydric Soils ³ :
Histisol (A1)	Dark Surface (S7)		2 cm Muck (A10) (MLRA 147)
Histic Epipedon (A2)	Polyvalue Below Surface	(S8) (MLRA 147, 148	Coast Prairie Redox (A16)
Black Histic (A3)	Thin Dark Surface (S9) (MLRA 147, 148)	(MLRA 147,148)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2	2)	Piedmont Floodplain Soils (F19)
Stratified Layers (A5)	Depleted Matrix (F3)		(MLRA 136, 147)
2 cm Mucky Mineral (A10) (LRR N)	Redox Dark Surface (F6))	Very Shallow Dark Surface (TF12)
Depleted Below Dark Suface (A11)	Depleted Dark Surface (F	=7)	Other (Explain in Remarks)
Thick Dark Surface (A12)	Redox Depressions (F8)		
Sandy Mucky Mineral (S1) (LRR N,	Iron-Manganese Masses	(F12) (LRR N,	
MLRA 147, 148)	MLRA 136)		
Sandy Gleyed Matrix (S4)	Umbric Surface (F13) (M	LRA 136,122)	³ Indicators of hydrophytic vegetation and
Sandy Redox (S5)	Piedmont Floodplain Soil	s (F19) (MLRA 148)	wetland hydrology must be present,
Stripped Matrix (S6)	Red Parent Material (F21	I) (MLRA 127, 147)	unless disturbed or problematic.
Restrictive Layer (if observed):			
Type: None			
Depth (inches): N/A		Hydric soil pres	ent? Yes NoX
The soil appears to be fill material from upstream agriculture.	US 41. The downstrea	m end of the swale	e appears to have been filled with silt from



APPENDIX E

Stream Data Forms

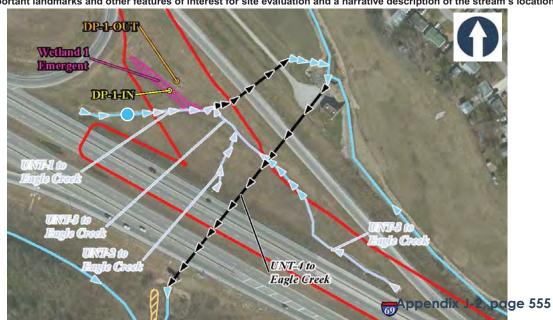


27

SITE NAME/LOCATION UNT-1 to Eagle Creek	-
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <1	-
LENGTH OF STREAM REACH (ft) 200 LAT. 37.93854 LONG87.53897 RIVER CODE N/A RIVER MILE N/A DATE 08/17/18 SCORER Luke F. Eggering COMMENTS Concrete-lined ephemeral channel in interchange	-
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruction	-
STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECENT OR NO RECOVERY MODIFICATIONS:	
WODII ICATIONS.	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] HH Met Percent SILT [3 pt] LEAF PACK/WOODY DEBRIS [3 pts] LEAF PACK/WOODY DEBRIS [3 pts] CLAY or HARDPAN [0 pt] MUCK [0 pts] MUCK [0 pts]	ric nts trate
□ □ SAND (<2 mm) [6 pts] 0 ARTIFICIAL [3 pts] 100	╝
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	В
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	 epth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): > 30 centimeters [20 pts]	-
COMMENTS The concrete channel is wet from recent rainfall. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check <i>ONLY</i> one box): > 4.0 meters (> 13') [30 pts]	th =30
This information <u>must</u> also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY RIPARIAN WIDTH (Per Bank) Wide >10m Mature Forest, Wetland Immature Forest, Shrub or Old Field Narrow <5m None Residential, Park, New Field Comments an infrequently maintained interchange area. NOTE: River Left (L) and Right (R) as looking downstream NOTE: River Left (L) and Right (R) as looking downstream NOTE: River Left (L) and Right (R) as looking downstream NOTE: River Left (L) and Right (R) as looking downstream NOTE: River Left (L) and Right (R) as looking downstream L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS The concrete is wet from previous night's rain. Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 0.5 1.5 2.5 >3	
STREAM GRADIENT ESTIMATE ☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate	_

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A	(If Yes, Attach Completed QHEI Form)
CWH Name:	
BWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENT	IRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Evansville South, IN-KY	NRCS Soil Map Page: N/A NRCS Soil Map Stream Order
	nip / City:
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	7/18 Quantity:
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 0	
Were samples collected for water chemistry? (Y/N): N/A (Note lab	sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not, p	olease explain:
Additional comments/description of pollution impacts:Roadside debris	is present in the area.
BIOTIC EVALUATION	
· , ———	collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Aquation	
Comments Regarding Biology:	
This is a low-quality concrete lined ephemeral channel in the I-69/US Overall, there is limited habitat for aquatic life. It is anticipated that approximately the control of the control	

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi 2) <1	
LENGTH OF STREAM REACH (ft) 167 LAT. 37.93811 LONG87.53802 RIVER CODE N/A RIVER MILE N/A	Α
DATE 08/17/18 SCORER Luke F. Eggering COMMENTS Ephemeral channel in interchange	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru	uctions
STREAM CHANNEL	VFRY
MODIFICATIONS:	VEICI
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE PERCENT TYPE PERCENT □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	Metric Points
□ □ BLDR SLABS [16 pts] 0 □ SILT [3 pt] 15 □ □ □ □ □ LEAF PACK/WOODY DEBRIS [3 pts] 10	1 011113
BEDROCK [16 pt] 0 FINE DETRITUS [3 pts] 5	Substrate Max = 40
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ CLAY or HARDPAN [0 pt] 70 ☐ ☐ GRAVEL (2-64 mm) [9 pts] 0 ☐ ☐ MUCK [0 pts] 0	
□ GRAVEL (2-64 mm) [9 pts] 0 □ MUCK [0 pts] 0 □ SAND (<2 mm) [6 pts]	7
Total of Percentages of (A)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock 0 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Max = 30
□ > 30 centimeters [20 pts] □ > 5 cm - 10 cm [15 pts] □ > 22.5 - 30 cm [30 pts] □ < 5 cm [5 pts]	0
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfull
2 > 4.0 meters (> 13') [30 pts] 2 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 1.0 m (> 3' 3") [5 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] 3.0	Width
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 1.0 m (> 3' 3") [5 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] 3.0	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY AVERAGE BANKFULL WIDTH (meters) This information must also be completed RIPARIAN WIDTH FLOODPLAIN QUALITY FLOODPLAIN QUALITY	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY AVERAGE BANKFULL WIDTH (meters) This information function must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream ☆	Width Max=30
> 4.0 meters (> 13') [30 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream ⅓ RIPARIAN WIDTH L R (Per Bank)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY PLOODPLAIN QUALITY RIPARIAN WIDTH L R (Per Bank) Wide >10 m Mature Forest, Wetland Moderate 5-10m Narrow <5m Narrow <5m Narrow <5m Narrow <5m Residential, Park, New Field Residential, Park, New Field COMMENTS This is an infrequently maintained interchange area. FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Moist Channel, isolated pools, no flow (Intermittent)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH L R (Per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m Moderate 5-10m Residential, Park, New Field Narrow <5m None COMMENTS This is an infrequently maintained interchange area. FLOW REGIME (At Time of Evaluation) Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS Stormwater from previous night's rain is present in a few low-lying areas, SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): Check ONLY one box): SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream AND FLOODPLAIN QUALITY L R (Per Bank)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7' - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7' - 13') [25 pts]	Width Max=30

ADDITIONAL STREAM INFORMATION (This Information Must Also be	e Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream 1.0 mile
CWH Name:	Distance from Evaluated Stream
BWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIR	RE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:	IRCS Soil Map Page: NRCS Soil Map Stream Order
	o / City: Evansville
MISCELLANEOUS	
Base Flow Conditions? (Y/N): No Date of last precipitation: 08/17/1	8 Quantity: 0.5 inch
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 0	
Were samples collected for water chemistry? (Y/N): $\underline{\hspace{1cm}^{N/A}}$ (Note lab sa	mple no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not, ple	ease explain:
Additional comments/description of pollution impacts: This is a fairly straightful additional comments.	ght eroded stream/ditch in the US-41/I-69 interchange. Roadside
debris is present in the area. Herbicide appears to have been used on	
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher of ID number. Include appropriate field data shaped in the control of the cont	ollections optional. NOTE: all voucher samples must be labeled with the site neets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observeds or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic N	
Comments Regarding Biology:	
This deeply incised, eroded, ephemeral channel is generally low quality erosion starts where the riprap ends. A few scattered crayfish burrows species, but traffic disturbance minimizes benefits to wildlife. The entire	were observed. In this area, there is marginal habitat for upland

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location DP-1-OUT Welland 1 Emergent DP-1-IN UNT-4 to Eagle Creek Appendix 1-2 page 557

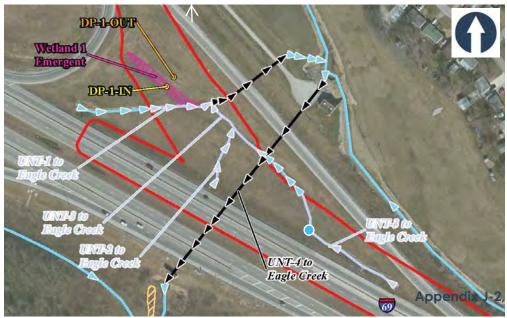


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N1/A N1/A	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi ²) \leq	:1
LENGTH OF STREAM REACH (ft) 200 LAT. 37.93771 LONG87.53727 RIVER CODE N/A RIVER MILE	N/A
DATE 08/17/18 SCORER Luke F. Eggering COMMENTS Ephemeral channel in interchange	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Ins	tructions
STREAM CHANNEL	COVERY
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE PERCENT TYPE PERCENT	Metric
□ □ BLDR SLABS [16 pts] 0 □ SILT [3 pt] 30 □ BOULDER (>256 mm) [16 pts] 0 □ LEAF PACK/WOODY DEBRIS [3 pts] 0	Points
BEDROCK [16 pt] BEDROCK [16 pt] BEDROCK [16 pt] BEDROCK [16 pt] BEDROCK [16 pt] BEDROCK [16 pt] BEDROCK [16 pt]	Substrate
☐ ☐ COBBLE (65-256 mm) [12 pts] 0	Max = 40
☐ ☐ GRAVEL (2-64 mm) [9 pts] ☐ ☐ MUCK [0 pts] ☐ 0 ☐ ARTIFICIAL [3 pts] 0 ☐ 0	6
SAND (12 IIIIII) [0 pts]	
Total of Percentages of (A) Bldr Slabs, Boulder, Cobble, Bedrock0 3	A+B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	i
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
25 centaineters [26 pts]	0
□ > 10 - 22.5 cm [25 pts] ■ NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS This is an eroded ephemeral channel. MAXIMUM POOL DEPTH (centimeters):	4
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfull
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	May=30
→ 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	
COMMENTSAVERAGE BANKFULL WIDTH (meters)AVERAGE BANKFULL WIDTH (meters)	
COMMENTSAVERAGE BANKFULL WIDTH (meters) This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY %NOTE: River Left (L) and Right (R) as looking downstream %	
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY L R (Per Bank) AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) L R (Most Predominant per Bank) L R	
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ∴ NOTE: River Left (L) and Right (R) as looking downstream ∴ RIPARIAN WIDTH ∴ R (Per Bank) ∴ R (Most Predominant per Bank) ∴ R (Wide >10m ∴ Mature Forest, Wetland ∴ Conservation Tillage	
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m AVERAGE BANKFULL WIDTH (meters) L R (Most Predominant per Bank) Mature Forest, Wetland Urban or Industrial	
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY L R (Per Bank) Wide >10m Moderate 5-10m AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) L R (Most Predominant per Bank) L R (Most Predominant per Bank) Mature Forest, Wetland L R (Description of Mature Forest, Shrub or Old Average BankFull Width (meters) L R (Most Predominant per Bank) L R (Most Predominant per Bank) Mature Forest, Shrub or Old Average BankFull Width (meters)	
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH L R (Per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m Narrow <5m Narrow <5m Residential, Park, New Field RVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) L R (Most Predominant per Loop Bank) L R (Most Predominant per Bank) L R (Most Predominant per Bank) L R (Most Predominant per Bank) L R (Description Tillage) Residential, Park, New Field Residential, Park, New Field Mining or Construction	5
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m AVERAGE BANKFULL WIDTH (meters) L R (Most Predominant per Bank) L R (Most Predominant per Bank) I Mature Forest, Wetland Open Pasture, Row Crop	5
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ♣ NOTE: River Left (L) and Right (R) as looking downstream ♣ RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m Mature Forest, Shrub or Old Urban or Industrial Narrow <5m None Residential, Park, New Field Open Pasture, Row Crop None Fenced Pasture Mining or Construction Comments of C	5
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m Narrow <5m None COMMENTS This is an infrequently maintained interchange area. FLOW REGIME (At Time of Evaluation) Subsurface flow with isolated pools (Interstitial) AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) 1.0 AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) AVERAGE BANKFULL WIDTH (persham) A	5
COMMENTS	5
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY Residentiant Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Crop Winner Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Mining or Construction Residential, Park, New Field Crop Crop Mining or Construction Residential, Park, New Field Crop Crop Mining or Construction Residential, Park, New Field Crop Crop Mining or Construction Residential, Park, New Field Crop Crop Crop Mining or Construction Residential, Park, New Field Crop Crop Crop Mining or Construction Residential, Park, New Field Crop Crop Crop Crop Mining or Construction Residential Park Crop Crop Crop Crop Crop Crop Mining or Construction Residential Park Crop Crop Crop Crop Crop Crop Crop Crop	5
AVERAGE BANKFULL WIDTH (meters) This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH FLOODPLAIN QUALITY Nide > 10	5
COMMENTS	5

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): **QHEI PERFORMED?** - \square Yes \blacksquare No QHEI Score $^{N/A}$ (If Yes, Attach Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) _____ Distance from Evaluated Stream _____1.0 mile WWH Name: Ohio River CWH Name: Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION Evansville South, IN-KY USGS Quadrangle Name:_ NRCS Soil Map Page:_____ NRCS Soil Map Stream Order____ County: ____ _____ Township / City: **MISCELLANEOUS** Base Flow Conditions? (Y/N):____ Date of last precipitation:____ 0.5 inch Quantity: Photograph Information: ____ Photos attached. _____ Canopy (% open): ___ Elevated Turbidity? (Y/N): No Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: _____ Temp (°C) $\frac{N/A}{}$ Dissolved Oxygen (mg/l) $\frac{N/A}{}$ pH (S.U.) $\frac{N/A}{}$ Conductivity (µmhos/cm) $\frac{N/A}{}$ Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A Additional comments/description of pollution impacts:_____A lot of roadway debris (aluminum cans, glass bottles, fast food containers, etc.) is present. Runoff is from US-41 and the interchange. **BIOTIC EVALUATION** Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Comments Regarding Biology: This ephemeral channel is an erosional feature that has developed an ordinary high water mark and stabilized a channel over time. The area is infrequently maintained through mowing or use of herbicides. A few crayfish burrows are present. Traffic minimizes benefits to wildlife. Overall, this channel is low quality. Approximately 130 feet of the stream will be enclosed in a culvert and 316 feet of the stream will be filled. A potential shift in the alignment to the existing US 41 ramp to the northeast could avoid these impacts.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):





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SITE NAME/LOCATION UNT-5 to Eagle Creek	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (m	
LENGTH OF STREAM REACH (ft) 10 LAT. 37.93642 LONG87.53343 RIVER CODE N/A RIVER MIDDATE 08/17/18 SCORER Luke F. Eggering COMMENTS Shallow ephemeral channel	LE N/A
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for	Instructions
·	
STREAM CHANNEL	RECOVERY
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE box (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE box (Max of 32). Final metric score is sum of boxes A & B. SILT [3 pt] BUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE box (Max of 32). Final metric score is sum of boxes A & B. SILT [3 pt] BUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE box (Max of 32). Final metric score is sum of boxes A & B.	HHEI Metric Points
BEDROCK [16 pt] 0 FINE DETRITUS [3 pts] 10	Substrate
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ CLAY or HARDPAN [0 pt]	Max = 40
□ □ GRAVEL (2-64 mm) [9 pts] □ □ MUCK [0 pts] □ □ ARTIFICIAL [3 pts] □ □ SAND (<2 mm) [6 pts]	6
Total of Percentages of (A)	A+B
Bldr Slabs, Boulder, Cobble, Bedrock0 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	3 7.5
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
□ > 22.5 - 30 cm [30 pts]	0
• • • • • • • • • • • • • • • • • • •	0
COMMENTS Dry ephemeral channel. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Bankfull Width Max=30
COMMENTS AVERAGE BANKFULL WIDTH (meters)	20
This information <u>must</u> also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH FLOODPLAIN QUALITY	र्द
L R (Per Bank) L R (Most Predominant per Bank) L R	
☐ ■ Wide >10m ☐ ■ Mature Forest, Wetland ☐ ☐ Conservation Till Immature Forest, Shrub or Old	
Field Orban or Industri	
■ □ Narrow <5m □ □ Residential, Park, New Field □ □ Open Pasture, R	OW
☐ ☐ None ☐ ☐ Fenced Pasture ☐ ☐ Mining or ConstruCOMMENTS Proximal to I-69.	uction
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Moist Channel, isolated pools, no flow (Intern Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral) COMMENTS Mostly dry channel with more water west of this stream reach.	nittent)
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None □ 1.0 □ 2.0 □ 3.0 0.5 □ 1.5 □ 2.5 □ >3	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft)	(10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Tyes No QHEI Score N/A (If Yes, Atta	ch Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream
CWH Name:	
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED	AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Evansville South, IN-KY NRCS Soil Map F	Page: NRCS Soil Map Stream Order
County: Vanderburgh County Township / City: Evansvil	lle
MISCELLANEOUS	
Base Flow Conditions? (Y/N): No Date of last precipitation: 08/17/18	Quantity:
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 0	
Were samples collected for water chemistry? (Y/N): $\frac{N/A}{}$ (Note lab sample no. or id. a	N/A and attach results) Lab Number:
Field Measures: Temp (°C) $\frac{N/A}{}$ Dissolved Oxygen (mg/l) $\frac{N/A}{}$ pH (S.U.) $\frac{N}{}$	/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not, please explain: N/A	4
Additional comments/description of pollution impacts: This ephemeral channel likely rece	eives runoff from I-69 during heavy rain events.
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optiona ID number. Include appropriate field data sheets from the Pri	•
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrate	
Comments Regarding Biology:	
This is a dry ephemeral channel north of I-69. Overall, this channel is low quality. This	channel would fall outside of the construction limits.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





21

SITE NAME/LOCATION UNT-6 to Eagle Creek	
SITE NUMBER_N/A RIVER BASIN_N/A DRAINAGE AREA (mi²) <1N/A	
LENGTH OF STREAM REACH (ft) 3 LAT. 37.93664 LONG87.52701 RIVER CODE N/A RIVER MILE N/A DATE 08/17/18 SCORER Luke F. Eggering COMMENTS Shallow ephemeral channel	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruc	
·	
STREAM CHANNEL	/ERY
MODIFICATIONS:	
BOULDER (>256 mm) [16 pts]	HHEI Metric Points
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ CLAY or HARDPAN [0 pt] 60	Max = 40
GRAVEL (2-64 mm) [9 pts] 0 MUCK [0 pts] 0	6
SAND (<2 mm) [0 pts]	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	A + B
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
□ > 22.5 - 30 cm [30 pts] □ < 5 cm [5 pts]	0
□ > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS This is a dry ephemeral channel. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check <i>ONLY</i> one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Bankfull Width Max=30
COMMENTS AVERAGE BANKFULL WIDTH (meters)	15
This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R	
Wide >10m Mature Forest, Wetland U Conservation Tillage Immature Forest, Shrub or Old Urban or Industrial	
Field - Open Pasture Row	
□ □ Narrow <5m □ □ Residential, Park, New Field □ □ Open Pasture, Row Crop □ □ None □ □ Fenced Pasture □ □ Mining or Construction	
COMMENTS This is a shallow channel through a forest.	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS House of Evaluation (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 0.5 1.5 2.5 >3	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft)	ft)

ADDITIONAL STREAM INFO	RMATION (This Information Mus	st Also be Completed):		
QHEI PERFORMEI	D? - ☐ Yes ■ No QHEI Score	N/A (If Yes, Attac	h Completed QHEI Form)	
DOWNSTREAM DE	ESIGNATED USE(S)		Distance from Evaluated Stream 2.0 miles	
			Distance from Evaluated Stream	_
			Distance from Evaluated Stream	_
		HE <u>ENTIRE</u> WATERSHED A	AREA. CLEARLY MARK THE SITE LOCATION	
USGS Quadrangle Name: Ev	ansville South, IN-KY	NRCS Soil Map Pa	nge: N/A NRCS Soil Map Stream Order 1	
County: Vanderburgh Count		Township / City:	9	
MISCELLANEOUS	;			
Base Flow Conditions? (Y/N):	No Date of last precipitation	08/17/18	Quantity:	
Photograph Information: Pho				_
Elevated Turbidity? (Y/N):	Canopy (% open): 0			
Were samples collected for w	rater chemistry? (Y/N): N/A (No	ote lab sample no. or id. ar	nd attach results) Lab Number:	_
Field Measures: Temp (°C	C) Dissolved Oxygen (mg/l) N/A pH (S.U.) N/	Conductivity (µmhos/cm) N/A	_
Is the sampling reach represe	entative of the stream (Y/N) N/A	If not, please explain: N/A		_
Additional comments/descript	ion of pollution impacts:			
BIOTIC EVALUAT	<u>ION</u>			
Performed? (Y/N): No	·		NOTE: all voucher samples must be labeled with the nary Headwater Habitat Assessment Manual)	site
	Voucher? (Y/N) No Salamand ? (Y/N) No Voucher? (Y/N) No		Voucher? (Y/N) No Sobserved? (Y/N) No Voucher? (Y/N) No	
Comments Regarding Biology	r:			
This is a dry ephemeral charduring heavy rain events.	nnel north of I-69. Overall, this cha	annel is low quality. This e	ephemeral channel flows under I-69 via a culver	

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





21

SITE NAME/LOCATION UNT-7 to Eagle Creek	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200 LAT. 37.93657 LONG87.52691 RIVER CODE N/A RIVER MILE N/A DATE 08/17/18 SCORER Luke F. Eggering COMMENTS Shallow ephemeral channel	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruc	
STREAM CHANNEL	ERY
MODIFICATIONS:	
SILT [3 pt] SILT [3 pt] 35	HHEI Metric Points Substrate Max = 40
☐ ☐ GRAVEL (2-64 mm) [9 pts] ☐ ☐ MUCK [0 pts] ☐ ☐ SAND (<2 mm) [6 pts] ☐ ☐ ARTIFICIAL [3 pts] ☐ ☐	6
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: ARTIFICIAL [3 pts] (B) TOTAL NUMBER OF SUBSTRATE TYPES:	A + B
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
□ > 22.5 - 30 cm [30 pts]	0
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS This is a dry ephemeral channel. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONL Y one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (≤ 3' 3") [5 pts]	Bankfull Width Max=30
COMMENTSAVERAGE BANKFULL WIDTH (meters)	15
This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY なNOTE: River Left (L) and Right (R) as looking downstreamな RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R Wide >10m Mature Forest, Wetland	
☐ ☐ Moderate 5-10m ☐ Immature Forest, Shrub or Old ☐ ☐ Urban or Industrial	
Field Narrow <5m Residential, Park, New Field None Fenced Pasture Open Pasture, Row Crop Mining or Construction	
COMMENTS This is a shallow channel through a forest parallel to I-69.	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS Hoist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 0.5 1.5 2.5 >3	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft)	ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):		
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach	Completed QHEI Form)	
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream 2.0 mile	
CWH Name:		
DEWH Name:		
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED A	REA. CLEARLY MARK THE SITE LOCATION	
USGS Quadrangle Name: NRCS Soil Map Pag	ge: NRCS Soil Map Stream Order	
County: Vanderburgh County Township / City: Evansville		
MISCELLANEOUS		
Base Flow Conditions? (Y/N): Date of last precipitation:	Quantity:	
Photograph Information: Photos attached.		
Elevated Turbidity? (Y/N): Canopy (% open):		
Were samples collected for water chemistry? (Y/N): $\underline{\hspace{1cm}}^{N/A}$ (Note lab sample no. or id. and	M/A d attach results) Lab Number:	
Field Measures: Temp (°C) $\underline{\hspace{1cm}}^{N/A}$ Dissolved Oxygen (mg/l) $\underline{\hspace{1cm}}^{N/A}$ pH (S.U.) $\underline{\hspace{1cm}}^{N/A}$	Conductivity (µmhos/cm) N/A	
Is the sampling reach representative of the stream $(Y/N) \frac{N/A}{}$ If not, please explain: $\frac{N/A}{}$		
Additional comments/description of pollution impacts:		
BIOTIC EVALUATION		
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. ID number. Include appropriate field data sheets from the Prima	•	
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates		
Comments Regarding Biology:		
This is a dry aphamaral abannal north of LGO. Overall, this abannal is law quality.		

This is a dry ephemeral channel north of I-69. Overall, this channel is low quality.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





22

SITE NUMBER N/A	RIVER BASIN N/A DRAINAGE AREA (mi²) \leq	1
LENGTH OF STREAM REACH (ft) 56	LAT. <u>37.93525</u> LONG. <u>-87.52670</u> RIVER CODE <u>N/A</u> RIVER MILE	N/A
DATE 08/17/18 SCORER Luke F. Egge	ering COMMENTS Ephemeral channel	
NOTE: Complete All Items On This Form	n - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Ins	ructions
STREAM CHANNEL NONE / NAT	TURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RE	COVERY
MODIFICATIONS:		
	ry type of substrate present. Check ONLY two predominant substrate TYPE boxes	HHEI
,	ant substrate types found (Max of 8). Final metric score is sum of boxes A & B. ERCENT TYPE PERCENT	Metric
BLDR SLABS [16 pts]	0 SILT [3 pt] 15	Points
☐ ☐ BOULDER (>256 mm) [16 pts] BEDROCK [16 pt]	0	Substrate
COBBLE (65-256 mm) [12 pts]	0 CLAY or HARDPAN [0 pt] 70	Max = 40
GRAVEL (2-64 mm) [9 pts]	0	7
SAND (<2 mm) [6 pts]	0 ARTIFICIAL [3 pts] 0	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	0 (A) 3 (B) 4	A + B
SCORE OF TWO MOST PREDOMINATE SUBST		
2. Maximum Pool Depth (Measure the ma	aximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
	d culverts or storm water pipes) (Check ONLY one box):	Max = 30
> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts]	□ > 5 cm - 10 cm [15 pts] □ < 5 cm [5 pts]	
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS	MAXIMUM POOL DEPTH (centimeters):	_
3. BANK FULL WIDTH (Measured as the		Davidskill
> 4.0 meters (> 13') [30 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] 1.0 m (≤ 3' 3") [5 pts]	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] \(\leq 1.0 m \) (\(\leq 3' 3") [5 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) This information <u>must</u> also be completed	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆ FLOODPLAIN QUALITY	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream A	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank)	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) 1.2 AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Shrub or Old Urban or Industrial	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) 1.2 AVERAGE BANKFULL WIDTH (meters) LAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Wetland Immature Forest, Shrub or Old Field Onen Pasture Row	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) 1.2 AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Open Pasture, Row Crop	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) 1.2 AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Shrub or Old Immature Forest, Shrub or Old Field Residential Park New Field Open Pasture, Row	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ∠ AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ∴ NOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing	This information must also be completed PLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Residential, Park, New Field Fenced Pasture Wation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermitter) 1.2 AVERAGE BANKFULL WIDTH (meters) 1.2	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS	This information must also be completed PLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Residential, Park, New Field Fenced Pasture Wation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermitter) 1.2 AVERAGE BANKFULL WIDTH (meters) 1.2	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Subsurface flow with isolated pool COMMENTS Stormwater from processors and the storm of the storm	This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Residential, Park, New Field Residential, Park, New Field Fenced Pasture Moist Channel, isolated pools, no flow (Intermitter Intervious night's rain is present in the normally dry channel.	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pool COMMENTS Stormwater from pool None SINUOSITY (Number of bends per None	This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Residential, Park, New Field Fenced Pasture Moist Channel, isolated pools, no flow (Intermitter Intervious night's rain is present in the normally dry channel. PLAIN QUALITY L R (Most Predominant per Bank) L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction Moist Channel, isolated pools, no flow (Intermitter Intervious night's rain is present in the normally dry channel. Per 61 m (200 ft) of channel) (Check ONLY one box): 1.0 2.0 3.0	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pool COMMENTS Stormwater from pools	This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Residential, Park, New Field Residential, Park, New Field Fenced Pasture Moist Channel, isolated pools, no flow (Intermitter Intervious night's rain is present in the normally dry channel. Check ONLY one box): Moist Channel, isolated pools, no flow (Intermitter Intervious night's rain is present in the normally dry channel. Check ONLY one box): Check ONLY one box): Check ONLY one box):	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pool COMMENTS Stormwater from pool None SINUOSITY (Number of bends per None	This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Residential, Park, New Field Fenced Pasture Moist Channel, isolated pools, no flow (Intermitter Intervious night's rain is present in the normally dry channel. PLAIN QUALITY L R (Most Predominant per Bank) L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction Moist Channel, isolated pools, no flow (Intermitter Intervious night's rain is present in the normally dry channel. Per 61 m (200 ft) of channel) (Check ONLY one box): 1.0 2.0 3.0	Width Max=30 15

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.9 mile
CWH Name: Distance from Evaluated Stream
EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Vanderburgh County Township / City: Evansville
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 0
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts:
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y
Comments Regarding Biology:
This is an ephemeral channel that drains into Eagle Creek. Approximately 25 feet of channel lies between the right of way and preliminary

This is an ephemeral channel that drains into Eagle Creek. Approximately 25 feet of channel lies between the right of way and preliminary construction limits. This sample point is below a culvert under a private access road. This stream receives fairly frequent backwater flooding from Eagle Creek.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





|--|

SITE NAME/LOCATION UNT-9 to Eagle Creek		
SITE NUMBER N/A	RIVER BASIN N/A DRAINAGE AREA (mi²)	0.25
	LAT. <u>37.93609</u> LONG. <u>-87.52514</u> RIVER CODE <u>N/A</u> RIVER MIL	<u>N/A</u>
DATE 08/17/18 SCORER Luke F. Egge		
NOTE: Complete All Items On This Form	n - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for I	nstructions
STREAM CHANNEL	TURAL CHANNEL $lacksquare$ RECOVERED \Box RECOVERING \Box RECENT OR NO F	ECOVERY
MODIFICATIONS:		
` .	ry type of substrate present. Check ONLY two predominant substrate TYPE boxe ant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	s HHEI
	ERCENT TYPE PERCENT	Metric Points
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]	0 SILT [3 pt] 15 0 LEAF PACK/WOODY DEBRIS [3 pts] 10	Foilits
□ □ BEDROCK [16 pt]	0 FINE DETRITUS [3 pts] 5	Substrate Max = 40
☐ ☐ COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts]	0 CLAY or HARDPAN [0 pt] 70 0 MUCK [0 pts] 0	
☐ GRAVEL (2-64 mm) [9 pts] ☐ SAND (<2 mm) [6 pts]	0	7
Total of Percentages of	(A) (B)	
Bldr Slabs, Boulder, Cobble, Bedrock	_0 4	A + B
SCORE OF TWO MOST PREDOMINATE SUBST	TRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
Maximum Pool Depth (Measure the management) Avoid plungs pools from road avaluation. Avoid plungs pools from road	aximum pool depth within the 61 meter (200 ft) evaluation reach at the time of decliverts or storm water pipes) (Check ONLY one box):	Pool Depth Max = 30
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15 pts]	
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	, 0
COMMENTS	MAXIMUM POOL DEPTH (centimeters):	
		⁻
3. BANK FULL WIDTH (Measured as the	average of 3-4 measurements) (Check ONLY one box):	Bankfull Width
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	average of 3-4 measurements) (Check <i>ONLY</i> one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] \[\leq 1.0 m (\leq 3' 3") [5 pts] \]	Width Max=30
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	average of 3-4 measurements) (Check <i>ONLY</i> one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] \(\leq 1.0 m \leq 3' 3"\right) [5 pts]	Width Max=30
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	average of 3-4 measurements) (Check <i>ONLY</i> one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] \(\leq \text{1.0 m} \) (\(\leq \text{3' 3"}\) [5 pts] AVERAGE BANKFULL WIDTH (meters)	Width Max=30
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	average of 3-4 measurements) (Check <i>ONL</i> Y one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstreams	Width Max=30 15
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	average of 3-4 measurements) (Check ONLY one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ↑ FLOODPLAIN QUALITY	Width Max=30 15
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland (Check ONLY one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] AVERAGE BANKFULL WIDTH (meters) 1 AVERAGE BANKFULL WIDTH (meters) L R (Most Predominant per Bank) L R (Conservation Tillage)	Width Max=30 15
3. BANK FULL WIDTH (Measured as the at > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank)	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY L R (Most Predominant per Bank) (Check ONLY one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) 1 AVERAGE BANKFULL WIDTH (meters)	Width Max=30 15
3. BANK FULL WIDTH (Measured as the asset of the second se	AVERAGE BANKFULL WIDTH (meters) This information must also be completed LAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstreams FLOODPLAIN QUALITY Residential Park New Field Open Pasture, Rov	Width Max=30 15
3. BANK FULL WIDTH (Measured as the at > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstreams FLOODPLAIN QUALITY R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Wetland Mature Forest, Shrub or Old Field Onen Pasture Roy	Width Max=30 15
3. BANK FULL WIDTH (Measured as the assemble of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second second series of the second second series of the second	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstreams FLOODPLAIN QUALITY R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Wetland Mature Forest, Shrub or Old Field Residential, Park, New Field Open Pasture, Rov Crop	Width Max=30 15
3. BANK FULL WIDTH (Measured as the assemble of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second series of the second second series of the second second series of the second	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Mining or Constructuation) (Check ONLY one box):	Width Max=30 15
3. BANK FULL WIDTH (Measured as the at > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation of Evaluation Subsurface flow with isolated pool	average of 3-4 measurements) (Check ONLY one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width Max=30 15
3. BANK FULL WIDTH (Measured as the at > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation of Evaluation Subsurface flow with isolated pool	average of 3-4 measurements) (Check ONLY one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Substitute Width Max=30 15	
3. BANK FULL WIDTH (Measured as the assemble of the second part of the	average of 3-4 measurements) (Check ONLY one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] < 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) AVERAG	Width Max=30 15
3. BANK FULL WIDTH (Measured as the assemble of the second process	average of 3-4 measurements) (Check ONLY one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) 1 AVERAGE BANKFULL WIDTH (meters) AVERAGE BANKFULL WIDTH (meters) 1 AV	Width Max=30 15
3. BANK FULL WIDTH (Measured as the assemble of the second process	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ↑NOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY ↑ R (Most Predominant per Bank) ↑ L R (Most Predominant per Bank) ↑ L R (Most Predominant per Bank) ↑ L R (Most Predominant per Bank) ↑ Residential, Park, New Field ↑ Residential, Park, New Field ↑ Penced Pasture Moist Channel, isolated pools, no flow (Intermit Is (Interstitial)) This information must also be completed AVERAGE BANKFULL WIDTH (meters) 1.2 1.3 AVERAGE BANKFULL WIDTH (meters) 1.4 1.5 AVERAGE BANKFULL WIDTH (meters) 1.5 AVERAGE BANKFULL WIDTH (meters) 1.6 AVERAGE BANKFULL WIDTH (meters) 1.7 AVERAGE BANKFULL WIDTH (meters) 1.8 AVERAGE BANKFULL WIDTH (meters) 1.9 AVERAGE BANKFULL W	Width Max=30 15

ADDITIONAL STREAM INFORM	ATION (This Information Must Also	be Completed):	
QHEI PERFORMED? -	Yes No QHEI Score N/A	(If Yes, Attach Comp	leted QHEI Form)
			ice from Evaluated Stream 1.9 mile
☐ CWH Name: Distance from Evaluated Streating EWH Name: Distance from EVALUATED EWH Name: Distance from EVALUATED EWH Name: Distance from EVALUATED EWH Name: Distance from EVALUATED EWH Name: Distance from EVALUATED EWH Name: Distance from EVALUATED EWH Name: Distance from EVALUATED EWH Name: Distance from EVALUATED EWH Name: Distance from EVALUATED EWH Name: Distance from EVALUATED EWH Name: DISTANCE EWH Name: DISTANCE EWH Name:			
		Distan	Se nom Evaluated Offeam
	OPIES OF MAPS, INCLUDING THE <u>EN</u>		
USGS Quadrangle Name: Evans	ville South, IN-KY	NRCS Soil Map Page: N/A	NRCS Soil Map Stream Order
MISCELLANEOUS			
	Date of last precipitation:	7/18 Qua	ntity:
Photograph Information: Photos	attached.		
	Canopy (% open):		
Were samples collected for water	chemistry? (Y/N): N/A (Note lab	sample no. or id. and attach	n results) Lab Number:
Field Measures: Temp (°C) N	/A Dissolved Oxygen (mg/l) N/A	pH (S.U.)	Conductivity (µmhos/cm) N/A
Is the sampling reach representat	tive of the stream (Y/N) N/A If not, p	olease explain: N/A	
Additional comments/description	of pollution impacts:		
BIOTIC EVALUATION	<u> </u>		
	f Yes, Record all observations. Voucher In number. Include appropriate field data		all voucher samples must be labeled with the site dwater Habitat Assessment Manual)
Fish Observed? (Y/N) No V Frogs or Tadpoles Observed? (Y/	oucher? (Y/N <u>) No</u> Salamanders Ol N <u>) No</u> Voucher? (Y/N <u>) No</u> Aquati	oserved? (Y/N) No Voud c Macroinvertebrates Obser	her? (Y/N) No ved? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology:			
	at drains into Eagle Creek. This chanclear whether this 96 feet of chance		rom I-69. This tributary braids into Wetland 3

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





SITE NAME/LOCATION UNT-10 to Eagle Creek				
SITE NUMBER_N/A RIVER BASIN_N/A DRAINAGE AREA (I				
LENGTH OF STREAM REACH (ft) 144 LAT. 37.93675 LONG87.52317 RIVER CODE N/A RIVER N	/IILE N/A			
DATE 08/17/18 SCORER Luke F. Eggering COMMENTS Ephemeral channel				
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for	r Instructions			
STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR N	O RECOVERY			
MODIFICATIONS:				
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE be (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BEDROCK [16 pt] BEDROCK [16 pt] FINE DETRITUS [3 pts] 5	HHEI Metric Points			
☐ ☐ COBBLE (65-256 mm) [12 pts] 0 CLAY or HARDPAN [0 pt] 70	Max = 40			
☐ ☐ GRAVEL (2-64 mm) [9 pts]	7			
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	4 A+B			
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth			
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30			
□ > 22.5 - 30 cm [30 pts] □ < 5 cm [5 pts]	0			
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	0			
COMMENTS MAXIMUM POOL DEPTH (centimeters):				
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check <i>ONLY</i> one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Bankfull Width Max=30			
COMMENTS AVERAGE BANKFULL WIDTH (meters)	1.2 15			
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstrea	m≰r			
RIPARIAN WIDTH L R (Per Bank) L R (Most Predominant per Bank) L R				
Wide >10m Mature Forest, Wetland Conservation Ti	llage			
☐ ☐ Moderate 5-10m ☐ ☐ Immature Forest, Shrub or Old ☐ ☐ Urban or Indust	rial			
□□ Narrow <5m □□ Residential Park New Field □□ Open Pasture, I	Row			
□ None □ □ Fenced Pasture □ □ Mining or Const	ruction			
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)				
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): □ None □ 1.0 □ 2.0 □ 3.0 □ 0.5 □ 1.5 □ 2.5 □ >3				
STREAM GRADIENT ESTIMATE ☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Sever	e (10 ft/100 ft)			

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream Distance from Evaluated Stream
EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE <u>ENTIRE</u> WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Evansville South, IN-KY NRCS Soil Map Page: N/A NRCS Soil Map Stream Order
County: Vanderburgh County Township / City: Evansville
MISCELLANEOUS
Base Flow Conditions? (Y/N): No Date of last precipitation: 08/17/18 Quantity: 0.5 inch
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 0
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts:
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (
Comments Regarding Biology:
This is an ephemeral channel that drains into Eagle Creek. This channel likely receives runoff from I-69. This tributary braids into Wetland 3

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 37

Stream & Location: Eagle Creek	RM: N/A Date: 08/01/18
Scorers Full Name & Affiliation:	Luke F. Eggering, PWS
River Code: N/A STORET #: N/A Lat./ Long.: (NAD 83 - decimal) 37.9353	3, -87.52389 Office verified location
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present BEST TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE BLDR /SLABS [10] 0 0 HARDPAN [4] 0 0 LIMESTONE [1]	ONE (Or 2 & average) QUALITY HEAVY [-2]
□ □ BOULDER [9] □ □ □ □ DETRITUS [3] □ □ □ WETLANDS [0] □ □ GRAVEL [7] □ □ □ SILT [2] □ □ □ HARDPAN [0] □ □ SAND [6] □ □ □ ARTIFICIAL [0] □ □ □ SANDSTONE [0] □ □ BEDROCK [5] □ □ □ (Score natural substrates; ignore □ RIP/RAP [0] NUMBER OF BEST TYPES: □ 4 or more [2] sludge from point-sources) □ LACUSTURINE [0] SHALE [-1] □ COAL FINES [-2]	SILT MODERATE [-1] Substrate NORMAL [0] FREE [1]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common quality; 2-Moderate amounts, but not of highest quality or in small amounts quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional 1 UNDERCUT BANKS [1] 0 POOLS > 70cm [2] 0 OXBOWS, BACKWATE OVERHANGING VEGETATION [1] 1 ROOTWADS [1] 1 AQUATIC MACROPHY BOULDERS [1] 1 LOGS OR WOODY DEI	of highest r, large pools. ☐ EXTENSIVE >75% [11] ERS [1] ☐ MODERATE 25-75% [7] TES [1] ☐ SPARSE 5-<25% [3]
O ROOTMATS [1] Comments	Cover Maximum 8
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)	
SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY	
☐ HIGH [4] ☐ EXCELLENT [7] ☐ NONE [6] ☐ HIGH [3] ☐ MODERATE [3] ☐ GOOD [5] ☐ RECOVERED [4] ☐ MODERATE [2]	
□ LOW [2] □ FAIR [3] □ RECOVERING [3] □ LOW [1]	Channel
■ NONE [1] □ POOR [1] □ RECENT OR NO RECOVERY [1] Comments	Maximum 13
The entire stretch in the project area is channelized but stable.	20
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (O	
River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALI REPOSION WIDE > 50m [4] FOREST, SWAMP [3]	CONSERVATION TILLAGE [1]
■ NONE / LITTLE [3] ■ □ MODERATE 10-50m [3] ■ □ SHRUB OR OLD FIELD [2]	☐ ☐ URBAN OR INDUSTRIAL [0]
☐ ☐ HEAVY / SEVERE [1] ☐ ☐ VERY NARROW < 5m [1] ☐ ☐ FENCED PASTURE [1]	Indicate predominant land use(s)
□ □ NONE [0] □ OPEN PASTURE, ROWCROP [0]	past 100m riparian. Riparian
Comments The left decending bank was recently sprayed with herbicide to kill woody vegetation.	Maximum 9
5] POOL / GLIDE AND RIFFLE / RUN QUALITY	
MAXIMUM DEPTH CHANNEL WIDTH CURRENT VELOCITY Check ONE (ONLY!) Check ONE (Or 2 & average) Check ALL that apply	Recreation Potential Primary Contact
□ > 1m [6] ■ POOL WIDTH > RIFFLE WIDTH [2] □ TORRENTIAL [-1] ■ SLOW [1]	Secondary Contact
\square 0.7-<1m [4] \square POOL WIDTH = RIFFLE WIDTH [1] \square VERY FAST [1] \square INTERSTI \square 0.4-<0.7m [2] \square POOL WIDTH < RIFFLE WIDTH [0] \square FAST [1] \square INTERMIT	
■ 0.2-<0.4m [1]	Pool / Current
Comments When the Ohio River rises, backwater reverses the flow of Eagle Creek.	Maximum 12
Indicate for functional riffles; Best areas must be large enough to support	a population NO RIFFLE [metric=0]
of riffle-obligate species: Check ONE (Or 2 & average). RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFI	FLE / RUN EMBEDDEDNESS
☐ BEST AREAS > 10cm [2] ☐ MAXIMUM > 50cm [2] ☐ STABLE (e.g., Cobble, Boulder) [2]	□ NONE [2]
☐ BEST AREAS 5-10cm [1] ☐ MAXIMUM < 50cm [1] ☐ MOD. STABLE (e.g., Large Gravel) [1] ☐ BEST AREAS < 5cm ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ LOW [1] ☐ MODERATE [0] Riffle /
[metric=0] Comments No riffles were present in the reach.	EXTENSIVE [-1] Run Maximum 8
6] GRADIENT (1.0 ft/mi) ■ VERY LOW - LOW [2-4] %POOL: 100	%GLIDE: 0 Gradient
DRAINAGE AREA MODERATE [6-10]	%RIFFLE: 0 Maximum 2

Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc. A] SAMPLED REACH Check ALL that apply This channelized reach of Eagle Creek is typical. The left descending bank was recently sprayed with herbicide to kill woody **METHOD STAGE** vegetation. It appears that channel maintenance only occurs from the south side of the creek. A levee located north of I-69 may impact 1st -sample pass- 2nd BOAT hydrology during high water events. This reach of Eagle Creek is frequently affected by backwater flooding from the Ohio River. There HIGH WADE is considerable amount of beaver activity and beaver dams in this reach. Eagle Creek is considered a legal drain in Indiana. Eagle □UP П L. LINE NORMAL Creek will be spanned by bridges and impacts to the stream will be short term during construction. □ OTHER Low **DISTANCE** DRY 0.5 Km D] MAINTENANCE **CLARITY** B] AESTHETICS Circle some & COMMENT E] ISSUES F] MEASUREMENTS 0.2 Km NUISANCE ALGAE PUBLIC / PRIVATE / BOTH / NA WWTP / CSO / NPDES / INDUSTRY $\overline{\Box}$ x width 0.15 Km < 20 cm ☐ INVASIVE MACROPHYTES ACTIVE / HISTORIC / BOTH / NA HARDENED / URBAN / DIRT&GRIME 0.12 Km x depth □ 20-<40 cm YOUNG-SUCCESSION-OLD **CONTAMINATED / LANDFILL** ☐ EXCESS TURBIDITY □ OTHER max. depth ☐ 40-70 cm SPRAY / SNAG / REMOVED **BMPs-CONSTRUCTION-SEDIMENT** DISCOLORATION x bankfull width □ > 70 cm/ CTB MODIFIED / DIPPED OUT / NA LOGGING / IRRIGATION / COOLING ☐ FOAM / SCUM bankfull x depth ☐ SECCHI DEPTH☐ meters LEVEED / ONE SIDED BANK / EROSION / SURFACE OIL SHEEN W/D ratio □ TRASH / LITTER RELOCATED / CUTOFFS FALSE BANK / MANURE / LAGOON **CANOPY** bankfull max. depth MOVING-BEDLOAD STABLE WASH H₂0 / TILE / H₂0 TABLE ■ NUISANCE ODOR floodprone x² width ARMOURED / SLUMPS ACID / MINE / QUARRY / FLOW ☐ SLUDGE DEPOSITS **55%-<85%** ☐ CSOs/SSOs/OUTFALLS ISLANDS / SCOURED NATURAL/WETLAND/STAGNANT entrench, ratio 30%-<55% PARK / GOLF / LAWN / HOME IMPOUNDED / DESICCATED AREA DEPTH Legacy Tree: ■ 10%-<30%</p> C] RECREATION FLOOD CONTROL / DRAINAGE ATMOSPHERE / DATA PAUCITY POOL: □>100ft2 □>3ft ☐ <10%- CLOSED </p>

Stream Drawing:



HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME Eagle Creek	LOCATION Evansville, Indiana		
STATION # NA RIVERMILE NA	STREAM CLASS Perennial		
LAT <u>37.93501</u> LONG <u>-87.52485</u>	RIVER BASIN Ohio River		
STORET # N/A	AGENCY N/A		
INVESTIGATORS L. Eggering			
FORM COMPLETED BY L. Eggering	DATE 05/16/19 TIME 12:30 AM PM REASON FOR SURVEY I-69 ORX Project		

	Habitat				
	Parameter	Optimal	Suboptimal	Marginal	Poor
	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
each	SCORE 14	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
uate	SCORE 10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
rs to be evalu	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.
mete	score 9	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Paran	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	score 9	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
	SCORE 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat				
	Parameter	Optimal	Suboptimal	Marginal	Poor
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	SCORE 12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
pling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
ı san	SCORE 2	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
eva	SCORE 7 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
to be	SCORE 8 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
Parameters to	9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
	SCORE $\frac{7}{2}$ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	SCORE 7 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
	SCORE $\underline{9}$ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	SCORE 6 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 113

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Eagle Creek	LOCATION Evansville,	, Indiana	
STATION # N/A RIVERMILE N/A	STREAM CLASS Perennial		
LAT <u>37.93521</u> LONG <u>-87.52485</u>	RIVER BASIN Ohio Rive	er	
STORET # N/A	AGENCY N/A		
investigators L. Eggering			
FORM COMPLETED BY L. Eggering	DATE 05/16/19 TIME 12:30 PM AM PM	REASON FOR SURVEY I-69 ORX Project	

WEATHER CONDITIONS	Now storm (heavy rain) rain (steady rain) showers (intermittent) %cloud cover clear/sunny	Past 24 hours Yes No Air Temperature 26 ° C Other Clear and calm			
SITE LOCATION/MAP	Draw a map of the site and indicate the areas sampled (or attach a photograph)				
	See attached Qualitative Ha	abitat Evaluation Index (QHEI) Form.			
STREAM CHARACTERIZATION	Stream Subsystem Perennial 'Intermittent 'Ti	Stream Type idal 'Coldwater Warmwater			
	Stream Origin ' Glacial ' Spring-	Catchment Area ¹⁶ km ²			

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse ■ Forest 'Commercial' 'Field/Pasture 'Industrial' 'Agricultural' 'Residential'	Local Watershed NPS Pollution ' No evidence ■ Some potential sources ' Obvious sources Local Watershed Erosion ■ None ' Moderate ' Heavy	
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the domin Trees Shrubs dominant species present	ant species present Grasses ' Herbaceous	
INSTREAM FEATURES	Estimated Reach Length 100 m Estimated Stream Width 10 m Sampling Reach Area 1000 m² Area in km² (m²x1000) 0.001 km² Estimated Stream Depth 1.5 m Surface Velocity 0.7 m/sec (at thalweg)	Canopy Cover ' Partly open Partly shaded ' Shaded High Water Mark 2.8 m Proportion of Reach Represented by Stream Morphology Types ' Riffle 2 % ' Run 18 % ' Pool 80 % Channelized Yes ' No Dam Present ' Yes No	
LARGE WOODY DEBRIS	LWD N/A m² Density of LWD N/A m²/km² (LWD/ reaction)	h area)	
AQUATIC VEGETATION	Indicate the dominant type and record the domin ■ Rooted emergent ' Floating Algae ' Attached Algae dominant species present Common buttonbush Portion of the reach with aquatic vegetation 2	Rooted floating ' Free floating	
WATER QUALITY	Temperature 21.5 0 C Specific Conductance 464.0 SPC Dissolved Oxygen 95.5% pH 7.66 Turbidity 72.15 NTU WQ Instrument Used YSI ProDSS	Water Odors Normal/None ' Sewage ' Petroleum ' Chemical ' Fishy ' Other Water Surface Oils ' Slick ' Sheen ' Globs ' Flecks None ' Other Turbidity (if not measured) ' Clear ' Slightly turbid ' Opaque ' Stained ' Other	
SEDIMENT/ SUBSTRATE	Odors ' Normal ' Sewage ' Petroleum ' Chemical ' Anaerobic None ' Other Oils Absent ' Slight ' Moderate ' Profuse	Deposits Sludge 'Sawdust 'Paper fiber 'Sand Other No deposits. Looking at stones which are not deeply embedded, are the undersides black in color? Yes 'No No stones present.	

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)		ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)				
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Bedrock		0	Detritus	sticks, wood, coarse plant	10	
Boulder	> 256 mm (10")	0		materials (CPOM)	10	
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud		2	
Gravel	2-64 mm (0.1"-2.5")	0		(FPOM)		
Sand	0.06-2mm (gritty)	5	Marl	grey, shell fragments	0	
Silt	0.004-0.06 mm	35		ı		Ü
Clay	< 0.004 mm (slick)	60				

5% is comprised of artificial material.



12

SITE NAME/LOCATION UNT-11 to Eagle Creek		
SITE NUMBER N/A	RIVER BASIN N/A	DRAINAGE AREA (mi²) <1
LENGTH OF STREAM REACH (ft) 80 L	AT. <u>37.93345</u> LONG. <u>-87.52263</u> RIVER	R CODE N/A RIVER MILE N/A
DATE 08/17/18 SCORER Luke F. Egger	ring COMMENTS Ephemeral channel	
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Manual for O	hio's PHWH Streams" for Instructions
STREAM CHANNEL	JRAL CHANNEL RECOVERED RECOV	VERING TRECENT OF NO RECOVERY
MODIFICATIONS:	THE STANKE THE SOUTH THE THE SOUTH THE THE THE THE THE THE THE THE THE T	VERMINE ENLOCKING REGOVERN
(Max of 32). Add total number of significan	y type of substrate present. Check <i>ONLY</i> two profit substrate types found (Max of 8). Final metric so	core is sum of boxes A & B.
TYPE PE BLDR SLABS [16 pts]	RCENT TYPE 0 SILT [3 pt]	PERCENT Points
BOULDER (>256 mm) [16 pts]	0 LEAF PACK/WOODY D	Substrate
☐ ☐ BEDROCK [16 pt] ☐ ☐ COBBLE (65-256 mm) [12 pts]	0 FINE DETRITUS [3 pts	$\frac{3}{\text{Max}} = 40$
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ GRAVEL (2-64 mm) [9 pts]	0 CLAY or HARDPAN [0 0 MUCK [0 pts]	0
SAND (<2 mm) [6 pts]	0 ARTIFICIAL [3 pts]	0 7
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	0 (A) 3	(B) 4 A+B
SCORE OF TWO MOST PREDOMINATE SUBSTI		OF SUBSTRATE TYPES:
2. Maximum Pool Depth (Measure the max	ximum pool depth within the 61 meter (200 ft) e	evaluation reach at the time of Pool Depth
evaluation. Avoid plunge pools from road > 30 centimeters [20 pts]	culverts or storm water pipes) (Check <i>ONLY</i> on > 5 cm - 10 cm [15 pts	
> 22.5 - 30 cm [30 pts]	5 cm [15 pts]	0
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIS	ST CHANNEL [0 pts]
COMMENTS	MAXIMUM POO	DL DEPTH (centimeters):
3. BANK FULL WIDTH (Measured as the a	verage of 3-4 measurements) (Check	ONLY one box): Bankfull
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	> 1.0 m - 1.5 m (> 3' 3" ≤ 1.0 m (≤ 3' 3") [5 pts	/ - · -
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		
COMMENTS	AVERAGE BAN	JKFULL WIDTH (meters)
RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH	This information must also be completed AIN QUALITY ☆NOTE: River Left (L) and Ri FLOODPLAIN QUALITY	ight (R) as looking downstream☆
L R (Per Bank)	L R (Most Predominant per Bank)	<u>L</u> <u>R</u>
☐ ☐ Wide >10m	Mature Forest, Wetland	Conservation Tillage
☐ ☐ Moderate 5-10m	Immature Forest, Shrub or Old Field	Urban or Industrial
Narrow <5m	Residential, Park, New Field	Open Pasture, Row Crop
□ □ None COMMENTS	☐ ☐ Fenced Pasture	Mining or Construction
Stream Flowing Subsurface flow with isolated pools COMMENTS	Moist Channel	, isolated pools, no flow (Intermittent) o water (Ephemeral)
SINUOSITY (Number of bends per None 0.5	1.0 (Check <i>ONLY</i> one both 1.5 (Check <i>ONLY</i> one both 2.5 (Check <i>ONLY</i> one	3.0 3.0 3.0
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	_	Severe Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Tyes No QHEI Score N/A (If Yes, Attach Completed QHEI Form)	
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.0 mile	
CWH Name: Distance from Evaluated Stream	
☐ EWH Name: Distance from Evaluated Stream	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION	
USGS Quadrangle Name: Evansville South, IN-KY NRCS Soil Map Page: N/A NRCS Soil Map Stream Order	1
County: Vanderburgh County Township / City: Evansville	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity: Quantity:	
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 0	
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number:	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A	
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled w ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)	ith the site
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No	<u> </u>
Comments Regarding Biology:	
This is an ephemeral channel that drains from an agricultural field into a borrow pit (OW-1). It is unlikely that this channel will be fill because I-69 will likely be on structure.	ed,

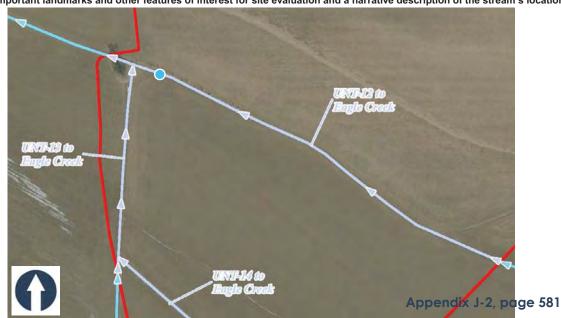




|--|

SITE NAME/LOCATION UNT-12 to Eagle Creek	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²)	0.04
LENGTH OF STREAM REACH (ft) 200 LAT. 37.93215 LONG87.52483 RIVER CODE N/A RIVER MILE	N/A
DATE 08/01/18 SCORER Luke F. Eggering COMMENTS Main agricultural stream/ditch to Eagle Creek	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Institute of the Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Institute of the Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Institute of the Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Institute of the Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Institute of the Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Institute of the Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Institute of the Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Institute of the Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Institute of the Complete All Items On This Form - Refer to This	structions
STREAM CHANNEL	COVERY
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] PERCENT SILT [3 pt] PERCENT 90	HHEI Metric Points
BOULDER (>256 mm) [16 pts] 0 LEAF PACK/WOODY DEBRIS [3 pts] 0	Substrate
□ □ BEDROCK [16 pt] 0 □ □ FINE DETRITUS [3 pts] 0 □ □ COBBLE (65-256 mm) [12 pts] 0 □ □ CLAY or HARDPAN [0 pt] 10	Max = 40
GRAVEL (2-64 mm) [9 pts] 0 MUCK [0 pts] 0	
□ □ SAND (<2 mm) [6 pts] □ □ ARTIFICIAL [3 pts] □	5
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 3	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	1
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Max = 30
 → 30 centimeters [20 pts] → 5 cm - 10 cm [15 pts] → 5 cm [5 pts] ← 5 cm [5 pts] 	0
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS Bottom of stream/ditch is moist from overnight rainfall MAXIMUM POOL DEPTH (centimeters):	ı —
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] 3.5	Bankfull Width Max=30
COMMENTS The stream/ditch is fairly uniform. AVERAGE BANKFULL WIDTH (meters)	
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY **NOTE: River Left (L) and Right (R) as looking downstream ** RIPARIAN WIDTH FLOODPLAIN QUALITY L. B. (Not Brademinest per Book)	
L R (Per Bank) L R (Most Predominant per Bank) L R U U Wide >10m U Mature Forest, Wetland U Conservation Tillage	
☐ ☐ Moderate 5-10m ☐ ☐ Immature Forest, Shrub or Old ☐ ☐ Urban or Industrial	
Narrow <5m Residential, Park, New Field Open Pasture, Row	
None Single Residential, Fark, New Field Crop Crop Mining or Construction	nn.
COMMENTS Corn to the north, soybeans to the south	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing	,
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 0.5 1.5 2.5 >3	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft)	ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - Yes No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.9 mile
CWH Name: Distance from Evaluated Stream
BWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:
County: Vanderburgh County Township / City: Evansville
MISCELLANEOUS
Base Flow Conditions? (Y/N): No Date of last precipitation: 07/30/18 Quantity: 0.5 inch
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 0
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: The area is routinely mowed and sprayed with herbicide.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the sit ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Vouche
Comments Regarding Biology:
This is the main agricultural stream/ditch that drains this area. It flows into Eagle Creek to the northwest. Many crayfish burrows were observed. The I-69 corridor crosses 1,049 feet of this tributary. It is unclear whether or not the I-69 roadway and interchange ramps will be on structure.





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SITE NAME/LOCATION UNT-13 to Eagle Creek				
	RIVER BASIN N			
LENGTH OF STREAM REACH (ft) 200			N/A RIVER MILE N/	Α
DATE 08/01/18 SCORER Luke F. Egge				
NOTE: Complete All Items On This Form	- Refer to "Field Evaluati	on Manual for Ohio's Pl	HWH Streams" for Instr	uctions
STREAM CHANNEL	JRAL CHANNEL	/ERED RECOVERING	RECENT OR NO RECO	OVERY
MODIFICATIONS:				
 SUBSTRATE (Estimate percent of ever (Max of 32). Add total number of significal 				HHEI
	RCENT TYPE	or o). I mai metro socie is sa	PERCENT	Metric
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]		T <mark>[3 pt]</mark> NF PACK/WOODY DEBRIS [3	90 0	Points
☐ ☐ BOULDER (>256 mm) [16 pts] ☐ ☐ BEDROCK [16 pt]		E DETRITUS [3 pts]	0	Substrate
COBBLE (65-256 mm) [12 pts]	0 CLA	AY or HARDPAN [0 pt]	10	Max = 40
GRAVEL (2-64 mm) [9 pts]		CK [0 pts]	0	5
SAND (<2 mm) [6 pts]	0	ΓΙΓΙCIAL [3 pts]	0	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	0 (A) 3		(B) 2	A + B
SCORE OF TWO MOST PREDOMINATE SUBST		TOTAL NUMBER OF SUBS		
Maximum Pool Depth (Measure the ma	vimum nool denth within the	61 meter (200 ft) evaluation	reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road	culverts or storm water pipes)	(Check ONLY one box):	reach at the time of	Max = 30
> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts]	_	5 cm - 10 cm [15 pts] 5 cm [5 pts]		0
> 10 - 22.5 cm [25 pts]		O WATER OR MOIST CHAN	NEL [0 pts]	
COMMENTS Bottom of stream/ditch is n	noist from overnight rainfall	MAXIMUM POOL DEPTI	1 (centimeters):	
2 DANK FULL MIDTH (Massured on the		- (Check ON) Von	, , , , , , , , , , , , , , , , , , ,	Bankfull
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]		(Check ONLY on 1.0 m - 1.5 m (> 3' 3" - 4' 8") [1		Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	_ ≤ ′	1.0 m (≤ 3' 3") [5 pts]		Max=30
			2.5	20
COMMENTS Stream/ditch is fairly unifor	m.	AVERAGE BANKFULL \	WIDTH (meters)	
	This information must	also he completed		
RIPARIAN ZONE AND FLOODPI	_AIN QUALITY ☆NOTE: F	River Left (L) and Right (R) a	s looking downstream☆	
	FLOODPLAIN QUALITY	et man Dank)		
L R (Per Bank) Wide >10m	L R (Most Predominar Mature Forest, We		Conservation Tillage	
☐ ☐ Moderate 5-10m	Immature Forest,	Shrub or Old	Urban or Industrial	
☐ ☐ Narrow <5m	Field Residential. Park.	Now Field	Open Pasture, Row	
□ □ Narrow <5m None	Residential, Park, Fenced Pasture	New Field	Crop Mining or Construction	
COMMENTS Corn to the north, s			Willing of Construction	_
FLOW REGIME (At Time of Evalu	uation) (Check ONLY one box	():		
Stream Flowing `	, , <u> </u>	Moist Channel, isolated	pools, no flow (Intermittent)	
Subsurface flow with isolated pools COMMENTS This stream/ditch lil		Dry channel, no water (ormwater events and Ohio R		
				-
SINUOSITY (Number of bends pe	er 61 m (200 ft) of channel) (C 1.0	Check ONLY one box):	3.0	
□ 0.5 □	1.5	2.5	☐ >3	
STREAM GRADIENT ESTIMATE				
Flat (0.5 ft/100 ft)	Moderate (2 ft/100 ft)	☐ Moderate to Severe	Severe (10 ft/10	00 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream Distance from Evaluated Stream Distance from Evaluated Stream Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Vanderburgh County Township / City: Evansville
MISCELLANEOUS Base Flow Conditions? (Y/N): No Date of last precipitation: 07/30/18 Quantity: 0.5 inch Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 0 Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (μmhos/cm) N/A Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: The area is routinely mowed and sprayed with herbicide.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y
Comments Regarding Biology:
This agricultural stream/ditch flows into a larger agricultural stream/ditch, which flows into Eagle Creek. The stream/ditch likely only has water in significant stormwater events and during severe Ohio River/Eagle Creek flood events. Many crayfish burrows and dead crayfish were observed. Approximately 430 feet of channelization may be necessary during construction. However, this agricultural stream/ditch may be avoided if I-69 is on structure or with a slight shift in the alignment to the east.





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SITE NAME/LOCATION UNT-14 to Eagle Creek				
SITE NUMBER_N/A	RIVER BASIN N/	A DRAIN	AGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200 L	AT. <u>37.93053</u> LONG. <u>-87</u>	.52486 RIVER CODE N/A	RIVER MILE N/A	4
DATE 08/01/18 SCORER Luke F. Egger	ing COMMENTS Lateral ag	ricultural stream/ditch		
NOTE: Complete All Items On This Form	- Refer to "Field Evaluatio	n Manual for Ohio's PHWH	Streams" for Instru	ıctions
STREAM CHANNEL	IRAL CHANNEL	RED RECOVERING RI	ECENT OR NO RECO	VERY
MODIFICATIONS:				
SUBSTRATE (Estimate percent of every				uuei
(Max of 32). Add total number of significan TYPE PEI	it substrate types found (Max of	8). Final metric score is sum of b	PERCENT	HHEI Metric
BLDR SLABS [16 pts]	0 SILT		90	Points
□ □ BOULDER (>256 mm) [16 pts] □ □ BEDROCK [16 pt]		PACK/WOODY DEBRIS [3 pts] DETRITUS [3 pts]	0 0	Substrate
COBBLE (65-256 mm) [12 pts]		or HARDPAN [0 pt]	10	Max = 40
☐ ☐ GRAVEL (2-64 mm) [9 pts]	0	< [0 pts]	0	5
SAND (<2 mm) [6 pts]	0 ARTII	FICIAL [3 pts]	0	
Total of Percentages of	0 (A) 3		(B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTF		OTAL NUMBER OF SUBSTRAT	E TYPES: 2	
Maximum Pool Depth (Measure the max evaluation. Avoid plunge pools from road of			at the time of	Pool Depth Max = 30
> 30 centimeters [20 pts]	> 5 (cm - 10 cm [15 pts]		
 > 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]		cm [5 pts] WATER OR MOIST CHANNEL [0	pts]	0
COMMENTS Agricultural stream/ditch is	moist from recent rainfall	MAXIMUM POOL DEPTH (cen	timeters):	
3. BANK FULL WIDTH (Measured as the av		(Check ONLY one box) 0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]):	Bankfull Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		0 m (≤ 3' 3") [5 pts]		Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]			1.2	15
COMMENTS Stream/ditch is routinely cle	aned and herbicides are used	_ AVERAGE BANKFULL WIDTH	(meters)	
RIPARIAN ZONE AND FLOODPL	This information <u>must</u> als AIN QUALITY ☆NOTE: Ri	so be completed ver Left (L) and Right (R) as looki	ng downstream☆	
RIPARIAN WIDTH	FLOODPLAIN QUALITY	,		
L R (Per Bank) Wide >10m	L R (Most Predominant Mature Forest, Wet		onservation Tillage	
☐ ☐ Moderate 5-10m	Immature Forest, S	brub or Old	ban or Industrial	
	Field	0	pen Pasture, Row	
□ □ Narrow <5m	Residential, Park, N Fenced Pasture	lew Field C	op	
None COMMENTS Corn to the south, so		□□ м	ining or Construction	
FLOW REGIME (At Time of Evalua	ation) (Check ONI V one hov)			
Stream Flowing		Moist Channel, isolated pools,	no flow (Intermittent)	
Subsurface flow with isolated pools COMMENTS	(Interstitial)	Dry channel, no water (Epher	neral)	
	04 (000 5) 5 : "			
SINUOSITY (Number of bends per None	61 m (200 ft) of channel) (Ch 1.0	eck ONLY one box): 2.0	3.0	
0.5	1.5	2.5	>3	
STREAM GRADIENT ESTIMATE	_	_	_	
Flat (0.5 ft/100 ft)	Moderate (2 ft/100 ft)	☐ Moderate to Severe	Severe (10 ft/100) ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.6 mile
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: N/A NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Vanderburgh County Township / City: Evansville
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 0
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: The area is routinely mowed and sprayed with herbicide.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y
Comments Regarding Biology:
This agricultural stream/ditch flows into a larger agricultural stream/ditch, which flows into Eagle Creek. Water is likely only present during stormwater events and during Ohio River/Eagle Creek flood events. Many crayfish burrows and dead crayfish were observed. A severe Ohio River flood event occurred in February 2018. I-69 crosses approximately 772 feet of this agricultural ditch. It is unclear whether I-69 will be on structure or fill in this area.





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SITE NUMBER_N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200 LAT. 37.88948 LONG87.51613 RIVER CODE N/A RIVER MILE N/A	<u>. </u>
DATE 08/02/18 SCORER Luke F. Eggering COMMENTS This is the main channel in this valley.	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruc	ctions
STREAM CHANNEL	/FRV
MODIFICATIONS:	7 = 1 \ 1
IIIODII IOATIONO.	
TEROCIAL THE TEROCIAL	HHEI Metric
□ □ BLDR SLABS [16 pts] 0 □ □ SILT [3 pt] 0 □ □ BOULDER (>256 mm) [16 pts] 0 □ □ LEAF PACK/WOODY DEBRIS [3 pts] 0	Points
	Substrate
☐ ☐ COBBLE (65-256 mm) [12 pts]0	Max = 40
GRAVEL (2-64 mm) [9 pts] 40	15
SAND (<2 mm) [6 pts] 20 ARTIFICIAL [3 pts] 40	
Total of Percentages of (A) Bldr Slabs, Boulder, Cobble, Bedrock 0 12	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Max = 30
□ > 30 centimeters [20 pts] □ > 5 cm - 10 cm [15 pts] □ > 22.5 - 30 cm [30 pts] □ < 5 cm [5 pts]	0
□ > 10 - 22.5 cm [25 pts] ■ NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS The channel is dry. MAXIMUM POOL DEPTH (centimeters):	
DANK FILL WIDTH (Managed on the groups of 2.4 managed to 2.4 manag	Bankfull
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	Max=30
[3.5]	25
COMMENTO The hanks have been armored with ribran	23
COMMENTS The banks have been armored with riprap. AVERAGE BANKFULL WIDTH (meters)	25
	25
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY PLOODPLAIN QUALITY AVERAGE BANKFULL WIDTH (meters) This information must also be completed RIPARIAN WIDTH FLOODPLAIN QUALITY	23
This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R	23
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH L R (Per Bank) L R (Most Predominant per Bank) L R (Most Predominan	23
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R Wide >10m Mature Forest, Wetland □ Conservation Tillage □ Moderate 5-10m □ Immature Forest, Shrub or Old □ Urban or Industrial Field □ Open Pasture Row	23
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R Wide >10m Mature Forest, Wetland □□ Conservation Tillage Immature Forest, Shrub or Old □□ Urban or Industrial Residential, Park, New Field □□ Open Pasture, Row Crop	23
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R Wide >10m Mature Forest, Wetland □ Conservation Tillage Immature Forest, Shrub or Old □ Urban or Industrial Marrow <5m □ Residential, Park, New Field □ Open Pasture, Row Crop None □ Fenced Pasture □ Mining or Construction	23
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R Wide >10m Mature Forest, Wetland □□ Conservation Tillage Immature Forest, Shrub or Old □□ Urban or Industrial Residential, Park, New Field □□ Open Pasture, Row Crop	23
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream ANOTE: River Left (L) and Right (R) as looking downstream ANOTE: River Left (L) and Right (R) as looking downstream ANOTE: River Left (L) and Right (R) as looking downstream ANOTE: River Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: River Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: River Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and Right (R) as looking downstream ANOTE: RIVER Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L) and River Left (L	23
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m Mature Forest, Shrub or Old Field Narrow <5m Residential, Park, New Field None COMMENTS FLOW REGIME (At Time of Evaluation) COMMENTS FLOW REGIME (At Time of Evaluation) COMMENTS This is a shallow ephemeral channel. SINUOSITY (Number of bends per 61 m (200 ft) of channel) None 1.0 Check ONLY one box): None	23

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed) QHEI PERFORMED? -	_
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Ohio River	Distance from Evaluated Stream
☐ CWH Name:	
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSH	ED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Ma	p Page: N/A NRCS Soil Map Stream Order1
County: Township / City:	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): No Date of last precipitation: 07/30/18	Quantity:
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 5	
Were samples collected for water chemistry? (Y/N): $\underline{\hspace{1cm}}^{N/A}$ (Note lab sample no. or id	d. and attach results) Lab Number:
Field Measures: Temp (°C) $\frac{N/A}{}$ Dissolved Oxygen (mg/l) $\frac{N/A}{}$ pH (S.U.)	N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not, please explain:	N/A
Additional comments/description of pollution impacts: There are no obvious pollution s	sources. There are agricultural fields in the upper
reaches of this stream.	
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections option ID number. Include appropriate field data sheets from the	·
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinverteb	No Voucher? (Y/N) No prates Observed? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology:	
This is a dry ephemeral channel. No aquatic life was observed; however, crayfish b	urrows were present in the channel. This sampling poin

is channelized and armored with riprap located near a pipeline facility. Approximately 32 feet of this 240-foot reach of stream UNT-1 to Ohio River would be channelized.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





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SITE NAME/LOCATION UNT-2 to Ohio River				
SITE NUMBER_N/A	RIVER E	ASIN N/A	DRAINAGE AR	EA (mi²) <u><1</u>
LENGTH OF STREAM REACH (ft) 200	LAT. <u>37.88931</u> LO	NG. <u>-87.51670</u> RIVER	R CODE N/A RIV	ER MILE N/A
DATE 08/02/18 SCORER Luke F. Egge	ring COMMENTS V	Vooded ephemeral draw/c	hannel.	
NOTE: Complete All Items On This Form	- Refer to "Field E	aluation Manual for O	hio's PHWH Streams	s" for Instructions
STREAM CHANNEL NONE / NAT	URAL CHANNEL 🗍	RECOVERED TRECOV	VERING TRECENT	OR NO RECOVERY
MODIFICATIONS:				
SUBSTRATE (Estimate percent of ever (Max of 32). Add total number of significa				
	RCENT TYPE	OU T 10 (1	PERO	— Dainta
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]		SILT [3 pt] LEAF PACK/WOODY D	10 DEBRIS [3 pts] 10	0
BEDROCK [16 pt]		FINE DETRITUS [3 pts		May = 40
☐ ☐ COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts]	0 20	CLAY or HARDPAN [0 MUCK [0 pts]	pt] 40	
SAND (<2 mm) [6 pts]	20	ARTIFICIAL [3 pts]	0	—— II 14 II
Total of Percentages of	(A)	1	(1	B) _ A+B
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBST	O 9	TOTAL NUMBER	OF SUBSTRATE TYPE	5
	-			<u> </u>
 Maximum Pool Depth (Measure the ma evaluation. Avoid plunge pools from road 	• •	, ,		me of Pool Depth Max = 30
> 30 centimeters [20 pts]	_	> 5 cm - 10 cm [15 pts	,	
 > 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]		< 5 cm [5 pts] NO WATER OR MOIS	ST CHANNEL [0 pts]	
_, , , ,				
COMMENTS The channel is dry.		MAXIMUM POO	L DEPTH (centimeters	1 1 1
COMMENTS The channel is dry. BANK FULL WIDTH (Measured as the comments)	avorage of 3-4 measure		ON V one box):	s):
3. BANK FULL WIDTH (Measured as the a	average of 3-4 measur	ements) (Check (ONLY one box): - 4' 8") [15 pts]	Bankfull Width
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	average of 3-4 measur	ements) (Check	ONLY one box): - 4' 8") [15 pts]	Bankfull Width Max=30
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	average of 3-4 measur	ements) (Check of 1.0 m - 1.5 m (> 3' 3") [5 pts	ONLY one box): 4' 8") [15 pts]	Bankfull Width Max=30
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	average of 3-4 measur	ements) (Check of 1.0 m - 1.5 m (> 3' 3") [5 pts	ONLY one box): - 4' 8") [15 pts]	Bankfull Width Max=30
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	This information	ements) (Check of the completed) (Check of th	ONLY one box): ' - 4' 8") [15 pts]] IKFULL WIDTH (meters	Bankfull Width Max=30 5
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is shallow. RIPARIAN ZONE AND FLOODP	This information LAIN QUALITY ☆	ements) (Check of the completed NOTE: River Left (L) and Riverse (Check of the completed (L) and Riverse (L) and Riverse (L) and Riverse (L) and Riverse (L) (L) and Riverse (L) (L) and Riverse (L) (L) (L) (L) (L) (L) (L) (L) (L) (L)	ONLY one box): ' - 4' 8") [15 pts]] IKFULL WIDTH (meters	Bankfull Width Max=30 5
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is shallow. RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank)	This information LAIN QUALITY ☆ FLOODPLAIN QUAL L R (Most Pred	ements) (Check of 1 > 1.0 m - 1.5 m (> 3' 3")	ONLY one box): 1 - 4' 8") [15 pts] IKFULL WIDTH (meters) ight (R) as looking down:	Bankfull Width Max=30 5 stream 3
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is shallow. RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m	This information LAIN QUALITY ☆ FLOODPLAIN QUAL L R (Most Prec	ements) (Check of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the complete of the comp	ONLY one box): 1 - 4' 8") [15 pts] IKFULL WIDTH (meters) ight (R) as looking down:	Bankfull Width Max=30 5
3. BANK FULL WIDTH (Measured as the assertion of the second of the seco	This information LAIN QUALITY ☆ FLOODPLAIN QUAL L R (Most Pred Mature Fo Immature Field	ements) (Check of 1 > 1.0 m - 1.5 m (> 3' 3")	ONLY one box): 1-4' 8") [15 pts] IKFULL WIDTH (meters) ight (R) as looking down:	Bankfull Width Max=30 5 stream A ion Tillage industrial
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is shallow. RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m	This information LAIN QUALITY ☆ FLOODPLAIN QUAL L R (Most Prec Mature Fo Immature Field Residentia	ements) (Check of the complete	ONLY one box): 1-4' 8") [15 pts] IKFULL WIDTH (meters) ight (R) as looking down: Urban or Ir Open Past Crop	Bankfull Width Max=30 5 stream & ion Tillage industrial cure, Row
3. BANK FULL WIDTH (Measured as the assertion of the second of the seco	This information LAIN QUALITY ☆ FLOODPLAIN QUAL L R (Most Prec Mature Fo Immature Field	ements) (Check of the complete	ONLY one box): 1-4' 8") [15 pts] IKFULL WIDTH (meters) ight (R) as looking down: Urban or Ir Open Past Crop	Bankfull Width Max=30 5 stream A ion Tillage industrial
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is shallow. RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS	This information LAIN QUALITY \$\frac{1}{2}\$ FLOODPLAIN QUAL L R (Most Prec Mature Fo Immature Field Residentia Fenced Pa	ements) (Check of a start of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the complete of the comple	ONLY one box): 1-4' 8") [15 pts] IKFULL WIDTH (meters) ight (R) as looking down: Urban or Ir Open Past Crop	Bankfull Width Max=30 5 stream & ion Tillage industrial cure, Row
3. BANK FULL WIDTH (Measured as the asset of the second o	This information LAIN QUALITY ☆ FLOODPLAIN QUAL L R (Most Pred Mature Fo Immature Field Residentia Fenced Pa	ements) (Check of a start of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the complete of the co	ONLY one box): 1 - 4' 8") [15 pts] IKFULL WIDTH (meters) Ight (R) as looking downs Urban or Ir Open Past Crop Mining or C	Bankfull Width Max=30 5 stream \$\frac{1}{2}\$ ion Tillage endustrial cure, Row Construction
3. BANK FULL WIDTH (Measured as the asset of the second o	This information LAIN QUALITY A FLOODPLAIN QUAL L R (Most Pred Mature Fo Immature Field Residentia Fenced Pa	ements) (Check of a start of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the completed of the complete of the co	ONLY one box): 1 - 4' 8") [15 pts] IKFULL WIDTH (meters) IGHT (R) as looking downs Urban or Ir Open Past Crop Mining or C	Bankfull Width Max=30 5 stream \$\frac{1}{2}\$ ion Tillage endustrial cure, Row Construction
3. BANK FULL WIDTH (Measured as the asset of the second o	This information LAIN QUALITY FLOODPLAIN QUAL L R (Most Pred Mature For Immature Field Residential Residential Fenced Paration) (Check ONLY) (Station) (Check ONLY) (Check ONLY) (Check ONLY) (Check ONLY) (Check ONLY) (Check ONLY)	ements) (Check of Street Stree	ONLY one box): 1-4'8") [15 pts] IKFULL WIDTH (meters) IGHT (R) as looking downs Urban or Ir Open Past Crop Mining or C	Bankfull Width Max=30 5 stream \$\frac{1}{2}\$ ion Tillage endustrial cure, Row Construction
3. BANK FULL WIDTH (Measured as the as > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is shallow. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation of Subsurface flow with isolated pools COMMENTS This is a shallow egging None SINUOSITY (Number of bends per None)	This information LAIN QUALITY FLOODPLAIN QUAL L R (Most Pred Mature For Immature Field Residentia Residentia Fenced Paration) (Check ONLY s (Interstitial) chemeral channel.	ements) (Check of Street Check	ONLY one box): 1-4'8") [15 pts] IKFULL WIDTH (meters IGHT (R) as looking downs Urban or In Open Past Crop Mining or O , isolated pools, no flow o water (Ephemeral) x): 3.0	Bankfull Width Max=30 5 stream \$\frac{1}{2}\$ ion Tillage endustrial cure, Row Construction
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is shallow. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH (Per Bank) Wide > 10m Moderate 5-10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation of Subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools COMMENTS This is a shallow egroup of the subsurface flow with isolated pools comments of the subsurface flow with isolated pools comments of the subsurface flow with isolated pools comments of the subsurface flow with isolated pools comments of the subsurface flow with isolated pools comments of the subsurface flow with isolated pools comments of the subsurface flow with isolated pools comments of the subsurface flow with isolated pools comments of the subsurface flow with isolated pools comments of the subsurface flow with isolated pools comments of the subs	This information LAIN QUALITY FLOODPLAIN QUAL R (Most Pred Mature Fo Immature Field Residentia Residentia Fenced Paration) (Check ONLY s (Interstitial) Chemeral channel.	ements) (Check of Street Stree	ONLY one box): 1-4'8") [15 pts] IKFULL WIDTH (meters) IGHT (R) as looking downs Urban or Ir Open Past Crop Mining or C isolated pools, no flow owater (Ephemeral)	Bankfull Width Max=30 5 stream \$\frac{1}{2}\$ ion Tillage endustrial cure, Row Construction
3. BANK FULL WIDTH (Measured as the as > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is shallow. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation of Subsurface flow with isolated pools COMMENTS This is a shallow egging None SINUOSITY (Number of bends per None)	This information LAIN QUALITY FLOODPLAIN QUAL L R (Most Pred Mature For Immature Field Residentia Residentia Fenced Paration) (Check ONLY s (Interstitial) chemeral channel.	ements) (Check of Street Stree	ONLY one box): 1-4'8") [15 pts] IKFULL WIDTH (meters) Ight (R) as looking down: Urban or Ir Open Past Crop Mining or O , isolated pools, no flow o water (Ephemeral) X): 3.0 >3	Bankfull Width Max=30 5 stream \$\frac{1}{2}\$ ion Tillage endustrial cure, Row Construction

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): (If Yes, Attach Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) _____ Distance from Evaluated Stream _____ WWH Name: Ohio River CWH Name: Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name: Henderson, KY-IN NRCS Soil Map Page:____ NRCS Soil Map Stream Order____ County: Henderson County _____ Henderson _____ Township / City:___ **MISCELLANEOUS** Quantity: 0.5 inch Base Flow Conditions? (Y/N):____ Date of last precipitation:____ Photograph Information: ____ Photos attached. Elevated Turbidity? (Y/N): No ____ Canopy (% open): ____ Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: _____N/A $\text{Temp (°C)} \frac{\text{N/A}}{\text{Dissolved Oxygen (mg/l)}} \frac{\text{N/A}}{\text{pH (S.U.)}} \frac{\text{N/A}}{\text{pH (S.U.)}} \frac{\text{N/A}}{\text{Conductivity (μmhos/cm)}} \frac{\text{N/A}}{\text{N/A}}$ Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: Additional comments/description of pollution impacts: Silt/sediment in the channel is likely from logging activities. **BIOTIC EVALUATION** Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Fish Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Comments Regarding Biology: This is a shallow ephemeral channel that extends west to a recently logged area. Approximately 226 feet of the 412-foot stream would be enclosed in a culvert.

enclosed in a culvert.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):



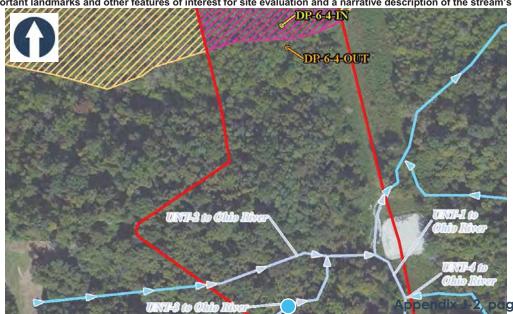


27

NI/A		
SITE NUMBER N/A	RIVER BASIN N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200 LAT.	37.88891 LONG. <u>-87.51687</u> RIVER CODE <u>N/A</u> RIVER MILE <u>N/A</u>	
DATE 08/02/18 SCORER Luke F. Eggering	COMMENTS Wooded ephemeral draw/channel	
NOTE: Complete All Items On This Form - Ref	efer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruc	ctions
STREAM CHANNEL NONE / NATURAL	CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERING RECENT OF NO RECOVERING R	/ERY
MODIFICATIONS:		
	e of substrate present. Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes bstrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE PERCEN	NT TYPE PERCENT	Metric
BLDR SLABS [16 pts] 0 BOULDER (>256 mm) [16 pts] 0	SILT [3 pt] 40 5	Points
BEDROCK [16 pt] 0		Substrate
COBBLE (65-256 mm) [12 pts] 0	CLAY or HARDPAN [0 pt] 15	Max = 40
GRAVEL (2-64 mm) [9 pts] 25 SAND (<2 mm) [6 pts] 0		17
SAND (<2 mm) [6 pts] 0	ARTIFICIAL [3 pts]0	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0	_ ^(A) 12	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE		
2. Maximum Pool Depth (Measure the maximum	Im pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culver	erts or storm water pipes) (Check ONLY one box):	Max = 30
→ 30 centimeters [20 pts]→ 22.5 - 30 cm [30 pts]	_J > 5 cm - 10 cm [15 pts] < 5 cm [5 pts]	5
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS Plunge pools had a little water	MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average	ge of 3-4 measurements) (Check ONLY one box):	Bankfull
> 4.0 meters (> 13') [30 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
	1.0	
COMMENTS This is an ephemeral channel.		5
COMMENTS This is an ephemeral channel.	AVERAGE BANKFULL WIDTH (meters)	5
		5
RIPARIAN ZONE AND FLOODPLAIN G	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY %NOTE: River Left (L) and Right (R) as looking downstream %	5
RIPARIAN ZONE AND FLOODPLAIN G	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ OODPLAIN QUALITY	5
RIPARIAN ZONE AND FLOODPLAIN G RIPARIAN WIDTH L R (Per Bank) L Wide >10m	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY ANOTE: River Left (L) and Right (R) as looking downstream OODPLAIN QUALITY R (Most Predominant per Bank) Mature Forest, Wetland Conservation Tillage	5
RIPARIAN ZONE AND FLOODPLAIN O RIPARIAN WIDTH FLO L R (Per Bank) L	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY ANOTE: River Left (L) and Right (R) as looking downstream OODPLAIN QUALITY R (Most Predominant per Bank) Mature Forest, Wetland Conservation Tillage	5
RIPARIAN ZONE AND FLOODPLAIN OF RIPARIAN WIDTH L R (Per Bank) Wide >10m	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY %NOTE: River Left (L) and Right (R) as looking downstream% OODPLAIN QUALITY R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Urban or Industrial Residential Park New Field Open Pasture, Row	5
RIPARIAN ZONE AND FLOODPLAIN G RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY ANOTE: River Left (L) and Right (R) as looking downstream OODPLAIN QUALITY R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture OVER DEATH OF THE MIDTH (meters) L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction	5
RIPARIAN ZONE AND FLOODPLAIN OF RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY ANOTE: River Left (L) and Right (R) as looking downstream OODPLAIN QUALITY R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture OVER DEATH OF THE MIDTH (meters) L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction	5
RIPARIAN ZONE AND FLOODPLAIN OF RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS The area was selectively FLOW REGIME (At Time of Evaluation)	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY NOTE: River Left (L) and Right (R) as looking downstream OODPLAIN QUALITY R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Residential, Park, New Field Gopen Pasture, Row Crop Fenced Pasture Fenced Pasture Fenced Pasture Forest, Shrub or Old Field Gopen Pasture, Row Crop Mining or Construction Fenced Pasture Fence	3
RIPARIAN ZONE AND FLOODPLAIN OF RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS The area was selectively	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY NOTE: River Left (L) and Right (R) as looking downstream OODPLAIN QUALITY R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Wetland Immature Forest, Shrub or Old Field Open Pasture, Row Crop Mining or Construction y logged last year. Moist Channel, isolated pools, no flow (Intermittent)	5
RIPARIAN ZONE AND FLOODPLAIN OF RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS The area was selectively FLOW REGIME (At Time of Evaluation) Stream Flowing Subsurface flow with isolated pools (Inter	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY NOTE: River Left (L) and Right (R) as looking downstream OODPLAIN QUALITY R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Wetland Immature Forest, Shrub or Old Field Open Pasture, Row Crop Mining or Construction y logged last year. Moist Channel, isolated pools, no flow (Intermittent)	3
RIPARIAN ZONE AND FLOODPLAIN OF RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS The area was selectively FLOW REGIME (At Time of Evaluation) Stream Flowing Subsurface flow with isolated pools (Inter COMMENTS The channel is usually dressed in the comment of the comment	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY NOTE: River Left (L) and Right (R) as looking downstream OODPLAIN QUALITY R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Urban or Industrial Residential, Park, New Field Open Pasture, Row Crop Fenced Pasture Mining or Construction y logged last year. Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral) Iry. Water in pools is from recent rainfall.	5
RIPARIAN ZONE AND FLOODPLAIN OF RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS The area was selectively FLOW REGIME (At Time of Evaluation) Stream Flowing Subsurface flow with isolated pools (Inter COMMENTS The channel is usually dressed in the comment of the comment	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY NOTE: River Left (L) and Right (R) as looking downstream \(\frac{1}{2} \) OODPLAIN QUALITY R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Urban or Industrial Residential, Park, New Field Crop Fenced Pasture Mining or Construction Volgaged last year. Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral) Iry. Water in pools is from recent rainfall.	3
RIPARIAN ZONE AND FLOODPLAIN OF RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS The area was selectively FLOW REGIME (At Time of Evaluation) Stream Flowing Subsurface flow with isolated pools (Inter COMMENTS The channel is usually dr. SINUOSITY (Number of bends per 61 m.) None None 1.0 0.5	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY NOTE: River Left (L) and Right (R) as looking downstream \(\frac{1}{2} \) OODPLAIN QUALITY R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Urban or Industrial Residential, Park, New Field Crop Fenced Pasture Mining or Construction Volgaged last year. Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral) Iry. Water in pools is from recent rainfall.	5
RIPARIAN ZONE AND FLOODPLAIN OF RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS The area was selectively FLOW REGIME (At Time of Evaluation) Stream Flowing Subsurface flow with isolated pools (Inter COMMENTS The channel is usually drawn of the comment of	AVERAGE BANKFULL WIDTH (meters) This information must also be completed QUALITY NOTE: River Left (L) and Right (R) as looking downstream \(\frac{1}{2} \) OODPLAIN QUALITY R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Urban or Industrial Residential, Park, New Field Crop Fenced Pasture Mining or Construction Volgaged last year. Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral) Iry. Water in pools is from recent rainfall.	

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): **QHEI PERFORMED?** - \square Yes \blacksquare No QHEI Score $^{N/A}$ (If Yes, Attach Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) Distance from Evaluated Stream 0.9 mile WWH Name: Ohio River CWH Name: ___ Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name: Henderson, KY-IN NRCS Soil Map Page: NRCS Soil Map Stream Order 1 County: Henderson County _____ Henderson _____ Township / City:___ **MISCELLANEOUS** Base Flow Conditions? (Y/N):____ Date of last precipitation:____ Quantity:____ Photograph Information: ____ Photos attached. Elevated Turbidity? (Y/N): No ____ Canopy (% open): ____ Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: $\text{Temp (°C)} \frac{\text{N/A}}{\text{Dissolved Oxygen (mg/l)}} \text{ Dissolved Oxygen (mg/l)} \frac{\text{N/A}}{\text{pH (S.U.)}} \text{ pH (S.U.)} \frac{\text{N/A}}{\text{Conductivity (μmhos/cm)}} \frac{\text{N/A}}{\text{N/A}}$ Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: Additional comments/description of pollution impacts: Silt and muck in the channel is likely from logging activities. **BIOTIC EVALUATION** Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Fish Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Comments Regarding Biology: This is an ephemeral channel in a forest. Recent logging activity likely contributed to the presence of silt and muck in the channel. The surrounding area is good wildlife habitat. Approximately 181 feet of the 252-foot channel would be enclosed in a culvert.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):





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00

SITE NAME/LOCATION UNT-4 to Ohio River				
	RIVER BASIN N/	A DRAIN	AGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 14 L	AT. <u>37.88900</u> LONG. <u>-87</u>	7.51586 RIVER CODE N/A	RIVER MILE N/	Α
DATE 08/02/18 SCORER Luke F. Egger	ing COMMENTS Sample po	oint is in a pipeline right-of-way		
NOTE: Complete All Items On This Form	- Refer to "Field Evaluatio	n Manual for Ohio's PHWH	Streams" for Instru	ıctions
STREAM CHANNEL	RAL CHANNEL RECOVE	RED RECOVERING R	ECENT OR NO RECO	VERY
MODIFICATIONS:				
 SUBSTRATE (Estimate percent of every (Max of 32). Add total number of significan 				HHEI
TYPE PEF	RCENT TYPE	,	PERCENT	Metric Points
□ □ BLDR SLABS [16 pts] □ □ BOULDER (>256 mm) [16 pts] □	0	[3 pt] PACK/WOODY DEBRIS [3 pts]	80 0	Politis
BEDROCK [16 pt]	0	DETRITUS [3 pts]	0	Substrate Max = 40
COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts]		or HARDPAN [0 pt]	0 0	
SAND (<2 mm) [6 pts]		K [0 pts] FICIAL [3 pts]	0	18
Total of Percentages of	(A)		(B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock1 SCORE OF TWO MOST PREDOMINATE SUBSTR	<u>5</u> 15	OTAL NUMBER OF SUBSTRAT	3	ATD
	-			
 Maximum Pool Depth (Measure the max evaluation. Avoid plunge pools from road of 		, ,	at the time of	Pool Depth Max = 30
> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts]	<u> </u>	cm - 10 cm [15 pts]		
> 10 - 22.5 cm [25 pts]	_	WATER OR MOIST CHANNEL [(pts]	5
COMMENTS Intermittent pools of waters	in a normally dry channel.	_ MAXIMUM POOL DEPTH (cen	timeters):	
3. BANK FULL WIDTH (Measured as the av	verage of 3-4 measurements)	(Check ONLY one box):	Bankfull
> 4.0 meters (> 13') [30 pts]	> 1.0) m - 1.5 m (> 3' 3" - 4' 8") [15 pts]		Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	□ ≤ 1.0	0 m (≤ 3' 3") [5 pts]		Max=30
COMMENTS The channel is eroded throu	ugh the pipline right-of-way.	AVERAGE BANKFULL WIDTH	1.5	15
		_	. ,	
DIDADIAN ZONE AND EL CODDI	This information must als		n n. dayımatına anayAs	
RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH	FLOODPLAIN QUALITY	ver Left (L) and Right (R) as looki	ng downstream ∡	
L R (Per Bank) Wide >10m	L R (Most Predominant Mature Forest, Wetl		onservation Tillage	
Moderate 5-10m	Immature Forest, SI	hrub or Old	rban or Industrial	
	Field	33 0	pen Pasture, Row	
☐ ☐ Narrow <5m ☐ ☐ None	Residential, Park, N Fenced Pasture	lew Field C	rop ining or Construction	
COMMENTS Pipeline right-of-way				
FLOW REGIME (At Time of Evalua	ation) (Check ONLY one box):			
Stream Flowing Subsurface flow with isolated pools		Moist Channel, isolated pools, Dry channel, no water (Epher	,	
COMMENTS This is normally a dr	` ,	Dry Channel, no water (Epher		
SINUOSITY (Number of bends_per	61 m (200 ft) of channel) (Ch	neck ONLY one box):		
None 0.5	1.0	2.0	3.0 >3	
			-	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft)	☐ Moderate to Severe	Severe (10 ft/10	O ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): **QHEI PERFORMED?** - \square Yes \blacksquare No QHEI Score $^{N/A}$ (If Yes, Attach Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) Distance from Evaluated Stream 0.9 mile WWH Name: Ohio River CWH Name: ___ Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name: Henderson, KY-IN NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1 County: Henderson County _____ Henderson **MISCELLANEOUS** Quantity: 0.5 inch Base Flow Conditions? (Y/N):____ Date of last precipitation:____ Photograph Information: ____ Photos attached. Elevated Turbidity? (Y/N): No ____ Canopy (% open): 60 Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: $\text{Temp (°C)} \frac{\text{N/A}}{\text{Dissolved Oxygen (mg/l)}} \frac{\text{N/A}}{\text{pH (S.U.)}} \frac{\text{N/A}}{\text{pH (S.U.)}} \frac{\text{N/A}}{\text{Conductivity (μmhos/cm)}} \frac{\text{N/A}}{\text{N/A}}$ Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A Additional comments/description of pollution impacts:_____Some agriculture is present in the upper reaches of the watershed. **BIOTIC EVALUATION** Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Fish Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Comments Regarding Biology: UNT-4 to Ohio River is a deeply incised channel located west of a utility right-of-way. The sample point is located within a pipeline right-of-way; however, the majority of the overall system is forested. The area is primarily used by upland species. An occasional crayfish burrow was observed.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):





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SITE NUMBER_N/A	RIVER BASIN N	I/A DRA	NAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200			RIVER MILE N/	Α
DATE 08/02/18 SCORER Luke F. Egge	ring COMMENTS Wooded	ephemeral draw/channel		
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation	on Manual for Ohio's PHWF	l Streams" for Instru	uctions
STREAM CHANNEL NONE / NATU	JRAL CHANNEL	ERED RECOVERING	RECENT OR NO RECC	VERY
MODIFICATIONS:				
 SUBSTRATE (Estimate percent of ever (Max of 32). Add total number of significal 				HHEI
	RCENT TYPE 0 SILT	· 1041	PERCENT	Metric Points
BOULDER (>256 mm) [16 pts]		· [3 pt] F PACK/WOODY DEBRIS [3 pts	10 0	
BEDROCK [16 pt]		DETRITUS [3 pts]	0	Substrate Max = 40
☐ ☐ COBBLE (65-256 mm) [12 pts]		Y or HARDPAN [0 pt] CK [0 pts]	30 0	40
SAND (<2 mm) [6 pts]		IFICIAL [3 pts]	0	13
Total of Percentages of	(A)		(B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBST	0 9	TOTAL NUMBER OF SUBSTRA	TE TYPES:	,,,,,
 Maximum Pool Depth (Measure the ma evaluation. Avoid plunge pools from road 			ch at the time of	Pool Depth Max = 30
> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts]	<u> </u>	cm - 10 cm [15 pts] cm [5 pts]		
> 10 - 22.5 cm [25 pts]		WATER OR MOIST CHANNEL	[0 pts]	5
COMMENTS Water is from recent rainfa	II.	MAXIMUM POOL DEPTH (ce	2.5	
3 RANK FULL WIDTH (Measured as the a	versage of 3-4 measurements	(Check ONLY one ho	×).	Bankfull
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	> 1.	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts		Bankfull Width
`	> 1.		5]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts]	1.5	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	> 1.	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts	1.5	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded.	> 1.	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT	TH (meters)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPI	> 1.	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT	TH (meters)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank)	This information must at AIN QUALITY ☆ NOTE: R FLOODPLAIN QUALITY L R (Most Predominant	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as loo	th (meters) 1.5	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPLE RIPARIAN WIDTH L R (Per Bank) Wide >10m	This information must at AIN QUALITY ANOTE: R FLOODPLAIN QUALITY L R (Most Predominant Mature Forest, We	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as loo t per Bank) L R Shrub or Old	th (meters) 1.5 king downstream☆ Conservation Tillage	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH (Per Bank) Wide > 10m Moderate 5-10m	This information must at AIN QUALITY ANOTE: R FLOODPLAIN QUALITY L R (Most Predominant Mature Forest, We Immature Forest, S Field	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as loo t per Bank) t per Bank) L R ttland Ghrub or Old	th (meters) 1.5 King downstream☆ Conservation Tillage Urban or Industrial	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPLE RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m	This information must all AIN QUALITY ☆NOTE: R FLOODPLAIN QUALITY L R (Most Predominant Mature Forest, We Immature Forest, S Field Residential, Park, I	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as loo t per Bank) t per Bank) t land Ghrub or Old	king downstream A Conservation Tillage Urban or Industrial Open Pasture, Row Crop	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m	This information must at AIN QUALITY L R (Most Predominant Mature Forest, We Immature Forest, S Field	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as loo at per Bank) t per Bank) t per Bank) t per Bank) t l R thand Shrub or Old	th (meters) 1.5 King downstream☆ Conservation Tillage Urban or Industrial Open Pasture, Row	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS	This information must all AIN QUALITY ☆NOTE: R FLOODPLAIN QUALITY L R (Most Predominant Mature Forest, We Immature Forest, Seld Residential, Park, I Grand Pasture	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as loo t per Bank) L R thand Ghrub or Old New Field	king downstream A Conservation Tillage Urban or Industrial Open Pasture, Row Crop	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation of	This information must at AIN QUALITY ANOTE: REFLOODPLAIN QUALITY L R (Most Predominant Mature Forest, We Immature Forest, We Field Residential, Park, Immature Procest Pasture	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as loo t per Bank) ttland Shrub or Old New Field	king downstream A Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction s, no flow (Intermittent)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10 m Moderate 5-10 m Narrow < 5 m None COMMENTS FLOW REGIME (At Time of Evaluation of Evaluati	This information must at AIN QUALITY NOTE: R FLOODPLAIN QUALITY L R (Most Predominant Mature Forest, We Immature Forest, We Field Residential, Park, I Penced Pasture (Check ONLY one box of Interstitial)	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT lso be completed River Left (L) and Right (R) as loo t per Bank) ttland httland New Field Moist Channel, isolated pool Dry channel, no water (Eph-	king downstream A Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction s, no flow (Intermittent) emeral)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation	This information must at AIN QUALITY ANOTE: REFLOODPLAIN QUALITY L R (Most Predominant Mature Forest, We Immature Forest, We Immature Forest, Seld Residential, Park, Immature Forest, Seld Residential,	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as loo t per Bank) t per Bank) t per Bank Withand Direction of Old Mew Field	king downstream A Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction s, no flow (Intermittent) emeral)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation of Subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools comments the subsurface flow with its pools of the subsurface flow with its pools of the subsurface flow with its pools of the subsurface flow with its	This information must at AIN QUALITY ANOTE: R FLOODPLAIN QUALITY L R (Most Predominant Mature Forest, We Immature Forest, Sell Field Residential, Park, If Fenced Pasture Forest Pasture Forest Pasture Interestitial) To the control of the control o	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as loo to the per Bank)	king downstream A Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction s, no flow (Intermittent) emeral) at rains.	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation	This information must all AIN QUALITY ANOTE: R FLOODPLAIN QUALITY L R (Most Predominant Mature Forest, We Immature Forest, We Immature Forest, Seld Field Residential, Park, Immature Forest, Seld	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as lood t per Bank) ttland Chrub or Old New Field	king downstream \(\frac{1}{2} \) Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction is, no flow (Intermittent) emeral) it rains.	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is eroded. RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation of Subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools COMMENTS This is normally a design of the subsurface flow with isolated pools comments the subsurface flow with its pools of the subsurface flow with its pools of the subsurface flow with its pools of the subsurface flow with its	This information must at AIN QUALITY ANOTE: R FLOODPLAIN QUALITY L R (Most Predominant Mature Forest, We Immature Forest, Sell Field Residential, Park, If Fenced Pasture Forest Pasture Forest Pasture Interestitial) To the control of the control o	.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts .0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDT Iso be completed River Left (L) and Right (R) as loo to the per Bank)	king downstream A Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction s, no flow (Intermittent) emeral) at rains.	Width Max=30

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Tyes No QHEI Score N/A (If Yes, Attach Complete)	eted QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distant	ce from Evaluated Stream 1.0 mile
☐ CWH Name: Distance	ce from Evaluated Stream
☐ EWH Name: Distance	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. O	
USGS Quadrangle Name: NRCS Soil Map Page: N/A	NRCS Soil Map Stream Order
County: Henderson County Township / City: Henderson	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation: Qua	0.5 inch ntity:
Photograph Information:	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach	N/A results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A	Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A	
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: ID number. Include appropriate field data sheets from the Primary Hea	•
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed?	
Comments Regarding Biology:	
This is a deeply incised wooded channel/ephemeral stream. Pools of water during survey are li	kely from recent rains. No aquatic species

This is a deeply incised wooded channel/ephemeral stream. Pools of water during survey are likely from recent rains. No aquatic species were observed. Some crayfish burrows were observed. The surrounding area is good quality habitat for upland species. Approximately 263 feet of the 403-foot channel would be enclosed in a culvert.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):

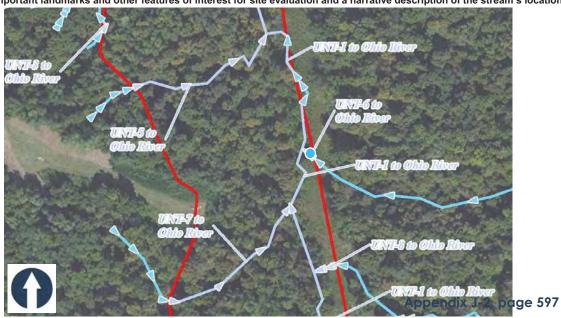




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SITE NAME/LOCATION UNT-6 to Ohio River	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 42 LAT. 37.88709 LONG87.51534 RIVER CODE N/A RIVER MILE NOTE: 08/02/18 SCORER Luke F. Eggering COMMENTS Sample point is in a pipeline right-of-way	//A
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru-	
STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO REC	OVERY
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts] SILT [3 pt] LEAF PACK/WOODY DEBRIS [3 pts] CLAY or HARDPAN [0 pt] MUCK [0 pts] GRAVEL (2-64 mm) [6 pts] ARTIFICIAL [3 pts]	HHEI Metric Points Substrate Max = 40
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 15 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	A + B
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): > 30 centimeters [20 pts]	Pool Depth Max = 30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	Bankfull Width Max=30
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m Moderate 5-10m Residential, Park, New Field Narrow <5m Residential, Park, New Field None Compen Pasture, Row Crop Mining or Construction COMMENTS Pipeline right-of-way is currently an old field. FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Moderate 5-10m Stream Flowing Moderate 5-10m Moderate 5-10m Moderate 5-10m Moderate 5-10m Moderate 5-10m Residential, Park, New Field Open Pasture, Row Crop Mining or Construction Compendent of Evaluation (Check ONLY one box): Stream Flowing Moderate 5-10m Modera	_
Subsurface flow with isolated pools (Interstitial) COMMENTS This is normally a dry channel. SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 0.5 1.5 3.0 >3	_
STREAM GRADIENT ESTIMATE ☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)	00 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - Tyes No QHEI Score N/A (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.0 mile
CWH Name: Distance from Evaluated Stream
BWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): No Date of last precipitation: 07/30/18 Quantity: 0.5 inch
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 60
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: Some agriculture is present in the upper reaches of the watershed.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the sit ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (
Comments Regarding Biology:
UNT-6 to Ohio River is a deeply incised channel located west of a utility right-of-way. The sample point is located within a pipeline right-of-way; however, the majority of the overall system is forested. The area is primarily used by upland species. An occasional crayfish burrow was observed





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SITE NAME/LOCATION UNT-7 to Ohio River	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) _	:1
LENGTH OF STREAM REACH (ft) 200 LAT. 37.88631 LONG87.51586 RIVER CODE N/A RIVER MILE	N/A
DATE 08/02/18 SCORER Luke F. Eggering COMMENTS Wooded steep sided ephemeral channel	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Ins	tructions
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RE	COVERY
MODIFICATIONS:	001211
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE PERCENT TYPE PERCENT	Metric Points
□ □ BLDR SLABS [16 pts] □ □ SILT [3 pt] □ □ 0 BOULDER (>256 mm) [16 pts] □ □ LEAF PACK/WOODY DEBRIS [3 pts] □ 0	Politis
BEDROCK [16 pt] 10 FINE DETRITUS [3 pts] 0	Substrate
COBBLE (65-256 mm) [12 pts] 30 CLAY or HARDPAN [0 pt] 0	Max = 40
GRAVEL (2-64 mm) [9 pts] 30	26
□ □ SAND (<2 mm) [6 pts]	
Bldr Slabs, Boulder, Cobble, Bedrock 50 21 5	A+B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	'
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
□ > 22.5 - 30 cm [30 pts] □ < 5 cm [5 pts]	15
□ > 10 - 22.5 cm [25 pts] □ NO WATER OR MOIST CHANNEL [0 pts] 7.5	
COMMENTS Water in the plunge pools are from recent rains. MAXIMUM POOL DEPTH (centimeters):	'
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfull
<pre></pre>	Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	5
COMMENTS The channel is very steep sided. AVERAGE BANKFULL WIDTH (meters)	
This information <u>must</u> also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R	
Wide >10m Mature Forest, Wetland D Conservation Tillage Immature Forest, Shrub or Old	
Field Urban or Industrial	
□ □ Narrow <5m □ □ Residential, Park, New Field □ □ Open Pasture, Row Crop	
□ □ None □ □ □ Fenced Pasture □ □ □ Mining or Construction	n
COMMENTS This is a deeply incised channel in a wooded draw.	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	-4\
Stream Flowing Subsurface flow with isolated pools (Interstitial) Moist Channel, isolated pools, no flow (Intermitte Dry channel, no water (Ephemeral)	11)
COMMENTS This is normally a dry channel. Pools of water during survey are likely from recent rains.	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
□ None □ 1.0 □ 2.0 □ 3.0 □ 0.5 □ 1.5 □ 2.5 □ >3	
STREAM GRADIENT ESTIMATE ☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft)	/100 ft)

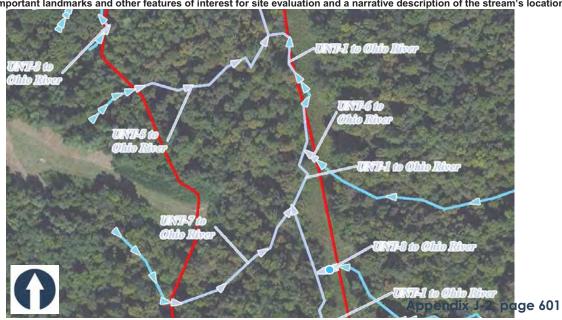
ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream 1.1 mile
CWH Name:	Distance from Evaluated Stream
EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE EN	TIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:	NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Towns	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): No Date of last precipitation: 07/3	0/18 Quantity: 0.5 inch
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): (Note lab	sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not,	please explain:
Additional comments/description of pollution impacts: This is a uniform	n deeply incised channel.
BIOTIC EVALUATION	
· / ·	r collections optional. NOTE: all voucher samples must be labeled with the site a sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders O Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquat	
Comments Regarding Biology:	
This is an ephemeral channel in a wooded draw. The water that is c were observed. No crayfish burrows were observed. Approximately	currently in the channel is likely due to recent rainfall. No aquatic species 224 feet of the 392-foot channel would be enclosed in a culvert.



41

SITE NAME/LOCATION UNT-8 to Ohio River	
SITE NUMBER_N/A RIVER BASIN_N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 60 LAT. 37.88630 LONG87.51508 RIVER CODE N/A RIVER MILE N/A	4
DATE 08/02/18 SCORER Luke F. Eggering COMMENTS Sample point is in a pipeline right-of-way	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru	ıctions
STREAM CHANNEL	VERY
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE PERCENT O SILT [3 pt] O	HHEI Metric Points
□ □	Substrate
COBBLE (65-256 mm) [12 pts] 25 CLAY or HARDPAN [0 pt] 0	Max = 40
GRAVEL (2-64 mm) [9 pts] 5 MUCK [0 pts] 0	31
SAND (\2 \text{Illill}) [0 pis]	
Total of Percentages of (A) Bldr Slabs, Boulder, Cobble, Bedrock 95 28	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box): > 30 centimeters [20 pts]	Max = 30
22.5 - 30 cm [30 pts] < 5 cm [5 pts]	5
□ > 10 - 22.5 cm [25 pts] □ NO WATER OR MOIST CHANNEL [0 pts] 2.5	
COMMENTS Intermittent pools of water in a normally dry channel. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check <i>ONLY</i> one box):	Bankfull Width
J > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Solution = 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
□ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	5
COMMENTS The channel is eroded through the pipline right-of-way. AVERAGE BANKFULL WIDTH (meters)	
This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R	
☐ ☐ Wide >10m ☐ ☐ Mature Forest, Wetland ☐ ☐ Conservation Tillage Immature Forest, Shrub or Old	
Field Urban or Industrial	
Narrow <5m Residential, Park, New Field Open Pasture, Row Crop	
☐ ☐ None ☐ ☐ Fenced Pasture ☐ ☐ Mining or Construction COMMENTS Pipeline right-of-way is currently an old field.	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS This is normally a dry channel. Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
None 1.0 2.0 3.0 0.5 1.5 2.5 >3	

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.1 mile
CWH Name: Distance from Evaluated Stream
BWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Henderson, KY-IN NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): No Date of last precipitation: 07/30/18 Quantity: 0.5 inch
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 40
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (μmhos/cm) N/A
s the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: Some agriculture is present in the upper reaches of the watershed.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Vouche
Comments Regarding Biology:
Generally, this is a dry ephemeral channel. The sample point is located within a pipeline right-of-way; however, the majority of the overall system is forested. The area is primarily used by upland species. An occasional crayfish burrow was observed. Lichens were present on the bedrock and channel. Approximately 34 feet of UNT-8 to Ohio River will be filled. UNT-8 to Ohio River will be connected to the channelized portion of UNT-1 to Ohio River.

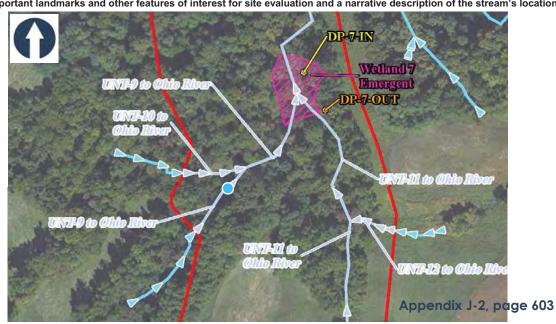




11

SITE NAME/LOCATION UNT-9 to Ohio River				
SITE NUMBER_N/A	RIVER BASIN N	N/A DRA	AINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200			RIVER MILE N/	Α
DATE 08/02/18 SCORER Luke F. Egge	ering COMMENTS Epheme	eral channel in a wooded draw		
NOTE: Complete All Items On This Form	ո - Refer to "Field Evaluati	on Manual for Ohio's PHW	H Streams" for Instru	uctions
STREAM CHANNEL NONE / NAT	URAL CHANNEL	VERED RECOVERING	RECENT OR NO RECO	VERY
MODIFICATIONS:				
 SUBSTRATE (Estimate percent of ever (Max of 32). Add total number of signification. 				HHEI
	ERCENT TYPE		PERCENT	Metric Points
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]		T [3 pt] kf pack/woody debris [3 pt:	15 10	i Ollits
BEDROCK [16 pt]		E DETRITUS [3 pts]	0	Substrate Max = 40
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ GRAVEL (2-64 mm) [9 pts]		AY or HARDPAN [0 pt] CK [0 pts]	<u>75</u> 0	
SAND (<2 mm) [6 pts]		FIFICIAL [3 pts]	0	6
Total of Percentages of	(A)		(B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBS	3	TOTAL NUMBER OF SUBSTR	3	Α.Β
 Maximum Pool Depth (Measure the ma evaluation. Avoid plunge pools from road 			ich at the time of	Pool Depth Max = 30
> 30 centimeters [20 pts]	<u> </u>	5 cm - 10 cm [15 pts]		
 > 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]		5 cm [5 pts] D WATER OR MOIST CHANNEL	. [0 pts]	0
COMMENTS This is an ephemeral char	nnel.	MAXIMUM POOL DEPTH (c	entimeters):	
3. BANK FULL WIDTH (Measured as the second s	average of 3-4 measurements		ox):	Bankfull Width
3. BANK FULL WIDTH (Measured as the second s	average of 3-4 measurements	s) (Check ONLY one b	ox):	
3. BANK FULL WIDTH (Measured as the second s	average of 3-4 measurements > 1 > 2	(Check <i>ONLY</i> one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts]	ox): s	Width
3. BANK FULL WIDTH (Measured as the second s	average of 3-4 measurements > 1 > 2	(Check <i>ONLY</i> one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts]	ox): s	Width Max=30
3. BANK FULL WIDTH (Measured as the second s	average of 3-4 measurements > 1 > 2	s) (Check <i>ONLY</i> one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pi 1.0 m (≤ 3' 3") [5 pts]	ox): s	Width Max=30
3. BANK FULL WIDTH (Measured as the assertion of the second of the seco	average of 3-4 measurements	s) (Check <i>ONLY</i> one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pi 1.0 m (≤ 3' 3") [5 pts]	ox): is] TH (meters)	Width Max=30
3. BANK FULL WIDTH (Measured as the algorithm) > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is incised at the algorithm of the algorithm.	This information must a LAIN QUALITY L R (Most Predominar	s) (Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pi 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo	ox): is] TH (meters)	Width Max=30
3. BANK FULL WIDTH (Measured as the second	This information must a LAIN QUALITY FLOODPLAIN QUALITY L R (Most Predominar Mature Forest, We	(Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo nt per Bank) L R etland Shrub or Old	ox): ss] TH (meters) bking downstream☆ Conservation Tillage	Width Max=30
3. BANK FULL WIDTH (Measured as the assertion of the second of the secon	This information must a LAIN QUALITY L R (Most Predominar	s) (Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo nt per Bank) L R etland □ □	ox): s] TH (meters) Dking downstream Conservation Tillage Urban or Industrial	Width Max=30
3. BANK FULL WIDTH (Measured as the second	This information must a LAIN QUALITY (Most Predominar Mature Forest, We) Immature Forest, We) Residential, Park,	(Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo nt per Bank) etland Shrub or Old	ox): ss] TH (meters) bking downstream☆ Conservation Tillage	Width Max=30
3. BANK FULL WIDTH (Measured as the second s	This information must a LAIN QUALITY C (Most Predominar Mature Forest, We Field	(Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo nt per Bank) etland Shrub or Old	ox): s] TH (meters) Dking downstream☆ Conservation Tillage Urban or Industrial Open Pasture, Row	Width Max=30
3. BANK FULL WIDTH (Measured as the second s	This information must a LAIN QUALITY C (Most Predominar Mature Forest, We Field Residential, Park, Fenced Pasture	s) (Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo nt per Bank)	ox): s] TH (meters) Dking downstream Conservation Tillage Urban or Industrial Open Pasture, Row Crop	Width Max=30
3. BANK FULL WIDTH (Measured as the second s	This information must a LAIN QUALITY C (Most Predominar Mature Forest, We Field Residential, Park, Fenced Pasture	(Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo nt per Bank) etland Shrub or Old New Field	ox): ITH (meters) Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction	Width Max=30
3. BANK FULL WIDTH (Measured as the second	This information must a LAIN QUALITY L R (Most Predominar Mature Forest, We Immature Forest, We Field Residential, Park, Fenced Pasture Lation) (Check ONLY one box	(Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo nt per Bank) etland Shrub or Old New Field	ox): ITH (meters) Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ols, no flow (Intermittent)	Width Max=30
3. BANK FULL WIDTH (Measured as the second	This information must a LAIN QUALITY REPORT (Most Predominar Mature Forest, Well Image: Mature Forest, Well Image: Median Residential, Park, Fenced Pasture Wation) (Check ONLY one box is (Interstitial)	s) (Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo at per Bank) betland Shrub or Old New Field Moist Channel, isolated por Dry channel, no water (Ept	ox): ITH (meters) Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ols, no flow (Intermittent)	Width Max=30
3. BANK FULL WIDTH (Measured as the second s	This information must a LAIN QUALITY REPORT Mature Forest, We limit Field Residential, Park, Fenced Pasture Wation) (Check ONLY one box is (Interstitial)	s) (Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo at per Bank) betland Shrub or Old New Field Check ONLY one box): 2.0	cx): s] TH (meters) Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ols, no flow (Intermittent) temeral)	Width Max=30
3. BANK FULL WIDTH (Measured as the second	This information must a LAIN QUALITY REPORT Mature Forest, Well (Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID Also be completed River Left (L) and Right (R) as lo at per Bank) betland Shrub or Old New Field Check ONLY one box):	ox): ITH (meters) Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ols, no flow (Intermittent) memeral)	Width Max=30	
3. BANK FULL WIDTH (Measured as the second s	This information must a LAIN QUALITY REPORT Mature Forest, We limit Field Residential, Park, Fenced Pasture Wation) (Check ONLY one box is (Interstitial)	s) (Check ONLY one b 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] W. AVERAGE BANKFULL WID also be completed River Left (L) and Right (R) as lo at per Bank) betland Shrub or Old New Field Check ONLY one box): 2.0	cx): s] TH (meters) Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ols, no flow (Intermittent) temeral)	Width Max=30 5

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.2 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): No Date of last precipitation: 07/30/18 Quantity: 0.5"
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 95
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: This is a dry ephemeral channel. There is the potential for soil erosion and herbicides
entering from agricultural fields to the south.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y
Comments Regarding Biology:
This is an ephemeral channel in a wooded draw that likely only has flow during stormwater events. It is fairly undisturbed and the surrounding area is high quality habitat for terrestrial wildlife. Crayfish burrows are present in the channel. Approximately 22 feet of UNT-9 to Ohio River would be enclosed in a culvert. Approximately 144 feet of channel lies within the ROW, however it would not be impacted.





SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mir) <1 LENGTH OF STREAM REACH (t) 165 LAT, 37.88478 LONG, -87.51592 RIVER CODE N/A RIVER MILE N/A DATE 08/02/18 SCORRE Luke F. Eggering COMMENTS Ephemeral channel in a wooded draw. NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY MODIFICATIONS: 1. SUBSTRATE (Estimate percent of every type of substrate present. Check O/L/1 bug predominant substrate TYPE boxes (Max of 32), Add total number of significant substrate byses found (Max of 5), Final metric score is sum of boxes A & B. Type BOXES A B. Type BOXES A	SITE NAME/LOCATION UNT-10 to Ohio River	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERING RECOVERING RECENT OR NO RECOVERY MODIFICATIONS: 1. SUBSTRATE (Estimate percent of every type of substrate present. Check. ONL. Y two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. SUBSTRATE (Estimate percent of every type of substrate present. Check. ONL. Y two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. SUBSTRATE (Estimate percent of every type of substrate present. Check. ONL. Y two predominant substrate TYPE boxes (Max of 8). Final metric score is sum of boxes A & B. SUBSTRATE (Types). BLDR SLABS (16 pts)	SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi ²) <1	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY MODIFICATIONS: 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HELL (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HELL (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HELL (Max of 8). Final metric score is sum of		
TREAM CHANNEL MODIFICATIONS: NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY MODIFICATIONS: NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY MODIFICATIONS: SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY be predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. PERCENT YPE SILT [3 pt] PERCENT SILT [3 pt] SILT	DATE 08/02/18 SCORER Luke F. Eggering COMMENTS Ephemeral channel in a wooded draw.	
### MODIFICATIONS: 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY byo predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Type	NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruction	ns
### MODIFICATIONS: 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY byo predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Type	STREAM CHANNEL NONE / NATURAL CHANNEL TRECOVERED TRECOVERING TRECENT OR NO RECOVER'S	Y
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Bus (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Bus (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Bus (Max of 8). Final metric score is sum of boxes A		
(Max of 32), Add total number of significant substrate types found (Max of 8), Final metric score is sum of boxes A & B. HEE TYPE PERCENT TYPE		
BLDR SLABS [16 pts]		
BLDR SLABS [16 pts]	()·······························	
Substrate Garage	BLDR SLABS [16 pts] 0 SILT [3 pt] Po	
COBBLE (65-256 mm) [12 pts]	\ \ /!!! \	strate
GRAVEL (2-64 mm) [9 pts]	— Max	x = 40
Total of Percentages of Bidr Slabs, Boulder, Cobble, Bedrock 0 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverls or storm water pipes) (Check ONLY one box): > 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts] > 22.5 - 30 cm [30 pts] > 40 meters (2 13) [30 pts] > 4.0 meters (2 13) [30 pts] > 1.5 m - 3.0 m (> 9' 7' - 13) [25 pts] > 1.5 m - 3.0 m (> 9' 7' - 4' 8'') [20 pts] COMMENTS The channel is narrow and incised. This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY **NOTE: River Left (L) and Right (R) as looking downstream:* RIPARIAN WIDTH FLOODPLAIN QUALITY **NOTE: River Left (L) and Right (R) as looking downstream:* RIPARIAN WIDTH FLOODPLAIN QUALITY **MOTE: River Left (L) and Right (R) as looking downstream:* RIPARIAN WIDTH FLOODPLAIN QUALITY **MOTE: River Left (L) and Right (R) as looking downstream:* RIPARIAN WIDTH FLOODPLAIN QUALITY **MOTE: River Left (L) and Right (R) as looking downstream:* RIPARIAN WIDTH FLOODPLAIN QUALITY **Moter Forest, Wetland Mature Forest, Wetland Mature Forest, Shrub or Old Urban or Industrial Field Narrow <5m	CDAVEL (2.64 mm) In stal	7
Bldr Slabs, Boulder, Cobble, Bedrock		
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): > 30 centimeters [20 pts]	Total of Percentages of (A)	+ B
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): > 30 centimeters [20 pts]		
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): 30 centimeters [20 pts]	·· ·	
> 30 centimeters [20 pts]		-
COMMENTS This is an ephemeral channel. MAXIMUM POOL DEPTH (centimeters): MAXIMUM POOL DEPTH (centimeters): MAXIMUM POOL DEPTH (centimeters): MAXIMUM POOL DEPTH (centimeters): (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 4' 8") [25 pts] > 3.0 m - 4.0 m (> 9' 7" - 4' 8") [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is narrow and incised. AVERAGE BANKFULL WIDTH (meters) This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream A griph and the pool of t	□ > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	X - 55
COMMENTS This is an ephemeral channel. MAXIMUM POOL DEPTH (centimeters): 3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts]		0
Bank FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS The channel is narrow and incised. This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream: RIPARIAN WIDTH FLOODPLAIN QUALITY Mature Forest, Wetland Mature Forest, Wetland Moderate 5-10m Moderate 5-10m Residential, Park, New Field Narrow <5m Residential, Park, New Field None COMMENTS This is a wooded draw. FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)		
> 4.0 meters (> 13') [30 pts]	COMMENTS Inis is an epnemeral channel. MAXIMUM POOL DEPTH (centimeters):	
3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY NoTE: River Left (L) and Right (R) as looking downstream to Note (L) and Right (R) as looking downstream to Right (R) as looking downstream to Note (L) and Right (R) as looking downstream to Note (L) and Right (R) as looking downstream to Note (L) and Right (R) as looking downstream to Note (L) and Right (R) as looking downstream to Note (L) and Right (R) as looking downstream to Note (L) and Right (R) as looking downstream to Note (L) and Right (R) as looking downstream to		
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY □ Residential, Park, New Field □ Conservation Tillage □ Moderate 5-10m □ Residential, Park, New Field □ Open Pasture, Row Crop □ None □ Fenced Pasture □ COMMENTS This is a wooded draw. FLOW REGIME (At Time of Evaluation) (Check ONLY one box): □ Stream Flowing □ Moist Channel, isolated pools, no flow (Intermittent) □ Dry channel, no water (Ephemeral)	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	5
RIPARIAN ZONE AND FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) Wide >10m Mature Forest, Wetland Immature Forest, Shrub or Old Field Narrow <5m None Comments is a wooded draw. FLOW REGIME (At Time of Evaluation) Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream A NOTE: River Left (L) and Right (R) as looking downstream A NOTE: River Left (L) and Right (R) as looking downstream A NOTE: River Left (L) and Right (R) as looking downstream A NOTE: River Left (L) and Right (R) as looking downstream A NOTE: River Left (L) and Right (R) as looking downstream A NOTE: River Left (L) and Right (R) as looking downstream A NOTE: River Left (L) and Right (R) as looking downstream A NOTE: River Left (L) and Right (R) as looking downstream A NOTE: River Left (L) and Right (R) as looking downstream A Notice Left (L) and Right		
RIPARIAN ZONE AND FLOODPLAIN QUALITY RIPARIAN WIDTH (Per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m Marrow <5m Narrow <5m None COMMENTS This is a wooded draw. FLOW REGIME (At Time of Evaluation) Subsurface flow with isolated pools (Interstitial) RIPARIAN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream Another End of the content of the co		
RIPARIAN WIDTH (Per Bank) Wide >10m Mature Forest, Wetland Immature Forest, Shrub or Old Field Narrow <5m None COMMENTS This is a wooded draw. FLOW REGIME (At Time of Evaluation) Stream Flowing Subsurface flow with isolated pools (Interstitial) FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R (Most Pr	<u> </u>	
L R (Per Bank) Wide >10m Mature Forest, Wetland Mature Forest, Wetland Moderate 5-10m Moderate 5		
Moderate 5-10m	L R (Per Bank) L R (Most Predominant per Bank) L R	
Narrow <5m	mmature Forest Shrub or Old	
Narrow <5m	Field Urban or Industrial	
COMMENTS This is a wooded draw. FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing	Narrow <5m Residential Park New Field	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)	□ □ None □ □ □ Fenced Pasture □ □ □ Mining or Construction	
Stream Flowing Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)	COMMENTS This is a wooded draw.	
Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral)		
COMMENTS This ephemeral channel only has flow during stormwater events.		
	COMMENTS This ephemeral channel only has flow during stormwater events.	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):		
✓ None ■ 1.0 ✓ 2.0 ✓ 3.0 ✓ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3		
STREAM GRADIENT ESTIMATE ☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)		

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream
CWH Name: Distance from Evaluated Stream
EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE <u>ENTIRE</u> WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: N/A NRCS Soil Map Page: NRCS Soil Map Stream Order NRCS Soil Map Stream Order
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: O7/30/18 Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 85
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: This is an ephemeral channel in a wooded draw. The area is fairly undisturbed.
It is likely dry except during stormwater events.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the si ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Vouche
Comments Regarding Biology:
Crayfish burrows were observed in the channel. There are 362 feet of UNT-10 to Ohio River in the ROW. Approximately 254 feet of UNT-

to Ohio River would be filled and replaced with 284 feet (78 feet of existing channel in culvert +206 feet of new culvert) of culvert that will extend from the western construction limits to UNT-1 to Ohio River. Approximately 61 feet of braided channel is within Wetland 7.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

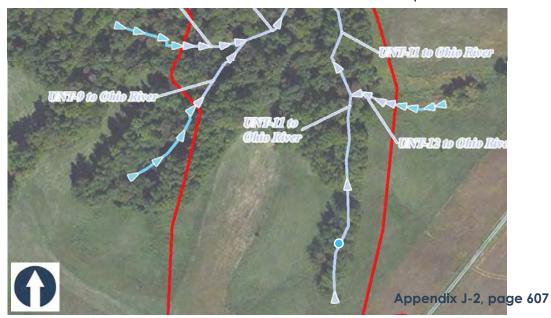




26

SITE NAME/LOCATION UNT-11 to Ohio River	
SITE NUMBER_N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200 LAT. 37.88347 LONG87.51491 RIVER CODE N/A RIVER MILE N/A	
DATE 08/02/18 SCORER Luke F. Eggering COMMENTS Wooded draw with agriculture surrounding	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruct	tions
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVE	ERY
MODIFICATIONS:	
	HHEI
	Metric Points
BOULDER (>256 mm) [16 pts] 0 LEAF PACK/WOODY DEBRIS [3 pts] 5	
BEDROCK [16 pt] — FINE DETRITOS [3 pts] — —	Substrate Vlax = 40
□ COBBLE (65-256 mm) [12 pts] 0 □ CLAY or HARDPAN [0 pt] 80 □ □ GRAVEL (2-64 mm) [9 pts] 0 □ MUCK [0 pts] 0 □	
□ □ SAND (<2 mm) [6 pts] □ □ □ ARTIFICIAL [3 pts] □ □	6
Total of Percentages of (A) (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock0 \$ SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	X - 2
	ool Depth Max = 30
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	
☐ > 22.5 - 30 cm [30 pts] ☐ < 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	0
COMMENTS Water is present only during stormwater events. MAXIMUM POOL DEPTH (centimeters):	
(**************************************	Bankfull Width
□ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] □ ≤ 1.0 m (≤ 3' 3") [5 pts] □	Max=30
1.6	20
COMMENTS This is a small eroded channel. AVERAGE BANKFULL WIDTH (meters)	
This information must also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY \$\text{NOTE}: River Left (L) and Right (R) as looking downstream \$\text{\$\frac{1}{2}}\$	
RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R	
Wide >10m Mature Forest, Wetland Conservation Tillage	
Field Urban or Industrial	
□ □ Narrow <5m □ □ Residential, Park, New Field □ □ Open Pasture, Row Crop	
□ □ None □ □ □ Fenced Pasture □ □ □ Mining or Construction	
COMMENTS Agriculture is present on both sides of the wooded draw.	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Moist Channel, isolated pools, no flow (Intermittent)	
Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral)	
COMMENTS Ephemeral flow only.	
<u> </u>	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
<u> </u>	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None	

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.3 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: Soil erosion from agricultural field is probable but not severe.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology:
This is an ephemeral channel in a wooded draw that is surrounded by agricultural fields. This is habitat for deer and upland species. Occasional crayfish burrows are in the channel. Approximately 878 feet of UNT-11 to Ohio River will be relocated to east of the ROW. Approximately 64 feet of UNT-11 to Ohio River is braided through Wetland 7.



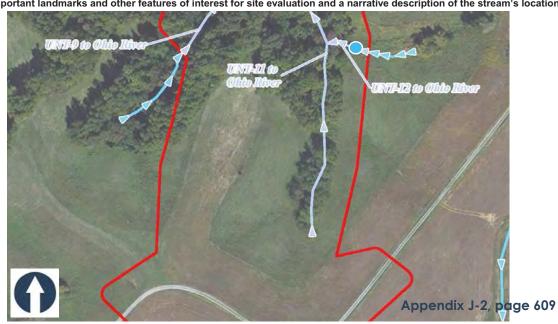


SITE NAME/LOCATION UNT-12 to Ohio River	
SITE NUMBER_N/A RIVER BASIN_N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 113 LAT. 37.88447 LONG87.51457 RIVER CODE N/A RIVER MILE N	'A
DATE 08/02/18 SCORER Luke F. Eggering COMMENTS Wooded draw from the east	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Institute 1.	uctions
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO REC	OVERY
MODIFICATIONS:	
 SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. 	HHEI
TYPE PERCENT TYPE PERCENT	Metric
□ □ BLDR SLABS [16 pts] 0 □ □ SILT [3 pt] 15 □ □ BOULDER (>256 mm) [16 pts] 5 □ □ LEAF PACK/WOODY DEBRIS [3 pts] 0	Points
BEDROCK [16 pt] 0 FINE DETRITUS [3 pts] 0	Substrate
COBBLE (65-256 mm) [12 pts] 0 CLAY or HARDPAN [0 pt] 80	Max = 40
☐ ☐ GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] ☐ SAND (<2 mm) [6 pts]	6
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5 (A) 3	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
> 22.5 - 30 cm [30 pts] < 5 cm [5 pts]	5
□ > 10 - 22.5 cm [25 pts] □ NO WATER OR MOIST CHANNEL [0 pts] 4	
COMMENTS After rain, there are a few holes of water in plunge pool. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfull
 > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.0 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] 	Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	
COMMENTS This is an eroded channel with several plunge pools. AVERAGE BANKFULL WIDTH (meters)	5
This information <u>must</u> also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY なNOTE: River Left (L) and Right (R) as looking downstreamな RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R	
Wide >10m Mature Forest, Wetland D Conservation Tillage Immature Forest, Shrub or Old	
Field Urban or Industrial	
□ □ Narrow <5m □ □ Residential, Park, New Field □ □ Open Pasture, Row Crop	
☐ ☐ None ☐ ☐ Fenced Pasture ☐ ☐ Mining or Construction COMMENTS 75 feet east of the channel is an agricultural field.	
	-
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Moist Channel, isolated pools, no flow (Intermittent	
Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral)	
COMMENTS At the sample point, the channel is dry.	-
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0	
□ None □ 1.0 □ 2.0 □ 3.0 □ 0.5 □ 1.5 □ 2.5 □ >3	
STREAM GRADIENT ESTIMATE	
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/1	00 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Complete	ed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A (If Yes,	Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream 1.15 miles
CWH Name:	Distance from Evaluated Stream
T EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERS	SHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil M	Map Page: NRCS Soil Map Stream Order
County: Henderson County Township / City: Her	nderson
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	Quantity:
Photograph Information:Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or	r id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U	J.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream $(Y/N) \frac{N/A}{M}$ If not, please explain	N/A
Additional comments/description of pollution impacts:	field is probable but not severe.
This sample point is a wooded draw.	
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections op ID number. Include appropriate field data sheets from the	•
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvert	
Comments Regarding Biology:	
There are some head-cuts and plunge pools developed along the eroding channe opossum and raccoon tracks were observed. Approximately 88 feet of UNT-12 to	

UNT-12 to Ohio River would be filled and UNT-12 to Ohio River will connect to channelized section of UNT-11 to Ohio River.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





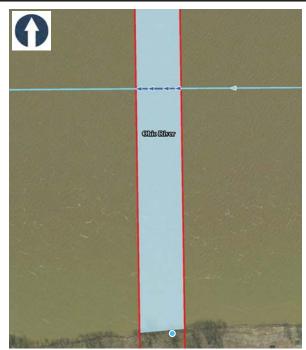
Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI	Score:	58	

Stream & Location: Ohio River	RM: N/A Date: 08/01/18
Scorers Full Name & Affiliation:	Luke F. Eggering, PWS
River Code: N/A STORET #: N/A Lat./ Long.: (NAD 83 - decimal) 37.9013	6, -87.51918 Office verified location □
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present BEST TYPES POOL RIFFLE HARDPAN [4] BULDER [9] COBBLE [8] O O O MUCK [2] CRAYFI [7] CORD RIFFLE ORIGIN CHECK ONLY Two substrate TYPE BOXES; estimate % or note every type present OTHER TYPES POOL RIFFLE ORIGIN LIMESTONE [1] DETRITUS [3] O O O MUCK [2] TILLS [1] WETLANDS [0]	ONE (Or 2 & average) QUALITY HEAVY [-2] MODERATE [-1] Substrate ODE ONE (Or 2 & average) OUALITY Substrate The property of the propert
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more commo quality; 2-Moderate amounts, but not of highest quality or in small amounts quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional 0 UNDERCUT BANKS [1] 3 POOLS > 70cm [2] 0 OXBOWS, BACKWATE 2 OVERHANGING VEGETATION [1] 0 ROOTWADS [1] 0 AQUATIC MACROPHY: 0 BOULDERS [1] 3 LOGS OR WOODY DEEP ROOTMATS [1]	of highest , large Check ONE (<i>Or 2 & average</i>) pools.
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECENT OR NO RECOVERY [1]	Channel Maximum 15
The entire stretch in the project area is channelized but stable.	20
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (O	
RIPARIAN WIDTH EROSION MIDE > 50m [4] MODERATE [3] MODERATE [2] MODERATE [2] MODERATE [1] VERY NARROW < 5m [1] PENCED PLAIN QUALI FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD FENCED PASTURE [1] NONE [0]	CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] [1] MINING / CONSTRUCTION [0] Indicate predominant land use(s)
Comments	past 100m riparian. Riparian 7
The left decending bank was recently sprayed with herbicide to kill woody vegetation.	10
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH Check ONE (ONLY!) > 1m [6] 0.7-<1m [4] 0.4-<0.7m [2] 0.2-<0.4m [1] CHANNEL WIDTH CHANNEL WIDTH CHANNEL WIDTH Check ONE (Or 2 & average) Check ALL that apply Check ALL that apply TORRENTIAL [-1] VERY FAST [1] INTERSITE MODERATE [1] MODERATE [1] EDDIES [1	FIAL [-1] TENT [-2] Primary Contact Secondary Contact (circle one and comment on back)
□ < 0.2m [0] Indicate for reach - pools and rii	
Indicate for functional riffles; Best areas must be large enough to support of riffle-obligate species: Check ONE (Or 2 & average).	a population NO RIFFLE [metric=0]
RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFF BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2]	FLE / RUN EMBEDDEDNESS
□ BEST AREAS 5-10cm [1] □ MAXIMUM < 50cm [1]	LOW [1] MODERATE [0] Riffle / Run EXTENSIVE [-1] Maximum 5
Comments No riffles were present in the reach.	- Maximum 8
6] GRADIENT (2 ft/mi) VERY LOW - LOW [2-4] %POOL: 0	%GLIDE: 0 Gradient 3
DRAINAGE AREA	%RIFFLE: 0 Maximum

A] SAMPLED REACH Check ALL that apply METHOD STAGE BOAT 1st -sample pass- 2nd WADE HIGH L. LINE UP OTHER NORMAL DISTANCE DRY DRY	•	**		y/Sampling observations, Concerns, Acc by the Kentucky Division of Wate	
□ 0.5 Km □ 0.2 Km □ 0.15 Km □ 0.12 Km □ 0.12 Km □ 0.12 Km □ 0.17 Km □ 0.12 Km □ 20-c40 cm □ 20-c40 cm □ > 70 cm / CTB □ > 70 cm / CTB □ > 85% - OPEN □ 55% - 85% □ 30% - 55%	□ INVASIVE MACROPHYTES □ EXCESS TURBIDITY □ DISCOLORATION □ FOAM / SCUM □ OIL SHEEN □ TRASH / LITTER □ NUISANCE ODOR □ SILIDGE DEPOSITS	DJ MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS MOVING-BELOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED	Circle some & COMMENT	E] ISSUES WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPS-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT	F] MEASUREMENTS \(\overline{x} \) width \(\overline{x} \) depth max. depth \(\overline{x} \) bankfull width bankfull \(\overline{x} \) depth W/D ratio bankfull max. depth floodprone x ² width entrench. ratio
■ 10%-<30% <p>C] RECR <10%- CLOSED</p>	EATION AREA DEPTH POOL: □>100ft²□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:



HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME Ohio River	LOCATION Henderson, Kentucky	
STATION # NA RIVERMILE NA	STREAM CLASS Perennial	
LAT <u>37.90136</u> LONG <u>-87.51918</u>	RIVER BASIN Ohio River	
STORET # N/A	AGENCY N/A	
INVESTIGATORS L. Eggering		
FORM COMPLETED BY L. Eggering	DATE 08/01/18 TIME 3:00 AM PM REASON FOR SURVEY I-69 ORX Project	

	Habitat	Condition Category				
	Parameter	Optimal	Suboptimal	Marginal	Poor	
	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
each	SCORE 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.	
uate	score 9	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
rs to be eval	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.	
mete	score 15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
Para	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	
	score 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.	
	SCORE 20	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat		Condition	ı Category		
	Parameter	Optimal	Suboptimal	Marginal	Poor	
	Alteration dredging absent or minimal; stream with normal pattern. present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than dredging, (greater than dredging absent or minimal; stream with normal pattern. present, usually in areas of extensive; embankments or shoring structures the present on both banks; and channelization, i.e., dredging, (greater than disrupted. alter		Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.			
	SCORE 15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
npling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.	
ı san	score 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.	
eva	SCORE 9 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0	
to be	SCORE 9 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0	
Parameters	9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	
	SCORE 8 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0	
	SCORE 8 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0	
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.	
	SCORE 6 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0	
	SCORE 6 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0	

Total Score 144

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Ohio River	LOCATION Henderson, Kentucky		
STATION # N/A RIVERMILE N/A	STREAM CLASS Perennial		
LAT <u>37.90136</u> LONG <u>-87.51918</u>	RIVER BASIN Ohio River		
STORET # N/A	AGENCY N/A		
investigators L. Eggering			
FORM COMPLETED BY L. Eggering	DATE 08/01/18 TIME 3:00 PM AM PM	REASON FOR SURVEY I-69 ORX Project	

WEATHER CONDITIONS	Now , , , , , , , , , , , , , , , , , , ,	storm (heavy rain) rain (steady rain) showers (intermittent) %cloud cover clear/sunny	Past 24 hours	Has there been a heavy rain in the last 7 days? 'Yes ■ No Air Temperature 28 ° C Other Light rain over the previous 3 days
SITE LOCATION/MAP	Draw a map	of the site and indicate th	ie areas samį	oled (or attach a photograph)
	See attac	hed Qualitative Hab	oitat Evalu	ation Index (QHEI) Form.
STREAM CHARACTERIZATION	Stream Subs	system ' Intermittent ' Tid	lal	Stream Type ' Coldwater
	Stream Orig ' Glacial ' Non-glacia ' Swamp and	rin ' Spring-fe I montane Mixture of		Catchment Area_>250 km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse ' Forest ' Commercial Field/Pasture ' Industrial ' Agricultural ' Other ' Residential Local Watershed NPS Pollution ' No evidence ' Some potential sources Obvious sources Local Watershed Erosion None ' Moderate ' Heavy	
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the dominant Trees Shrubs dominant species present	ant species present Grasses ' Herbaceous
INSTREAM FEATURES	Estimated Reach Length 200 m Estimated Stream Width 618 m Sampling Reach Area 123,600 m² Area in km² (m²x1000) 1.24 km² Estimated Stream Depth 9 m Surface Velocity <1 m/sec (at thalweg)	Canopy Cover Partly open ' Partly shaded ' Shaded High Water Mark 618 m Proportion of Reach Represented by Stream Morphology Types ' Run 0 % ' Pool 100 % Channelized ' Yes No Dam Present ' Yes No
LARGE WOODY DEBRIS	LWD N/A m² Density of LWD N/A m²/km² (LWD/ reach	h area)
AQUATIC VEGETATION	Indicate the dominant type and record the dominant 'Rooted emergent' Rooted submergent 'Attached Algae 'Attached Algae Aquatic vegetation absent. Portion of the reach with aquatic vegetation Output Description: Out	Rooted floating ' Free floating
WATER QUALITY	Temperature 18.6 0 C Specific Conductance 317.8 SPC Dissolved Oxygen 96% pH 7.68 Turbidity 35.96 NTU WQ Instrument Used YSI ProDSS	Water Odors Normal/None ' Sewage ' Petroleum ' Chemical ' Fishy ' Other Water Surface Oils ' Slick ' Sheen ' Globs ' Flecks None ' Other Turbidity (if not measured) ' Clear Slightly turbid ' Turbid ' Opaque ' Stained ' Other
SEDIMENT/ SUBSTRATE	Odors ' Normal ' Sewage ' Petroleum ' Chemical ' Anaerobic None ' Other Oils Absent ' Slight ' Moderate ' Profuse	Deposits 'Sludge 'Sawdust 'Paper fiber 'Sand Other No deposits. Looking at stones which are not deeply embedded, are the undersides black in color? 'Yes 'No No stones present.

INC	INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)		ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type Characteristic % Composition in Sampling Area		
Bedrock		0	Detritus	sticks, wood, coarse plant	15
Boulder	> 256 mm (10")	5		materials (CPOM)	15
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic	10
Gravel	2-64 mm (0.1"-2.5")	0		(FPOM)	10
Sand	0.06-2mm (gritty)	15	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	75]		Ü
Clay	< 0.004 mm (slick)	0			

5% is comprised of artificial material.



25

A1/A	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <	<1
LENGTH OF STREAM REACH (ft) 200 LAT. 37.88112 LONG87.51607 RIVER CODE N/A RIVER MILE	N/A
DATE 08/03/18 SCORER Luke F. Eggering COMMENTS This is an eroded ephemeral channel	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Ins	tructions
STREAM CHANNEL	COVERY
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE PERCENT TYPE PERCENT	Metric Points
□ □ BLDR SLABS [16 pts] 0 □ SILT [3 pt] 20 □ □ 0 □ □ LEAF PACK/WOODY DEBRIS [3 pts] 0	Points
BEDROCK [16 pt] 0 FINE DETRITUS [3 pts] 0	Substrate Max = 40
☐ ☐ COBBLE (65-256 mm) [12 pts] 0	Wax - 40
☐ ☐ GRAVEL (2-64 mm) [9 pts] 0 ☐ ☐ MUCK [0 pts] 0 ☐ ☐ SAND (<2 mm) [6 pts]	5
	. '
Total of Percentages of (A) Bldr Slabs, Boulder, Cobble, Bedrock 0 3	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
> 22.5 - 30 cm [30 pts] < 5 cm [5 pts]	0
□ > 10 - 22.5 cm [25 pts] ■ NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS The channel is dry. MAXIMUM POOL DEPTH (centimeters):	'
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfull
 > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] 	Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	20
COMMENTS Channel is incised from erosion. AVERAGE BANKFULL WIDTH (meters)	' 20
	٠ ــــــــــــــــــــــــــــــــــــ
This information <u>must</u> also be completed	
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R	
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This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆ NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Moderate 5-10m Residential, Park, New Field This information must also be completed Narrow <5m This information must also be completed Note: Also Note: River Left (L) and Right (R) as looking downstream☆ Note: Also Note: River Left (L) and Right (R) as looking downstream☆ Note: Also Note: River Left (L) and Right (R) as looking downstream☆ Note: Also N	
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This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m Moderate 5-10m Residential, Park, New Field Narrow <5m Residential, Park, New Field Completed Open Pasture, Row Crop None COMMENTS RDB: Soybeans, LDB:Narrow strip of herbaceous plants, mainly blackberry. FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Moderate 5-10m Stream Flowing Moderate 5-10m Moderate 5-10m Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction Check ONLY one box): Moist Channel, isolated pools, no flow (Intermitted)	on ——
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m Moderate 5-10m Residential, Park, New Field Narrow <5m Residential, Park, New Field None COMMENTS RDB: Soybeans, LDB:Narrow strip of herbaceous plants, mainly blackberry. This information must also be completed NOTE: River Left (L) and Right (R) as looking downstream Nariow Left (L) and Right (R) as looking downstream Nariow Left (L) and Right (R) as looking downstream Residential, Park (Most Predominant per Bank) L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction COMMENTS RDB: Soybeans, LDB:Narrow strip of herbaceous plants, mainly blackberry. FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	on ——
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ♣NOTE: River Left (L) and Right (R) as looking downstream♣ RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R Wide >10m	on ——
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY RIPARIAN WIDTH RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH RIPARIAN WITHH RIPARIA	on ——
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This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY RIPARIAN WIDTH RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH RIPARIAN WIDTH FLOODPLAIN QUALITY RIPARIAN WIDTH RIPARIAN WITHH RIPARIA	on nt)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): **QHEI PERFORMED?** - \square Yes \blacksquare No QHEI Score $^{N/A}$ (If Yes, Attach Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) _____ Distance from Evaluated Stream _____ WWH Name: Ohio River CWH Name: Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name: Henderson, KY-IN NRCS Soil Map Page: N/A NRCS Soil Map Stream Order Township / Citv: Henderson Henderson County County: **MISCELLANEOUS** Quantity: 0.5 inches Base Flow Conditions? (Y/N): ____ Date of last precipitation: ____ Photograph Information: ____ Photos attached. Elevated Turbidity? (Y/N): No Canopy (% open): Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: $\text{Temp (°C)} \frac{\text{N/A}}{\text{Dissolved Oxygen (mg/l)}} \frac{\text{N/A}}{\text{pH (S.U.)}} \frac{\text{N/A}}{\text{pH (S.U.)}} \frac{\text{N/A}}{\text{Conductivity (μmhos/cm)}} \frac{\text{N/A}}{\text{N/A}}$ Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A Additional comments/description of pollution impacts: The channel likely receives eroded soils from the adjacent agricultural field. The channel is incised. **BIOTIC EVALUATION** Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Fish Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Comments Regarding Biology: This is a dry ephemeral channel downstream from a wetland. It is eroded and likely only carries water in stormwater events. The channel is incised from stormwater, but also likely receives eroded soils from the adjacent agricultural field. The area provides habitat for deer. Crayfish burrows were observed along the bottom of the channel. Approximately 454 feet of UNT-1 to North Fork Canoe Creek would lie within the ROW and 416 feet would be filled.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):





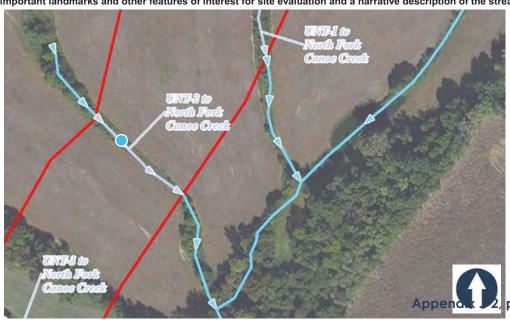
25

SITE NAME/LOCATION UNT-2 to North Fork Canoe Creek	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) 0.0	
LENGTH OF STREAM REACH (ft) 200 LAT. 37.87914 LONG87.51703 RIVER CODE N/A RIVER MILE N	/A
DATE 08/03/18 SCORER Luke F. Eggering COMMENTS This is an eroded ephemeral channel	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instr	uctions
STREAM CHANNEL	OVERY
MODIFICATIONS:	
 SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. 	HHEI
TYPE PERCENT TYPE PERCENT	Metric
□ □ BLDR SLABS [16 pts] 0 SILT [3 pt] 20	Points
□ □ BOULDER (>256 mm) [16 pts] □ □ □ LEAF PACK/WOODY DEBRIS [3 pts] □ □ □ BEDROCK [16 pt] □ □ □ FINE DETRITUS [3 pts] □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	Substrate
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ CLAY or HARDPAN [0 pt] 80	Max = 40
☐ ☐ GRAVEL (2-64 mm) [9 pts] 0	5
□ □ SAND (<2 mm) [6 pts] □ □ □ ARTIFICIAL [3 pts] □ 0	
Total of Percentages of (A)	A + B
Bidr Slabs, Boulder, Cobble, Bedrock 0 TOTAL NUMBER OF SUBSTRATE TYPES: 2	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Max = 30
⇒ 30 centimeters [20 pts]	
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS The channel is dry. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfull
> 4.0 meters (> 13') [30 pts]	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] ≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
2.5	20
COMMENTS Channel is incised from erosion. AVERAGE BANKFULL WIDTH (meters)	
This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH FLOODPLAIN QUALITY L. D. (North Part Par	
L R (Per Bank) L R (Most Predominant per Bank) L R U U Wide >10m U Mature Forest, Wetland U Conservation Tillage	
Moderate 5-10m Immature Forest, Shrub or Old Urban or Industrial	
Field Onen Pasture Row	
Narrow <5m Pesidential, Park, New Field Crop	
☐ ■ None ☐ ☐ Fenced Pasture ☐ ☐ Mining or Construction COMMENTS RDB: Soybeans, LDB:Narrow strip of herbaceous plants, mainly blackberry.	_
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing Moist Channel, isolated pools, no flow (Intermittent))
☐ Subsurface flow with isolated pools (Interstitial) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
	_
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0	
_ STREAM GRADIENT ESTIMATE	
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate	00 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): **QHEI PERFORMED?** - \square Yes \blacksquare No QHEI Score $^{N/A}$ (If Yes, Attach Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) _____ Distance from Evaluated Stream 1.5 miles WWH Name: Ohio River CWH Name: Distance from Evaluated Stream _____ Distance from Evaluated Stream ____ EWH Name: MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name: Henderson, KY-IN NRCS Soil Map Page: NRCS Soil Map Stream Order County: Henderson County _____ Henderson **MISCELLANEOUS** Base Flow Conditions? (Y/N): No Date of last precipitation: 07/30/18 Quantity: 0.5" Photograph Information: ____ Photos attached. _____ Canopy (% open): ___ Elevated Turbidity? (Y/N): No Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A Is the sampling reach representative of the stream (Y/N) $\frac{N/A}{}$ If not, please explain: $\frac{N/A}{}$ Additional comments/description of pollution impacts: The channel likely receives eroded soils from the adjacent agricultural field. The channel is incised. **BIOTIC EVALUATION** Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Comments Regarding Biology: This is a dry ephemeral channel downstream from a wetland. It is eroded and likely only carries water in stormwater events. The channel is incised from stormwater, but also likely receives eroded soils from the adjacent agricultural field. The area provides habitat for deer.

Crayfish burrows were observed along the bottom of the channel. Approximately 246 feet of UNT-2 to North Fork Canoe Creek would lie within the ROW.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):





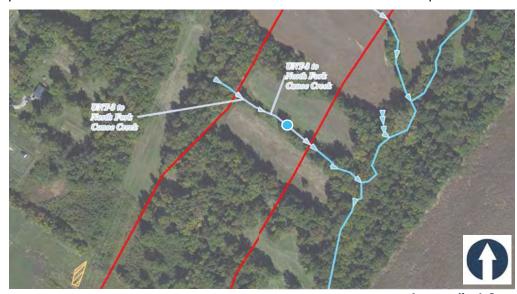
14

SITE NAME/LOCATION UNT-3 to North Fork Ca		
	RIVER BASIN N/A DRAINAGE ARE	. ,
	AT. <u>37.87794</u> LONG. <u>-87.51793</u> RIVER CODE <u>N/A</u> RIVE	
	COMMENTS Dry ephemeral channel wooded draw with mowed a	
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Manual for Ohio's PHWH Streams"	for Instructions
STREAM CHANNEL NONE / NATU	JRAL CHANNEL $\ \square$ RECOVERED $\ \square$ RECOVERING $\ \square$ RECENT OF	R NO RECOVERY
MODIFICATIONS:		
(Max of 32). Add total number of significar TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts]	y type of substrate present. Check ONLY two predominant substrate TYPE to substrate types found (Max of 8). Final metric score is sum of boxes A & ERCENT TYPE PERCE OLD SILT [3 pt] 25 OLEAF PACK/WOODY DEBRIS [3 pts] 60 OLEAF PACK/WOODY DEBRIS [3 pts] 0 OLEAF PACK/WOODY DEBRIS [3 pts] 15 OLEAF PACK/WOODY DEBRIS [3 pts] 15	B. HHEI
GRAVEL (2-64 mm) [9 pts] SAND (<2 mm) [6 pts]	0	_ 9
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTI	0 (A) 6	3 ^ - 5
	ximum pool depth within the 61 meter (200 ft) evaluation reach at the time	
evaluation. Avoid plunge pools from road > 30 centimeters [20 pts]	culverts or storm water pipes) (Check <i>ONLY</i> one box): > 5 cm - 10 cm [15 pts]	Max = 30
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	0
COMMENTS The channel is dry.	MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	verage of 3-4 measurements) (Check <i>ONLY</i> one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts]	Bankfull Width Max=30
COMMENTS	AVERAGE BANKFULL WIDTH (meters)	0.5
RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH	This information must also be completed AIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY	ream ⅓
L R (Per Bank) Wide >10m	L R (Most Predominant per Bank) L R □ □ Mature Forest, Wetland □ □ Conservation	a Tillago
Moderate 5-10m	Immature Forest, Shrub or Old	· ·
□ ■ Narrow <5m	Field Open Pastur Residential, Park, New Field Crop	e, Row
☐ ☐ None COMMENTS This is a wooded dr	☐☐ Fenced Pasture ☐☐ Mining or Coraw with mowed fields on both sides.	onstruction
FLOW REGIME (At Time of Evalu Stream Flowing Subsurface flow with isolated pools COMMENTS Braided ephemeral	tation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Interstitial) Dry channel, no water (Ephemeral)	ntermittent)
SINUOSITY (Number of bends per None 0.5	r 61 m (200 ft) of channel) (Check <i>ONLY</i> one box): 1.0	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Se	vere (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): (If Yes, Attach Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) _____ Distance from Evaluated Stream ______ WWH Name: Ohio River CWH Name: ___ Distance from Evaluated Stream Distance from Evaluated Stream EWH Name: MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name: Henderson, KY-IN NRCS Soil Map Page:_____ NRCS Soil Map Stream Order _____ County: Henderson County _____ Township / City:__ **MISCELLANEOUS** Base Flow Conditions? (Y/N): No Date of last precipitation: 07/30/18 Quantity: 0.5" Photograph Information: _ ____ Canopy (% open): ____ Elevated Turbidity? (Y/N): No Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: _____N/A $\text{Temp (°C)} \frac{\text{N/A}}{\text{Dissolved Oxygen (mg/l)}} \text{ Dissolved Oxygen (mg/l)} \frac{\text{N/A}}{\text{pH (S.U.)}} \text{ pH (S.U.)} \frac{\text{N/A}}{\text{Conductivity (μmhos/cm)}} \frac{\text{N/$ Field Measures: Is the sampling reach representative of the stream $(Y/N)^{N/A}$ If not, please explain: N/AAdditional comments/description of pollution impacts: _____ There are possible impacts from erosion from agricultural fields in the small watershed. **BIOTIC EVALUATION** Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Comments Regarding Biology: This is a dry ephemeral channel in a wooded draw. There are mowed fields/food plots on both sides of this channel. Some portions of the channel are braided. No aquatic life was observed. Approximately 236 feet of channel will be enclosed in a culvert, and there are

approximately 269 feet in the ROW.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):





SITE NAME/LOCATION UNT-4 to North Fork Car	noe Creek			
SITE NUMBER N/A	RIVER BASIN N/	A DRAIN	AGE AREA (mi²) 0.03	
LENGTH OF STREAM REACH (ft) 200 L	AT. <u>37.87351</u> LONG. <u>-87</u>	.52187 RIVER CODE N/A	RIVER MILE N/A	<u> </u>
DATE 09/20/18 SCORER Luke F. Egger	ring COMMENTS Ephemera	al stream/ditch.		
NOTE: Complete All Items On This Form	- Refer to "Field Evaluatio	n Manual for Ohio's PHWH	Streams" for Instru	ctions
STREAM CHANNEL	JRAL CHANNEL RECOVE	RED RECOVERING RE	ECENT OR NO RECOV	/ERY
MODIFICATIONS:				
 SUBSTRATE (Estimate percent of every (Max of 32). Add total number of significar 				HHEI
TYPE PEI	RCENT TYPE	,	PERCENT	Metric Points
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]	0	[3 pt] PACK/WOODY DEBRIS [3 pts]	90	Points
□ □ BEDROCK [16 pt]	0	DETRITUS [3 pts]	0	Substrate Max = 40
COBBLE (65-256 mm) [12 pts]		or HARDPAN [0 pt]	0 [IVIAX – 40
GRAVEL (2-64 mm) [9 pts] SAND (<2 mm) [6 pts]		〈 [0 pts] FICIAL [3 pts]	0 0	11
2 (42 mm) [0 pts]		IOIAL [3 pts]	(B)	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	<u>o</u> (A) 9		(B) 2	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTI	RATE TYPES:	OTAL NUMBER OF SUBSTRAT	E TYPES:	
2. Maximum Pool Depth (Measure the max			at the time of	Pool Depth
evaluation. Avoid plunge pools from road of some some some some some some some some		(Check ONLY one box): cm - 10 cm [15 pts]		Max = 30
> 22.5 - 30 cm [30 pts]	< 5 (cm [5 pts]		5
> 10 - 22.5 cm [25 pts]		WATER OR MOIST CHANNEL [0	pts] 4	
COMMENTS This is an ephemeral chann	nel with some pools.	_ MAXIMUM POOL DEPTH (cen	timeters):	
3. BANK FULL WIDTH (Measured as the a			:	Bankfull
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] 0 m (≤ 3' 3") [5 pts]		Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		, , , <u>, , , , , , , , , , , , , , , , </u>	3.5	25
COMMENTS		_ AVERAGE BANKFULL WIDTH		
RIPARIAN ZONE AND FLOODPL	This information must als	so be completed ver Left (L) and Right (R) as looki	na downstroom	
RIPARIAN WIDTH	FLOODPLAIN QUALITY	ver Left (L) and Right (R) as looki	ng downstream A	
L R (Per Bank) Wide >10m	L R (Most Predominant Mature Forest, Wetl		onservation Tillage	
Moderate 5-10m	Immature Forest, Sl	nrub or Old	ban or Industrial	
	Field		pen Pasture, Row	
☐ ☐ Narrow <5m	Residential, Park, N	lew Field Cr	ор	
☐ ☐ None COMMENTS	☐ ☐ Fenced Pasture	□ □ Mi	ning or Construction	
	otion) (Chook ON) V and have			
FLOW REGIME (At Time of Evaluation Stream Flowing		Moist Channel, isolated pools,	no flow (Intermittent)	
Subsurface flow with isolated pools COMMENTS	(Interstitial)	Dry channel, no water (Ephen	neral)	
	- C4 (000 ft) -5 -1 - 1) (C1	and ONUV area la la la		
SINUOSITY (Number of bends per None	r 61 m (200 ft) of channel) (Ch 1.0	eck ONLY one box): 2.0	3.0	
□ 0.5	1.5		>3	
STREAM GRADIENT ESTIMATE				
Flat (0.5 ft/100 ft)	Moderate (2 ft/100 ft)	☐ Moderate to Severe	Severe (10 ft/100	ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED LISE(S)	Distance from Evaluated Stream 1.9 miles
CWH Name:	Distance from Evaluated Stream
EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE EN	TIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:	NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Henderson County Towns	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	nown Quantity: NA
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): (Note lab	sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not,	please explain: N/A
Additional comments/description of pollution impacts: This channel is i lowest portions of the channel.	n a utility right-of-way. Crayfish burrows were observed at the
BIOTIC EVALUATION	
,	r collections optional. NOTE: all voucher samples must be labeled with the site a sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Of Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquati	
Comments Regarding Biology:	
Approximately 267 feet of stream will be in the right-of-way and appraiready been channelized.	roximately 236 feet will be in a culvert. This ephemeral channel has





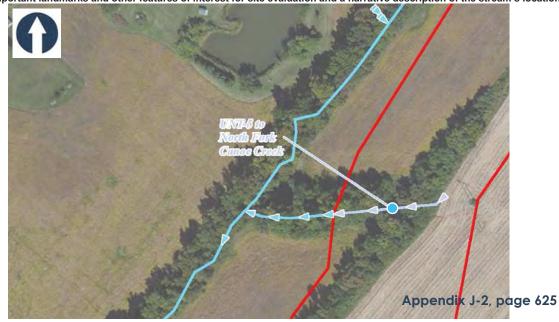
43

SITE NAME/LOCATION UNT-5 to North Fork Canoe Creek	
SITE NUMBER_N/A RIVER BASIN_N/A DRAINAGE AREA (mi²)_0.	06
LENGTH OF STREAM REACH (ft) 200 LAT. 37.87109 LONG87.52359 RIVER CODE N/A RIVER MILE 1	I/A
DATE 09/20/18 SCORER Luke F. Eggering COMMENTS Ephemeral stream/ditch	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Inst	ructions
STREAM CHANNEL	OVERY
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE PERCENT TYPE PERCENT	Metric
□ □ BLDR SLABS [16 pts] 0 □ SILT [3 pt] 85 □ □ □ □ LEAF PACK/WOODY DEBRIS [3 pts] 0	Points
BEDROCK [16 pt] 0 FINE DETRITUS [3 pts] 0	Substrate
COBBLE (65-256 mm) [12 pts] 10 CLAY or HARDPAN [0 pt] 0	Max = 40
☐ ☐ GRAVEL (2-64 mm) [9 pts]	18
Total of Percentages of (A) Bldr Slabs, Boulder, Cobble, Bedrock 0 15	A+B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
22.5 - 30 cm [30 pts] < 5 cm [5 pts]	5
□ > 10 - 22.5 cm [25 pts] □ NO WATER OR MOIST CHANNEL [0 pts] 2	
COMMENTS This is an ephemeral channel with some pools. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	20
COMMENTS AVERAGE BANKFULL WIDTH (meters)	
This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R Wide >10m D Mature Forest, Wetland D D Conservation Tillage	
Moderate 5-10m Immature Forest, Shrub or Old Irban or Industrial	
Field Narrow <5m Residential, Park, New Field Open Pasture, Row	
Crop None Residential, Fark, New Field One Crop Mining or Construction	1
COMMENTS	<u>. </u>
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing Subsurface flow with isolated pools (Interstitial) Moist Channel, isolated pools, no flow (Intermitten Dry channel, no water (Ephemeral)	t)
COMMENTS	_
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
None ■ 1.0 □ 2.0 □ 3.0 □ 0.5 □ 1.5 □ 2.5 □ >3	
STREAM GRADIENT ESTIMATE ☐ Flat (0.5 ft/100 ft) ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/	100 ft)
	,

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED LISE(S)	Distance from Evaluated Stream 2.1 miles
CWH Name:	Distance from Evaluated Stream
☐ EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE EN	ITIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:	NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Town:	ship / City: Henderson
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	nown Quantity: NA
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 85	
Were samples collected for water chemistry? (Y/N): $\underline{\hspace{1cm}^{N/A}}$ (Note lat	o sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) $\underline{\hspace{1cm}}^{N/A}$ Dissolved Oxygen (mg/l) $\underline{\hspace{1cm}}^{N/A}$	pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream $(Y/N) N/A$ If not,	please explain: N/A
Additional comments/description of pollution impacts: Soil erosion and	d herbicides from the adjacent utility ROW area likely affect this channel
BIOTIC EVALUATION	
, , ;	er collections optional. NOTE: all voucher samples must be labeled with the site a sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders C Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aqua	
Comments Regarding Biology:	
Approximately 277 feet of channel are within the right-of-way and a would need to extend beyond the existing channel, approximately 3	pproximately 236 feet of channel would be within a culvert. The culvert so feet.

to extend beyond the existing channer, approximately 30 leet.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





00

SITE NAME/LOCATION UNT-6 to North Fork Canoe Creek	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) 0.	
LENGTH OF STREAM REACH (ft) 200 LAT. 37.85822 LONG87.53216 RIVER CODE N/A RIVER MILE NOTE: 09/20/48	<u>/A</u>
DATE 09/20/18 SCORER Luke F. Eggering COMMENTS Ephemeral stream/ditch.	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Inst	
STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ■ RECOVERING ☐ RECENT OR NO REC	OVERY
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Final metric score is sum of boxes A & B. SILT [3 pt] BUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] BUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] BUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] BUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI Metric Points
□ □ BEDROCK [16 pt] □ □ □ □ FINE DETRITUS [3 pts] □ □ □ □ COBBLE (65-256 mm) [12 pts] □ □ □ □ CLAY or HARDPAN [0 pt] □ □	Max = 40
☐ ■ GRAVEL (2-64 mm) [9 pts] 10	15
□ □ SAND (<2 mm) [6 pts] □ □ ARTIFICIAL [3 pts] 0	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	A + B
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
22.5 - 30 cm [30 pts] < 5 cm [5 pts]	5
□ > 10 - 22.5 cm [25 pts] □ NO WATER OR MOIST CHANNEL [0 pts] 2	
COMMENTS This is an ephemeral channel with some pools. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check <i>ONLY</i> one box): > 4.0 meters (> 13') [30 pts]	Bankfull Width Max=30
COMMENTS AVERAGE BANKFULL WIDTH (meters) 4.5	30
This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R	
Moderate 5-10m Immature Forest, Shrub or Old Irban or Industrial	
Field Onen Pasture Row	
□ Narrow <5m □ □ Residential, Park, New Field Crop □ □ None □ □ Fenced Pasture □ □ Mining or Construction	
COMMENTS	_
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS House of Evaluation (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent Dry channel, no water (Ephemeral)) —
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 0.5 1.5 2.5 >3	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft)	00 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - Yes No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 2.9 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Unknown Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: Soil erosion and herbicides from the adjacent agricultural area likely affect this
stream/ditch. The stream banks are incised. Crayfish burrows were observed in the channel.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the sit ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y
Comments Regarding Biology:
Approximately 629 feet of this channel are within the right-of-way and approximately 425 feet of channel would be in a culvert. Note: This tributary crosses US 60 unstream however, it will not be within the construction limits

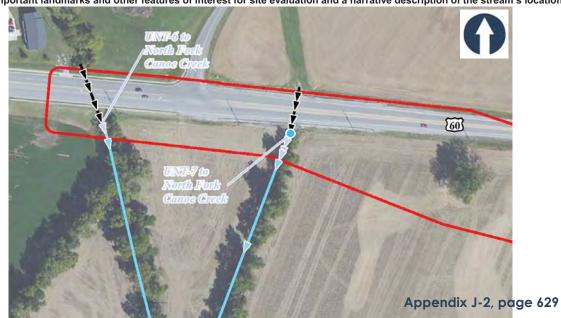




40

SITE NAME/LOCATION UNT-7 to North Fork Ca	anoe Creek	
	A RIVER BASIN N/A DRAINAGE AREA (mi²) 0.04	4
	LAT. 37.86429 LONG87.53661 RIVER CODE N/A RIVER MILE N/A	
DATE 09/20/18 SCORER Luke F. Egge	ering COMMENTS Ephemeral stream/ditch.	
NOTE: Complete All Items On This Form	n - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru	uctions
STREAM CHANNEL	TURAL CHANNEL	WEDV
MODIFICATIONS:	THE CHANNEL BRECOVERED RECOVERING BRECENT OF NO RECO	VLIXI
mobil loanoito.		
SUBSTRATE (Estimate percent of ever	ry type of substrate present. Check ONLY two predominant substrate TYPE boxes	
,	ant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI Metric
BLDR SLABS [16 pts]	ERCENT TYPE PERCENT 0 □ □ 20	Points
BOULDER (>256 mm) [16 pts] BEDROCK [16 pt]	0 LEAF PACK/WOODY DEBRIS [3 pts] 0	Substrate
☐ ☐ BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts]	0 ☐ FINE DETRITUS [3 pts] 0 0 CLAY or HARDPAN [0 pt] 0	Max = 40
GRAVEL (2-64 mm) [9 pts]	75	15
SAND (<2 mm) [6 pts]	5 ARTIFICIAL [3 pts] 0	
Total of Percentages of	(A) (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBST		
	aximum pool depth within the 61 meter (200 ft) evaluation reach at the time of d culverts or storm water pipes) (Check ONLY one box):	Pool Depth Max = 30
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15 pts]	
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	5
COMMENTS This is an ephemeral chan	2	
COMMENTS_THIS IS ATT OPTION OF CHAIN	nnel with some pools. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the a	average of 3-4 measurements) (Check <i>ONLY</i> one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐ ≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	2.0	20
COMMENTS	AVERAGE BANKFULL WIDTH (meters)	
RIPARIAN ZONE AND FLOODPI	This information <u>must</u> also be completed PLAIN QUALITY ↑NOTE: River Left (L) and Right (R) as looking downstream ↑	
RIPARIAN WIDTH	FLOODPLAIN QUALITY	
L R (Per Bank) Wide >10m	L R (Most Predominant per Bank) L R Mature Forest, Wetland D Conservation Tillage	
Moderate 5-10m	□ □ Urban or Industrial	
	Field — Open Pasture Pow	
☐ ☐ Narrow <5m	Crop	
☐ ☐ None COMMENTS	☐ ☐ Fenced Pasture ☐ ☐ Mining or Construction	
COMMENTS		
	(() (0) (0)() ()	•
FLOW REGIME (At Time of Evalu	luation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent)	
FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools	Moist Channel, isolated pools, no flow (Intermittent)	
FLOW REGIME (At Time of Evalu	Moist Channel, isolated pools, no flow (Intermittent)	
FLOW REGIME (At Time of Evalue Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per	Moist Channel, isolated pools, no flow (Intermittent) by channel, no water (Ephemeral) er 61 m (200 ft) of channel) (Check ONLY one box):	
FLOW REGIME (At Time of Evalue Stream Flowing Subsurface flow with isolated pools COMMENTS	Moist Channel, isolated pools, no flow (Intermittent) Is (Interstitial) Dry channel, no water (Ephemeral)	
FLOW REGIME (At Time of Evalue Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None	Moist Channel, isolated pools, no flow (Intermittent) by channel, no water (Ephemeral) er 61 m (200 ft) of channel) (Check ONLY one box): 1.0 2.0 3.0	

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream 2.3 miles
CWH Name:	Distance from Evaluated Stream
☐ EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE EN	NTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:	NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Henderson County Town	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	nown Quantity: NA
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): (Note lal	b sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream $(Y/N) \frac{N/A}{}$ If not,	please explain: N/A
Additional comments/description of pollution impacts: Crayfish burrow	s were observed within the channel.
BIOTIC EVALUATION	
· , ———	er collections optional. NOTE: all voucher samples must be labeled with the site ta sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders C Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aqua	
Comments Regarding Biology:	
Approximately 46 feet of this channel are within the right-of-way and downstream.	d the existing US 60 culvert would be extended approximately 12 feet





30

SITE NAME/LOCATION UNT-8 to North Fork Canoe Creek	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <	
LENGTH OF STREAM REACH (ft) 160 LAT. 37.86399 LONG87.53151 RIVER CODE N/A RIVER MILE N	<u>/A</u>
DATE 09/20/18 SCORER Luke F. Eggering COMMENTS Ephemeral stream/ditch	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Inst	uctions
STREAM CHANNEL	OVERY
MODIFICATIONS:	
 SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. 	HHEI
TYPE PERCENT TYPE PERCENT	Metric Points
□ □ BLDR SLABS [16 pts] 0 □ SILT [3 pt] 85 □ □ □ □ LEAF PACK/WOODY DEBRIS [3 pts] 0	Points
BEDROCK [16 pt] 0 FINE DETRITUS [3 pts] 0	Substrate Max = 40
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ CLAY or HARDPAN [0 pt] ☐ ☐ GRAVEL (2-64 mm) [9 pts] ☐ ☐ MUCK [0 pts] ☐ ☐ 0	
☐ GRAVEL (2-64 mm) [9 pts] ☐ MUCK [0 pts] ☐ 0 O O O O O O O O O O O O O O O O O O	15
Total of Percentages of (A) (B)	A
Bldr Slabs, Boulder, Cobble, Bedrock0	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Pool Depth Max = 30
□ > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max - 30
	0
0	
COMMENTS This is an ephemeral channel with a scour hole. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
□ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] □ ≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
□ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	15
COMMENTS AVERAGE BANKFULL WIDTH (meters)	
This information proved also be completed	
This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R	
☐ Wide >10m ☐ Mature Forest, Wetland ☐ ☐ Conservation Tillage	
Moderate 5-10m Immature Forest, Shrub or Old Immature Forest, Shru	
□□ Narrow <5m □□ Residential Park New Field □□ Open Pasture, Row	
☐ None ☐ ☐ Fenced Pasture ☐ ☐ Mining or Construction	
COMMENTS	_
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing Moist Channel, isolated pools, no flow (Intermittent)
☐ Stream Flowing Moist Channel, isolated pools, no flow (Intermitten) -
Stream Flowing Subsurface flow with isolated pools (Interstitial) Moist Channel, isolated pools, no flow (Intermittent Dry channel, no water (Ephemeral)	-
Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) None Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral) (Check ONLY one box): 2.0 3.0)
Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) None Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral) (Check ONLY one box): 2.0 3.0	-

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - Tyes No QHEI Score N/A (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 2.6 miles
CWH Name: Distance from Evaluated Stream
Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Henderson, KY-IN NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: Soil erosion and herbicides from the adjacent agricultural area likely affect this
stream/ditch.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y
Comments Regarding Biology:
Approximately 134 feet of this channel are within the right-of-way and approximately 104 feet of this channel will be in a culvert. The culvert will be extended approximately 196 feet to the south through the construction limits. Note: The eroded ephemeral channel transitions into a broad drainage swale and eventually extends 1,176 feet to UNT-9 to North Fork Canoe Creek. The drainage swale is a grass waterway that does not have a discernible bed and bank. UNT-8 to North Fork Canoe Creek is an isolated eroded ephemeral channel.





	noe Creek	
SITE NUMBER_N/A	RIVER BASIN N/A	DRAINAGE AREA (mi²)
LENGTH OF STREAM REACH (ft) 200 L	AT. <u>37.86229</u> LONG. <u>-87.52767</u> RIVER COL	DE N/A RIVER MILE N/A
DATE 09/20/18 SCORER Luke F. Egger	ing COMMENTS Ephemeral stream/ditch.	
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Manual for Ohio's	PHWH Streams" for Instructions
STREAM CHANNEL	IRAL CHANNEL RECOVERED RECOVERIN	IG RECENT OR NO RECOVERY
MODIFICATIONS:		
	r type of substrate present. Check ONLY two predomint substrate types found (Max of 8). Final metric score is	
TYPE PE	RCENT TYPE	PERCENT Metric
BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts]	0 SILT [3 pt] 0 LEAF PACK/WOODY DEBRIS	
☐ ☐ BEDROCK [16 pt]	0 FINE DETRITUS [3 pts]	0 Substrate
COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts]	CLAY or HARDPAN [0 pt] MUCK [0 pts]	0 0
☐ ☐ GRAVEL (2-64 mm) [9 pts] SAND (<2 mm) [6 pts]	0	
Total of Percentages of		(B) A + B
Bldr Slabs, Boulder, Cobble, Bedrock	0 (A) 9	2 2
SCORE OF TWO MOST PREDOMINATE SUBSTI	RATE TYPES: TOTAL NUMBER OF SU	JBSTRATE TYPES:
	kimum pool depth within the 61 meter (200 ft) evaluar	
evaluation. Avoid plunge pools from road (> 30 centimeters [20 pts]	culverts or storm water pipes) (Check <i>ONLY</i> one box) > 5 cm - 10 cm [15 pts]): Max = 30
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CH.	ANINEL FO etc.
COMMENTS	MAXIMUM POOL DE	PTH (centimeters):
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	verage of 3-4 measurements) (Check <i>ONLY</i> > 1.0 m - 1.5 m (> 3' 3" - 4' 8"	
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	≤ 1.0 m (≤ 3′ 3″) [5 pts]	Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		6 30
COMMENTS	AVERAGE BANKFUL	
	This information must also be completed	
RIPARIAN ZONE AND FLOODPL	AIN QUALITY	R) as looking downstream☆
RIPARIAN WIDTH	FLOODPLAIN QUALITY	,
	FLOODPLAIN QUALITY L R (Most Predominant per Bank) L	<u>R</u>
RIPARIAN WIDTH L R (Per Bank)	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old	R Conservation Tillage
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field	R Conservation Tillage
RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field	R Conservation Tillage Urban or Industrial Open Pasture, Row Crop
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field	R Conservation Tillage Urban or Industrial Open Pasture, Row Crop
RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture	R Conservation Tillage Urban or Industrial Open Pasture, Row Crop
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evalue) Stream Flowing	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture	R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evalue)	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture	R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Channel, isola Dry channel, no wat	R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluent Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Channel, isola Dry channel, no wat 61 m (200 ft) of channel) (Check ONLY one box): 1.0 (Check ONLY one box): 2.0	Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ted pools, no flow (Intermittent) ter (Ephemeral)
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluent Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Channel, isolar Dry channel, no wate	Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ted pools, no flow (Intermittent) ter (Ephemeral)
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluent Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Channel, isola Dry channel, no wat 61 m (200 ft) of channel) (Check ONLY one box): 1.0 (Check ONLY one box): 2.0	Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ted pools, no flow (Intermittent) ter (Ephemeral) 3.0 >3

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes No QHEI Score N/A (If Yes, Attach Co	ompleted QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	istance from Evaluated Stream 2.9 miles
CWH Name: Dis	stance from Evaluated Stream
EWH Name: Dis	stance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED ARE	A. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page:	N/A NRCS Soil Map Stream Order
County: Henderson County Township / City: Henderson	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	Quantity:
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): Canopy (% open):	
Were samples collected for water chemistry? (Y/N): $\underline{\hspace{1cm}^{N/A}}$ (Note lab sample no. or id. and a	ttach results) Lab Number:
Field Measures: Temp (°C) $\underline{\hspace{1cm}}^{N/A}$ Dissolved Oxygen (mg/l) $\underline{\hspace{1cm}}^{N/A}$ pH (S.U.) $\underline{\hspace{1cm}}^{N/A}$	Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A	
Additional comments/description of pollution impacts: At this location, the channel is damp but	ut there is no standing water.
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NO ID number. Include appropriate field data sheets from the Primary	·
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates O	
Comments Regarding Biology:	
Approximately 743 feet of this channel are within the right-of-way and 540 feet of channel v	will be within a culvert.





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 34.5

Stream & Location: UNT-10 to North Fork Canoe Creek	RM: N/A Date: 08/03/18
	ffiliation: Luke F. Eggering, PWS
River Code: N/A STORET #: N/A Lat./ Long.: (NAD 83 - decimal) 37.86149, -87.52346 Office verified location □
1] SUBSTRATE Check ONLYTwo substrate TYPE BOXES; estimate % or note every type present	Check ONE (Or 2 & average)
BEST TYPES	[1] SILT MODERATE [-1] Substrate ANDS [0] NORMAL [0] PAN [0] FREE [1] STONE [0] MODERATE [-1] AP [0] MODERATE [-1] AP [0] MODERATE [-1] STURINE [0] MODERATE [-1] Maximum 20
	FINES [-2]
	check ONE (Or 2 & average) d, functional pools. Check ONE (Or 2 & average)
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)	
SINUOSITY DEVELOPMENT CHANNELIZATION STAIL HIGH [4] EXCELLENT [7] NONE [6] HIGH	DERATE [2]
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EAC	CH BANK (Or 2 per bank & average)
RIPARIAN WIDTH EROSION WIDE > 50m [4] NONE / LITTLE [3] MODERATE [2] NARROW 5-10m [2] HEAVY / SEVERE [1] NONE [0] RIPARIAN WIDTH FLOOD PLA FOREST, SWAMP [3] SHRUB OR OLD FIEL RESIDENTIAL, PARK, VERY NARROW < 5m [1] OPEN PASTURE, RO	IN QUALITY CONSERVATION TILLAGE [1] D [2] NEW FIELD [1] Indicate predominant land use(s)
Comments	Maximum 10 5.5
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH Check ONE (ONLY!) > 1m [6] 0.7-<1m [4] 0.4-<0.7m [2] 0.2-<0.4m [1] <0.2m [0] Comments CHANNEL WIDTH Check ONE (Or 2 & average) Check ALL tr Check ONE (Or 2 & average) Check ONE (Or 2 & average) Check ONE (Or 2 & average) Check ONE (Or 2 & average) Check ONE (Or 2 & average) Check ONE (Or 2 & ave	Primary Contact SLOW [1] INTERSTITIAL [-1] INTERMITTENT [-2] EDDIES [1] Primary Contact Secondary Contact (circle one and comment on back)
Indicate for functional riffles; Best areas must be large enough to	support a population
of riffle-obligate species: RIFFLE DEPTH RUN DEPTH BEST AREAS > 10cm [2] BEST AREAS 5-10cm [1] BEST AREAS < 5cm [metric=0] Comments No riffles were present in the reach. Check ONE (Or 2 & average). RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA RIFFLE / RUN SUBSTRA UND. STABLE (e.g., Cobble, Boulde UNSTABLE (e.g., Fine Gravel, Substraction of the company of the c	INO RIFFLE [metric=0] ITE RIFFLE / RUN EMBEDDEDNESS IT) [2]
EL CRADIENT	(5) WOLIDE (0)
DRAINAGE AREA (0.11 mi²)	.: 5 %GLIDE: 0 Gradient 95 %RIFFLE: 0 Maximum 10

A] SAMPLED REACH Check ALL that apply METHOD STAGE BOAT 1st -sample pass - 2nd WADE HIGH CHARLES UP COTHER NORMAL DISTANCE DRY	This channel is an erosional	**	field. The banks of this	r/Sampling observations, Concerns, Acc channel are unvegetated. Appro	
☐ 0.12 Km ☐ 20-<40 cm ☐ OTHER ☐ 40-70 cm ☐	INVASIVE MACROPHYTES EXCESS TURBIDITY DISCOLORATION FOAM / SCUM OIL SHEEN TRASH / LITTER NUISANCE ODOR STUDGE DEPOSITS	DJ MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED	Circle some & COMMENT	E] ISSUES WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPS-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT	F] MEASUREMENTS \overline{x} width \overline{x} depth max. depth \overline{x} bankfull width bankfull \overline{x} depth W/D ratio bankfull max. depth floodprone x ² width entrench. ratio
☐ 10%-<30% <i>C] RECR</i> ☐ <10%- CLOSED	EATION AREA DEPTH POOL: □>100ft²□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:





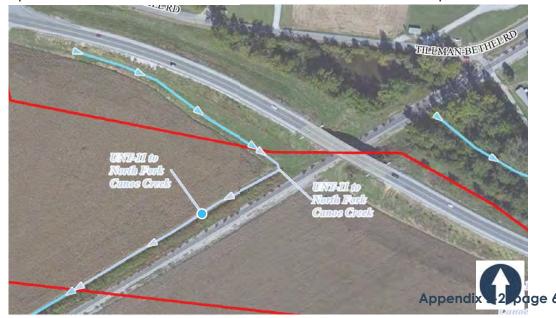
31

SITE NAME/LOCATION UNT-11 to North Fork Canoe Creek	
SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200 LAT. 37.86199 LONG87.52138 RIVER CODE N/A RIVER MILE N	/A
DATE 08/03/18 SCORER Luke F. Eggering COMMENTS Ephemeral railroad stream/ditch	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instr	uctions
STREAM CHANNEL	OVERY
MODIFICATIONS:	- 1 - 1 1
 SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE PERCENT TYPE PERCENT 	HHEI Metric
□ □ BLDR SLABS [16 pts] 0 SILT [3 pt] 40	Points
□ □ BOULDER (>256 mm) [16 pts] □ □ LEAF PACK/WOODY DEBRIS [3 pts] 10 □ □ BEDROCK [16 pt] 0 □ □ FINE DETRITUS [3 pts] 0	Substrate
□ □ BEDROCK [16 pt] □ □ □ FINE DETRITUS [3 pts] □ □ □ COBBLE (65-256 mm) [12 pts] □ □ CLAY or HARDPAN [0 pt] 50	Max = 40
☐ ☐ GRAVEL (2-64 mm) [9 pts] 0	6
□ □ SAND (<2 mm) [6 pts] □ □ ARTIFICIAL [3 pts] □ 0	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 3	A + B
Bldr Slabs, Boulder, Cobble, Bedrock 0 TOTAL NUMBER OF SUBSTRATE TYPES: 3	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Max = 30
<pre></pre>	
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	0
COMMENTS This is an ephemeral channel. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfull
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	Max=30
3.5	25
COMMENTS This is a stable well-maintained channel. AVERAGE BANKFULL WIDTH (meters)	
This information must also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH L R (Per Bank) L R (Most Predominant per Bank) L R	
☐ ☐ Wide >10m ☐ ☐ Mature Forest, Wetland ☐ ☐ Conservation Tillage	
☐ ☐ Moderate 5-10m Immature Forest, Shrub or Old ☐ ☐ Urban or Industrial	
■ ☐ Narrow <5m ☐ ☐ Residential Park New Field ☐ ☐ Open Pasture, Row	
□ None □ □ Fenced Pasture □ □ Mining or Construction	
COMMENTS RDB is soybeans, LDB is a levee with Johnson grass.	_
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS This is a dry channel. Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent Dry channel, no water (Ephemeral)) _
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
■ None	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft)	00 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River CWH Name:	Distance from Evaluated Stream 3.1 miles Distance from Evaluated Stream
EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENT	IRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:	NRCS Soil Map Page: N/A NRCS Soil Map Stream Order
County: Townsh	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	/18 Quantity: 0.5"
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): Canopy (% open):	
Were samples collected for water chemistry? (Y/N): N/A (Note lab	N/A sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not, p	elease explain: N/A
Additional comments/description of pollution impacts: Soil erosion and area likely affect this stream/ditch.	herbicides from railroad maintenance and the adjacent agricultural
BIOTIC EVALUATION	
, ,	collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Ob Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquation	served? (Y/N) No Voucher? (Y/N) No Voucher? (Y/N) No Voucher? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology:	
This is a well-maintained ephemeral railroad stream/ditch. There are sprayed with herbicide, killing the Johnsongrass and some vegetation	

sprayed with herbicide, killing the Johnsongrass and some vegetation. Crayfish burrows were observed in the bottom of the stream/ditc Approximately 640 feet of this channel is within the right-of-way however, it will be spanned by the US 60 railroad bridge.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





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SITE NAME/LOCATION UNT-12 to North Fork Can	oe Creek	
SITE NUMBER_N/A	RIVER BASIN N/A DRAINAGE ARE	A (mi²) 0.64
LENGTH OF STREAM REACH (ft) 200 LA DATE 09/20/18 SCORER Luke F. Eggerin	T. 37.86127 LONG87.51739 RIVER CODE N/A RIVE	R MILE N/A
	Refer to "Field Evaluation Manual for Ohio's PHWH Streams'	' for Instructions
·		
STREAM CHANNEL J NONE / NATUR MODIFICATIONS:	AL CHANNEL RECOVERED RECOVERING RECENT OF	R NO RECOVERY
(Max of 32). Add total number of significant starts and the sum of the significant starts are sum of the significant starts. TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] 0	CLAY or HARDPAN [0 pt] 0 0 0 0 0 0 0 0 0	HHEI Metric Points Substrate Max = 40 12
SCORE OF TWO MOST PREDOMINATE SUBSTRA		
	wum pool depth within the 61 meter (200 ft) evaluation reach at the time (100 ft) evaluation reach at the ti	0 Max = 30
3. BANK FULL WIDTH (Measured as the ave > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] \(\leq \) 1.0 m (\leq 3' 3") [5 pts]	Bankfull Width Max=30
COMMENTS	AVERAGE BANKFULL WIDTH (meters)	
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Grop Mining or Co	n Tillage fustrial re, Row onstruction
` ~	Moist Channel, isolated pools, no flow (In Dry channel, no water (Ephemeral) 11 m (200 ft) of channel) (Check ONLY one box): 1.0	ntermittent)
0.5 STREAM GRADIENT ESTIMATE	1.5	evere (10 ft/100 ft)

ADDITIONAL STREAM INFO	RMATION (This Information Must Al	so be Completed):
QHEI PERFORME	O? - ☐ Yes ■ No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DE	ESIGNATED USE(S)	Distance from Evaluated Stream 3.3 miles
		Distance from Evaluated Stream
		Distance from Evaluated Stream
MAPPING: ATTACH	I COPIES OF MAPS, INCLUDING THE	NTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: He	nderson, KY-IN	NRCS Soil Map Page: N/A NRCS Soil Map Stream Order
	Tow	nship / City:
MISCELLANEOUS		
Base Flow Conditions? (Y/N):	No Date of last precipitation: 07	/30/18 Quantity:
Photograph Information: Pho	tos attached.	
Elevated Turbidity? (Y/N): No	Canopy (% open): 100	
Were samples collected for wa	ater chemistry? (Y/N): N/A (Note I	ab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C	N/A Dissolved Oxygen (mg/l) N/	A pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach represe	ntative of the stream (Y/N) If no	rt, please explain:
Additional comments/descripti	ion of pollution impacts:	ws were observed. Trash/debris was present within the channel.
BIOTIC EVALUAT	ION	
Performed? (Y/N): No	•	her collections optional. NOTE: all voucher samples must be labeled with the site ata sheets from the Primary Headwater Habitat Assessment Manual)
		Observed? (Y/N) No Voucher? (Y/N) No vatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology	:	
Approximately 111 feet of thi US 60 culvert will be extended		and approximately 69 feet of channel will be in a culvert. The existing





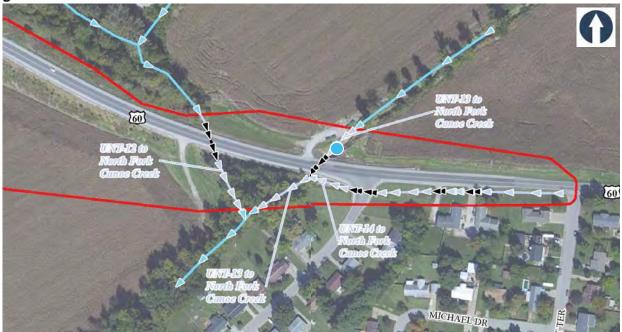
Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 34.5

Stream & Location: UNT-13 to North Fork Canoe Creek	RM: N/A Date: 09/20/18
Scorers Full Name & Affilia	
River Code: N/A STORET #: N/A Lat./ Long.: (NAD 83 - decimal) 37.	86156, -87.51632 Office verified location
11 SUBSTRATE Check ONLY Two substrate TYPE BOXES:	heck ONE (Or 2 & average) N QUALITY [1]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more of quality; 2-Moderate amounts, but not of highest quality or in small amounts or if more of quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, fund 0 UNDERCUT BANKS [1] 0 POOLS > 70cm [2] 0 OXBOWS, BACK OVERHANGING VEGETATION [1] 0 ROOTWADS [1] 0 AQUATIC MACRO SHALLOWS (IN SLOW WATER) [1] 0 BOULDERS [1] 2 LOGS OR WOOLD COMMENTS [1]	chounts of highest t water, large ctional pools. Check ONE (<i>Or 2 & average</i>) EXTENSIVE >75% [11] WODERATE 25-75% [7] OPHYTES [1] SPARSE 5-<25% [3]
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILIT HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERAT LOW [2] FAIR [3] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECENT OR NO RECOVERY [1]	
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BARRIVER right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUESTION WIDE > 50m [4] FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] SHRUB OR OLD FIELD [2] NARROW 5-10m [2] FENCED PASTURE [1] VERY NARROW < 5m [1] FENCED PASTURE [1] OPEN PASTURE, ROWCRO Comments	FIELD [1] CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] Indicate predominant land use(s)
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH Check ONE (ONLY!) > 1m [6] 0.7-<1m [4] 0.4-<0.7m [2] 0.2-<0.4m [1] <0.2-m [0] Comments CURRENT VELO Check ALL that app Check ALL that app Check ALL that app Check ALL that app Check ALL that app Check ALL that app Check ALL that app Check ALL that app FAST [1] INTE MODERATE [1] Indicate for reach - pools Comments	CITY ply W [1] ERSTITIAL [-1] ERMITTENT [-2] DIES [1] Recreation Potential Primary Contact (circle one and comment on back)
Indicate for functional riffles; Best areas must be large enough to sup of riffle-obligate species: RIFFLE DEPTH BEST AREAS > 10cm [2] BEST AREAS 5-10cm [1] BEST AREAS < 5cm [metric=0] Comments No riffles were present in the reach. Check ONE (Or 2 & average). RIFFLE / RUN SUBSTRATE STABLE (e.g., Cobble, Boulder) [2] MAXIMUM > 50cm [1] MOD. STABLE (e.g., Large Gravel) [1] UNSTABLE (e.g., Fine Gravel, Sand)	Port a population RIFFLE / RUN EMBEDDEDNESS NONE [2] 1] LOW [1]
6] GRADIENT (1.0 ft/mi) ■ VERY LOW - LOW [2-4] %POOL:	5 %GLIDE: 0 Gradient 3

Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc. A] SAMPLED REACH Check ALL that apply There are some shallow pools throughout the channel. Crayfish burrows and frogs were observed. Trash/debris was present within the **METHOD STAGE** channel. Approximately 114 feet of this channel are within the right-of-way and 61 feet of channel will be within a culvert. The Hwy 60 1st -sample pass- 2nd BOAT culvert would be extended to the southwest. HIGH WADE UP П L. LINE NORMAL OTHER Low **DISTANCE** □ DRY 0.5 Km D] MAINTENANCE F] MEASUREMENTS **CLARITY** B] AESTHETICS Circle some & COMMENT E] ISSUES 0.2 Km NUISANCE ALGAE PUBLIC / PRIVATE / BOTH / NA WWTP / CSO / NPDES / INDUSTRY x width $\overline{\Box}$ 0.15 Km < 20 cm ☐ INVASIVE MACROPHYTES ACTIVE / HISTORIC / BOTH / NA HARDENED/URBAN/DIRT&GRIME $\bar{\Box}$ 0.12 Km x depth ☐ 20-<40 cm ☐ EXCESS TURBIDITY YOUNG-SUCCESSION-OLD **CONTAMINATED / LANDFILL** OTHER max. depth ☐ 40-70 cm $\overline{\Box}$ SPRAY / SNAG / REMOVED **BMPs-CONSTRUCTION-SEDIMENT** DISCOLORATION x bankfull width □ > 70 cm/ CTB MODIFIED / DIPPED OUT / NA LOGGING / IRRIGATION / COOLING ☐ FOAM / SCUM bankfull x depth ☐ SECCHI DEPTH☐ meters LEVEED / ONE SIDED BANK / EROSION / SURFACE OIL SHEEN W/D ratio **RELOCATED / CUTOFFS** ■ TRASH / LITTER FALSE BANK / MANURE / LAGOON **CANOPY** WASH H₂0 / TILE / H₂0 TABLE bankfull max. depth MOVING-BEDLOAD-STABLE ☐ NUISANCE ODOR > 85%- OPEN floodprone x² width ARMOURED / SLUMPS ACID / MINE / QUARRY / FLOW ☐ SLUDGE DEPOSITS **55%-<85%** cm ☐ CSOs/SSOs/OUTFALLS ISLANDS / SCOURED NATURAL / WETLAND / STAGNANT entrench, ratio □ 30%-<55% IMPOUNDED / DESICCATED PARK / GOLF / LAWN / HOME Legacy Tree: AREA DEPTH ■ 10%-<30%</p> C] RECREATION FLOOD CONTROL / DRAINAGE POOL: □>100ft2 □>3ft ATMOSPHERE / DATA PAUCITY ☐ <10%- CLOSED
</p>

Stream Drawing:





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SITE NAME/LOCATION UNT-14 to North Fork C	Canoe Creek	
	A RIVER BASIN N/A DRAINAGE AREA (mi²) <	1
LENGTH OF STREAM REACH (ft) 200	LAT. 37.86135 LONG87.51653 RIVER CODE N/A RIVER MILE	N/A
DATE 09/20/18 SCORER Luke F. Egge	ering COMMENTS Ephemeral stream/ditch	
NOTE: Complete All Items On This Form	n - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Ins	tructions
STREAM CHANNEL	FURAL CHANNEL RECOVERED RECOVERING RECENT OR NO REC	COVERY
MODIFICATIONS:	The strain of th	5012.11
` •	ry type of substrate present. Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes	l
,	ant substrate types found (Max of 8). Final metric score is sum of boxes A & B. ERCENT TYPE PERCENT	HHEI Metric
BLDR SLABS [16 pts]	0 SILT [3 pt] 85	Points
□ □ BOULDER (>256 mm) [16 pts] □ BEDROCK [16 pt] □	0	Substrate
COBBLE (65-256 mm) [12 pts]	0	Max = 40
GRAVEL (2-64 mm) [9 pts] SAND (<2 mm) [6 pts]	5	12
SAND (<2 mm) [6 pts]	10 ARTIFICIAL [3 pts] 0	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	0 (A) 9	A + B
SCORE OF TWO MOST PREDOMINATE SUBST		
2. Maximum Pool Depth (Measure the ma	aximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road > 30 centimeters [20 pts]	d culverts or storm water pipes) (Check ONLY one box): Som - 10 cm [15 pts]	Max = 30
> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts]	5 cm [15 pts]	0
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS	MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the	average of 3-4 measurements) (Check ONLY one box):	Bankfull
> 4.0 meters (> 13') [30 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
3 0 m = 4 0 m (> 9' 7" = 13') [25 nts]	< 1.0 m (< 3' 3") [5 nts]	May=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	☐ ≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	1.2	15
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	= (= 0 0 / [6 p.o]	
OMMENTS	AVERAGE BANKFULL WIDTH (meters) This information <u>must</u> also be completed	
OMMENTS	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream	
COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank)	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY LR (Most Predominant per Bank) LR	
COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide >10m	AVERAGE BANKFULL WIDTH (meters) This information <u>must</u> also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) □ □ Mature Forest, Wetland □ □ Conservation Tillage	
COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank)	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Urban or Industrial	
COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ FLOODPLAIN QUALITY L R (Most Predominant per Bank)	
COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY *NOTE: River Left (L) and Right (R) as looking downstream * FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Urban or Industrial Residential Park New Field Open Pasture, Row	15
COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ FLOODPLAIN QUALITY L R (Most Predominant per Bank)	15
COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evalue)	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ FLOODPLAIN QUALITY L R (Most Predominant per Bank)	15
COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Subsurface flow with isolated pools)	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R Mature Forest, Wetland □ Conservation Tillage Immature Forest, Shrub or Old □ Urban or Industrial Field □ Residential, Park, New Field □ Open Pasture, Row Crop Residential, Park, New Field □ Open Pasture, Row Crop Mining or Construction Muation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermitter	15
COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation of Subsurface flow with isolated pools COMMENTS	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY *NOTE: River Left (L) and Right (R) as looking downstream *\frac{FLOODPLAIN QUALITY}{L R} (Most Predominant per Bank)	15
COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R Mature Forest, Wetland Dryban or Industrial Immature Forest, Shrub or Old Field Dryban or Industrial Open Pasture, Row Crop Mining or Construction Residential, Park, New Field Dryban or Construction Mining or Construction Mining or Construction Industrial Dryban or Industrial Open Pasture, Row Crop Mining or Construction Mining or Construction Industrial Open Pasture Dryban or Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture Dryban or Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture Dryban or Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining or Construction Industrial Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining Open Pasture, Row Crop Mining	15
COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation of Subsurface flow with isolated pools COMMENTS	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY *NOTE: River Left (L) and Right (R) as looking downstream *\frac{FLOODPLAIN QUALITY}{L R} (Most Predominant per Bank)	15
COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None	AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Urban or Industrial Residential, Park, New Field Open Pasture, Row Crop Fenced Pasture Mining or Constructio Moist Channel, isolated pools, no flow (Intermitter Dry channel, no water (Ephemeral) Per 61 m (200 ft) of channel) (Check ONLY one box): 1.0 2.0 3.0	15 n.

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 3.5 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts:
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the sit ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology:
This is a roadside channel that parallels US 60. Approximately 123 feet of this channel are within the right-of-way and 109 feet are within the construction limits





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SITE NAME/LOCATION UNT-15 to North Fork Ca	anoe Creek			
SITE NUMBER N/A	RIVER BASIN N/	A DRAIN	AGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 59 L			RIVER MILE N/A	
DATE 08/03/18 SCORER Luke F. Egger	ring COMMENTS Ephemera	al stream/ditch		
NOTE: Complete All Items On This Form	- Refer to "Field Evaluatio	n Manual for Ohio's PHWH	Streams" for Instruc	ctions
STREAM CHANNEL	JRAL CHANNEL RECOVE	RED RECOVERING RE	ECENT OR NO RECOV	ERY
MODIFICATIONS:				
 SUBSTRATE (Estimate percent of every (Max of 32). Add total number of significar 			oxes A & B.	HHEI
	RCENT TYPE 0 SILT	FO41	FLICENT	Metric Points
BOULDER (>256 mm) [16 pts]		[3 pt] PACK/WOODY DEBRIS [3 pts]	0	
BEDROCK [16 pt]		DETRITUS [3 pts]		Substrate Max = 40
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ GRAVEL (2-64 mm) [9 pts]		or HARDPAN [0 pt] K [0 pts]		
SAND (<2 mm) [6 pts]		FICIAL [3 pts]	0	11
Total of Percentages of	(A)		(B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTI		OTAL NUMBER OF SUBSTRAT	E TYPES: 2	
	-			
Maximum Pool Depth (Measure the max evaluation. Avoid plunge pools from road of			at the time of F	Pool Depth Max = 30
> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts]	_	cm - 10 cm [15 pts]		
> 10 - 22.5 cm [25 pts]		WATER OR MOIST CHANNEL [0	pts]	0
COMMENTS This is an ephemeral chanr	nel with dry scour holes.	_ MAXIMUM POOL DEPTH (cen	timeters):	
3. BANK FULL WIDTH (Measured as the a	versage of 3-4 measurements)	(Check ONLY one box)	 	Bankfull
> 4.0 meters (> 13') [30 pts]	> 1.0) m - 1.5 m (> 3' 3" - 4' 8") [15 pts]		Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	□ ≤ 1.	0 m (≤ 3' 3") [5 pts]		Max=30
COMMENTS		AVERAGE BANKFULL WIDTH	1.2	15
	This information must also			
RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH	. AIN QUALITY ☆NOTE: Ri <u>FLOODPLAIN QUALITY</u>	ver Left (L) and Right (R) as looki	ng downstream☆	
L R (Per Bank)	L R (Most Predominant Mature Forest, Wet		onconvetion Tillege	
Wide >10m Moderate 5-10m	Immature Forest, Wet	hrub or Old	onservation Tillage ban or Industrial	
	Field	= = 0	pen Pasture, Row	
☐ ☐ Narrow <5m	Residential, Park, N	lew Field Ci	ор	
□ □ None COMMENTS	☐ ☐ Fenced Pasture	□□ м	ining or Construction	
FLOW REGIME (At Time of Evalu.	ation) (Check ONLY one hox)			
Stream Flowing	_ ´ `	Moist Channel, isolated pools,	,	
Subsurface flow with isolated pools COMMENTS	(Interstitial)	Dry channel, no water (Epher	neral)	
SINUOSITY (Number of bends per	r 61 m (200 ft) of channel)(Ch	neck ONLY one box):		
None `	1.0	2.0	3.0	
0.5	1.5	2.5	>3	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft)	☐ Moderate to Severe	Severe (10 ft/100 f	ft)
•	· ,		,	

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)	<u>.</u>
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Ar	ttach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream 3.0 miles
CWH Name:	
EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	ED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map	Page: N/A NRCS Soil Map Stream Order
County: Henderson County Township / City: Hende	erson
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	Quantity: NA
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): Canopy (% open):	
Were samples collected for water chemistry? (Y/N): $\underline{\hspace{1cm}}^{N/A}$ (Note lab sample no. or id	. and attach results) Lab Number:
Field Measures: Temp (°C) $\frac{N/A}{}$ Dissolved Oxygen (mg/l) $\frac{N/A}{}$ pH (S.U.)	N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream $(Y/N)_{\underline{\hspace{1cm}}}^{N/A}$ If not, please explain:	N/A
Additional comments/description of pollution impacts: This channel is an erosional feat	ture within an agricultural field.
The banks of this channel are unvegetated.	
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections option ID number. Include appropriate field data sheets from the	nal. NOTE: all voucher samples must be labeled with the site Primary Headwater Habitat Assessment Manual)
Fish Observed? $(Y/N) No$ Voucher? $(Y/N) No$ Salamanders Observed? $(Y/N) No$ Frogs or Tadpoles Observed? $(Y/N) No$ Voucher? $(Y/N) No$ Aquatic Macroinverteb	
Comments Regarding Biology:	
Approximately 15 feet of this eroded ephemeral channel are within the right-of-way.	





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SITE NAME/LOCATION UNT-16 to North Fork C	anoe Creek		
SITE NUMBER_N/A	RIVER BASIN N/A DRAINAGE AREA (m	i ²) <u><1</u>	
LENGTH OF STREAM REACH (ft) 200	LAT. <u>37.85811</u> LONG. <u>-87.53069</u> RIVER CODE <u>N/A</u> RIVER M	ILE <u>N/A</u>	
DATE 09/20/18 SCORER Luke F. Egge	ring COMMENTS Ephemeral stream/ditch		
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for	Instructions	
STREAM CHANNEL	JRAL CHANNEL ☐ RECOVERED ■ RECOVERING ☐ RECENT OR NO	RECOVERY	
MODIFICATIONS:			
	y type of substrate present. Check ONLY two predominant substrate TYPE booms to substrate types found (Max of 8). Final metric score is sum of boxes A & B.	xes HHEI	
TYPE PE	RCENT TYPE PERCENT	Metric	
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]	0 SILT [3 pt] 90 0 LEAF PACK/WOODY DEBRIS [3 pts] 0	Points	
BEDROCK [16 pt]	0 FINE DETRITUS [3 pts]	Substrate Max = 40	
COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts]	0 CLAY or HARDPAN [0 pt] 0 0 MUCK [0 pts] 0	Max - 40	
☐ ☐ GRAVEL (2-64 mm) [9 pts] ☐ ■ SAND (<2 mm) [6 pts]	0	11	
Total of Percentages of	(A) (B)	_ '	
Bldr Slabs, Boulder, Cobble, Bedrock	0 9	2	
SCORE OF TWO MOST PREDOMINATE SUBST	RATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:		
	ximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth	
evaluation. Avoid plunge pools from road > 30 centimeters [20 pts]	culverts or storm water pipes) (Check <i>ONLY</i> one box): Some 10 cm [15 pts]	Max = 30	
☐ > 22.5 - 30 cm [30 pts] ☐ > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	0	
		0	
COMMENTS I his is an ephemeral chan	nel with some dry scour holes. MAXIMUM POOL DEPTH (centimeters):		
3. BANK FULL WIDTH (Measured as the a	verage of 3-4 measurements) (Check <i>ONLY</i> one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	\(\text{1.0 m} \(\text{1.5 m} \(\text{2 3 3 - 4 6} \) \(\text{13 pts} \) \(\text{1.0 m} \(\text{5 3 5 - 4 6} \) \(\text{13 pts} \) \(\text{5 5 pts} \)	Max=30	
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	1	.2 15	
COMMENTS	AVERAGE BANKFULL WIDTH (meters)		
RIPARIAN ZONE AND FLOODPL	This information <u>must</u> also be completed AIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream	าร์	
RIPARIAN WIDTH	FLOODPLAIN QUALITY L. B. (Most Prodominant per Bank) L. B. (Most Prodominant per Bank)		
L R (Per Bank) Wide >10m	L R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Till	age	
☐ ☐ Moderate 5-10m	Immature Forest, Shrub or Old	al	
☐ ☐ Narrow <5m	Residential Park New Field Open Pasture, R	ow	
None	Crop Fenced Pasture Mining or Constru	uction	
COMMENTS			
FLOW REGIME (At Time of Evalu	/ · ·		
Stream Flowing Subsurface flow with isolated pools	Moist Channel, isolated pools, no flow (Intern pry channel, no water (Ephemeral)	nittent)	
COMMENTS			
SINUOSITY (Number of bends pe	er 61 m (200 ft) of channel) (Check ONLY one box):		
None 0.5	1.0		
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe	(10 ft/100 ft)	

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A (If Yes, Attach Completed QHEI Form)	
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream	2.8 miles
☐ CWH Name: Distance from Evaluated Stream _	
☐ EWH Name: Distance from Evaluated Stream _	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE L	OCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream	m Order
County: Henderson County Township / City: Henderson	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): No Date of last precipitation: Unknown Quantity: NA	
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:N/A	
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A	/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A	
Additional comments/description of pollution impacts: This channel is an erosional feature within an agricultural field.	
The banks of this channel are unvegetated.	
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Note:	
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher?	(Y/N) <u>No</u>
Comments Regarding Biology:	
Approximately 218 feet of this eroded ephemeral channel are within the right-of-way and approximately 127 feet would be Approximately 223 feet of culvert would be required to connect UNT-16 to North Fork Canoe Creek to the upstream water In lieu of the culvert, the upstream watershed could be drained in a road ditch to UNT-14 to North Fork Canoe Creek.	





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SITE NAME/LOCATION UNT-17 to North Fork C	anoe Creek	
	RIVER BASIN N/A DRAINAG	SE AREA (mi²) 0.5
	AT. 37.85428 LONG87.54710 RIVER CODE N/A	
DATE 09/20/18 SCORER Luke F. Egge	ring COMMENTS Ephemeral stream/ditch	
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Manual for Ohio's PHWH Str	eams" for Instructions
STREAM CHANNEL	JRAL CHANNEL RECOVERED RECOVERING RECI	ENT OR NO RECOVERY
MODIFICATIONS:		
	y type of substrate present. Check ONLY two predominant substrant substrate types found (Max of 8). Final metric score is sum of boxe	
TYPE PE	RCENT TYPE	PERCENT Metric
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]	0 SILT [3 pt] 0 LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐ BEDROCK [16 pt]	0 FINE DETRITUS [3 pts]	0 Substrate Max = 40
COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts]	0 CLAY or HARDPAN [0 pt] 0 MUCK [0 pts]	10
☐ ☐ GRAVEL (2-64 mm) [9 pts] ☐ ☐ SAND (<2 mm) [6 pts]		0 6
Total of Percentages of	(A)	(B) A+B
Bldr Slabs, Boulder, Cobble, Bedrock	0 3	3 7 7 8
SCORE OF TWO MOST PREDOMINATE SUBST	RATE TYPES: TOTAL NUMBER OF SUBSTRATE	TYPES:
	ximum pool depth within the 61 meter (200 ft) evaluation reach at culverts or storm water pipes) (Check ONLY one box):	the time of Pool Depth Max = 30
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15 pts]	Wax - 30
☐ > 22.5 - 30 cm [30 pts] ☐ > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pt	0
	nel with some dry scour holes. MAXIMUM POOL DEPTH (centim	
COMMENTS This is an ephiemeral chair	MAXIMUM POOL DEPTH (centim	leters):
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	verage of 3-4 measurements) (Check <i>ONLY</i> one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐ ≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		4.5 30
COMMENTS	AVERAGE BANKFULL WIDTH (m	neters)
	This information would be be accorded	
RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH	This information <u>must</u> also be completed AIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking FLOODPLAIN QUALITY	downstream ኔት
L R (Per Bank)	L R (Most Predominant per Bank) L R Mature Forest Wetland Cons	· T''
Wide >10m Moderate 5-10m	Immature Forest Shrub or Old	ervation Tillage
	Field	n or Industrial ı Pasture, Row
☐ ☐ Narrow <5m	Residential, Park, New Field Crop	
☐ ☐ None COMMENTS	☐ ☐ Fenced Pasture ☐ ☐ Minin	g or Construction
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):		
Stream Flowing	Moist Channel, isolated pools, no	,
Subsurface flow with isolated pools COMMENTS	(Interstitial) Dry channel, no water (Ephemer	al)
	r 61 m (200 ft) of channel) (Check ONLY one box):	
None 🔲	1.0 2.0	
□ 0.5	1.5	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe	Severe (10 ft/100 ft)
i lat (0.5 lv loo lt)	- Moderate (2 IV 100 II) - IVIOGETATE (U SEVETE	OGVOIG (10 10 100 It)

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	Distance from Evaluated Stream
CWH Name:	Distance from Evaluated Stream
EWH Name:	
	TIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:	NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Henderson County Townsl	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	own Quantity: NA
Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): $\underline{\hspace{1cm}^{N/A}}$ (Note lab	sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream $(Y/N) \begin{tabular}{c} N/A \\ \hline \end{tabular}$ If not, p	olease explain:
Additional comments/description of pollution impacts: There is a scour	hole near a culvert. The channel has steep banks.
BIOTIC EVALUATION	
· , ·	collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Aquation	
Comments Regarding Biology:	
Approximately 660 feet of this channel are within the right-of-way. Approximately 416-foot culvert. Note: Straight-line culvert reduces the	





<u> </u>

	Canoe Creek	
SITE NUMBER_N/A	RIVER BASIN N/A	DRAINAGE AREA (mi²) <1
	LAT. 37.85460 LONG87.54706 RIVER	CODE N/A RIVER MILE N/A
DATE 09/21/18 SCORER Luke F. Egge	ring COMMENTS Ephemeral stream/ditch	
NOTE: Complete All Items On This Form	ı - Refer to "Field Evaluation Manual for Ohi	o's PHWH Streams" for Instructions
STREAM CHANNEL	URAL CHANNEL RECOVERED RECOVE	ERING RECENT OR NO RECOVERY
MODIFICATIONS:		
` · ·	y type of substrate present. Check ONLY two pred nt substrate types found (Max of 8). Final metric sco	
<u>TYPE</u> PE	RCENT TYPE	PERCENT Metric
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]	0 SILT [3 pt] 0 LEAF PACK/WOODY DE	
□ □ BEDROCK [16 pt]	0 FINE DETRITUS [3 pts]	0 Substrate
COBBLE (65-256 mm) [12 pts]	O CLAY or HARDPAN [0 p	tj 10 max = 40
☐ ☐ GRAVEL (2-64 mm) [9 pts] ☐ ☐ SAND (<2 mm) [6 pts]		0 6
Total of Percentages of		(B) A + B
Bldr Slabs, Boulder, Cobble, Bedrock	0 (A) 3	(B) 3 A+B
SCORE OF TWO MOST PREDOMINATE SUBST	TRATE TYPES: TOTAL NUMBER OF	F SUBSTRATE TYPES:
• •	ximum pool depth within the 61 meter (200 ft) eva	
evaluation. Avoid plunge pools from road > 30 centimeters [20 pts]	culverts or storm water pipes) (Check <i>ONLY</i> one > 5 cm - 10 cm [15 pts]	box): Max = 30
> 22.5 - 30 cm [30 pts]	< 5 cm [5 pts]	CHANNEL 10 max
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST	
COMMENTS	MAXIMUM POOL	DEPTH (centimeters):
		VLY one box): Bankfull
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	average of 3-4 measurements) (Check Of > 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts]	
> 4.0 meters (> 13') [30 pts]	> 1.0 m - 1.5 m (> 3' 3" -	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts]	4' 8") [15 pts] Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts]	4' 8") [15 pts] Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed	Width Max=30 1.2 Total Properties
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed LAIN QUALITY 公NOTE: River Left (L) and Right FLOODPLAIN QUALITY	Width Max=30 1.2 1.5 Total (R) as looking downstream: 1.2 1.3
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right	Width Max=30 1.2 Total Properties
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank)	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed LAIN QUALITY %NOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old	Width Max=30 1.2 1.5 FULL WIDTH (meters) 1.2 1.2 1.2
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field	Width Max=30 1.2 1.5 FULL WIDTH (meters) 1.6 1.7 1.8 1.9 1.9 1.0 1.0 1.0 1.0 1.0 1.0
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field	Width Max=30 1.2 1.5 FULL WIDTH (meters) 1.2 L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field	Width Max=30 1.2 1.5 FULL WIDTH (meters) 1.2 L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPINE RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture	Width Max=30 1.2 1.5 FULL WIDTH (meters) 1.2 L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop
> 4.0 meters (> 13') [30 pts]	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Channel, is	Width Max=30 1.2 1.5 FULL WIDTH (meters) 1.2 1.5 L R
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10 m Moderate 5-10 m Narrow < 5 m None COMMENTS FLOW REGIME (At Time of Evaluation of Eval	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Channel, is	Width Max=30 1.2 FULL WIDTH (meters) 1.2 1.5 To the (R) as looking downstream Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation Subsurface flow with isolated pools COMMENTS	> 1.0 m - 1.5 m (> 3' 3" - ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANK This information must also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Channel, is	Width Max=30 1.2 FULL WIDTH (meters) 1.2 1.5 To the (R) as looking downstream Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction Solated pools, no flow (Intermittent) water (Ephemeral)
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation of Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None	This information must also be completed LAIN QUALITY ANOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Wetland Residential, Park, New Field Residential, Park, New Field Fenced Pasture Moist Channel, is Dry channel, no er 61 m (200 ft) of channel) (Check ONLY one box): 1.0 (Check ONLY one box): 2.0	Width Max=30 1.2 FULL WIDTH (meters) 1.2 1.5 To the term of
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation of Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None 0.5	This information must also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank)	Width Max=30 1.2 FULL WIDTH (meters) 1.2 1.5 To the (R) as looking downstream Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction Solated pools, no flow (Intermittent) water (Ephemeral)
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation of Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None	This information must also be completed LAIN QUALITY ANOTE: River Left (L) and Right FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Wetland Residential, Park, New Field Residential, Park, New Field Fenced Pasture Moist Channel, is Dry channel, no er 61 m (200 ft) of channel) (Check ONLY one box): 1.0 (Check ONLY one box): 2.0	Width Max=30 1.2 FULL WIDTH (meters) 1.2 To the total conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction Solated pools, no flow (Intermittent) water (Ephemeral) 3.0 >3.0 >3.0

ADDITIONAL STREAM INFORMATION (This Information Mus	st Also be Completed):
QHEI PERFORMED? - Tyes No QHEI Score	N/A (If Yes, Attach Completed QHEI Form)
	Distance from Evaluated Stream 2.0 miles Distance from Evaluated Stream
	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING T	THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:	NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Henderson County	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation	Unknown Quantity: NA
Photograph Information: Photos attached. Elevated Turbidity? (Y/N): No Canopy (% open): 10	
Were samples collected for water chemistry? (Y/N): N/A (N Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l	lote lab sample no. or id. and attach results) Lab Number: N/A
Additional comments/description of pollution impacts: Soil erosic stream/ditch.	on and herbicides from the adjacent agricultural area likely affect this
BIOTIC EVALUATION	
	Voucher collections optional. NOTE: all voucher samples must be labeled with the site eld data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salaman Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No	ders Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology:	
Crayfish burrows were observed in the channel. Approximate would be enclosed in a culvert.	ly 213 feet of this channel are within the right-of-way and 156 feet of channel





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SITE NAME/LOCATION UNT-19 to North Fork C	Canoe Creek	
· · · · · · · · · · · · · · · · · · ·	RIVER BASIN N/A DRAINAGE AREA (mi ²) <1	
	LAT. 37.85418 LONG87.54681 RIVER CODE N/A RIVER MILE N/A	A
DATE 09/21/18 SCORER Luke F. Egge	ering COMMENTS Ephemeral stream/ditch	
NOTE: Complete All Items On This Form	n - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru	uctions
STREAM CHANNEL NONE / NATI	FURAL CHANNEL TRECOVERED FRECOVERING RECENT OR NO RECO)VERV
MODIFICATIONS:	TORAL CHANNEL BRECOVERED RECOVERING BRECENT OF NO RECO	VERT
MODII IOATIONO.		
(Max of 32). Add total number of significa TYPE PE	ry type of substrate present. Check ONLY two predominant substrate TYPE boxes ant substrate types found (Max of 8). Final metric score is sum of boxes A & B. ERCENT TYPE PERCENT	HHEI Metric Points
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts] ☐	0	Foilits
BEDROCK [16 pt]	0 FINE DETRITUS [3 pts] 0	Substrate
COBBLE (65-256 mm) [12 pts]	0 CLAY or HARDPAN [0 pt] 10	Max = 40
GRAVEL (2-64 mm) [9 pts] SAND (<2 mm) [6 pts]	0	6
7 6 1 1 1 1		
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	0 (A) 3	A + B
SCORE OF TWO MOST PREDOMINATE SUBST		
2. Maximum Pool Depth (Measure the ma	aximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road > 30 centimeters [20 pts]	d culverts or storm water pipes) (Check ONLY one box): Som - 10 cm [15 pts]	Max = 30
> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts]	5 cm [15 pts]	0
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS	MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the a		Bankfull
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ⊆ 1.0 m (≤ 3' 3") [5 pts]	Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		
COMMENTS	AVERAGE BANKFULL WIDTH (meters)	20
RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH	This information <u>must</u> also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ FLOODPLAIN QUALITY	
L R (Per Bank)	L R (Most Predominant per Bank) L R Mature Forest, Wetland D Conservation Tillage	
Wide >10m Moderate 5-10m	☐ ☐ Mature Forest, Wetland ☐ ☐ Conservation Tillage ☐ ☐ Immature Forest, Shrub or Old ☐ ☐ Urban or Industrial	
	Field Onen Pasture Row	
☐ ☐ Narrow <5m	Residential, Park, New Field Crop	
□ □ None COMMENTS	☐ ☐ Fenced Pasture ☐ ☐ Mining or Construction	
None COMMENTS FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS	luation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent)	
FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS	luation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent)	
FLOW REGIME (At Time of Evalue Stream Flowing Subsurface flow with isolated pools COMMENTS	Auation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral) er 61 m (200 ft) of channel) (Check ONLY one box): 1.0 3.0	
FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per	Auation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral) Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)	

ADDITIONAL STREAM INFORMATION (This Information Must Also be	e Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream 2.0 miles
CWH Name:	Distance from Evaluated Stream
☐ EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIR	RE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: N	IRCS Soil Map Page: N/A NRCS Soil Map Stream Order
County: Henderson County Township	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): No Date of last precipitation: Unknow	vn Quantity: NA
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	_
Were samples collected for water chemistry? (Y/N): $\underline{\hspace{1cm}^{N/A}}$ (Note lab sa	mple no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not, ple	ease explain: N/A
Additional comments/description of pollution impacts: Soil erosion and he	erbicides from the adjacent agricultural area likely affect this
stream/ditch. The stream has steep banks, approximately 5-6 feet high	ո.
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher of ID number. Include appropriate field data sh	ollections optional. NOTE: all voucher samples must be labeled with the site neets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observeds or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic N	
Comments Regarding Biology:	
Crayfish burrows were observed in the channel. Approximately 199 fee be enclosed in a culvert.	et of channel are within the right-of-way and 99 feet of channel would





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SITE NAME/LOCATION UNT-20 to North Fork C	Canoe Creek	
	RIVER BASIN N/A DRAINAGE AREA (mi²) <	1
	LAT. 37.85358 LONG87.55093 RIVER CODE N/A RIVER MILE	
DATE 09/21/18 SCORER Luke F. Egge	ering COMMENTS Ephemeral stream/ditch	
NOTE: Complete All Items On This Form	ı - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Ins	ructions
STREAM CHANNEL NONE / NATI	URAL CHANNEL RECOVERED RECOVERING RECENT OR NO REC	COVERY
MODIFICATIONS:	ONAL OFFICIAL DE REGOVERED TO REGENT OF NO REG	OVERT
mosii ioxiione.		
(Max of 32). Add total number of significa	ry type of substrate present. Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes and substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI Metric
BLDR SLABS [16 pts]	ERCENT TYPE PERCENT 0 SILT [3 pt] 75	Points
BOULDER (>256 mm) [16 pts]	0 LEAF PACK/WOODY DEBRIS [3 pts] 0	Substrate
☐ ☐ BEDROCK [16 pt] ☐ ☐ COBBLE (65-256 mm) [12 pts]	0 ☐ FINE DETRITUS [3 pts] 0 0 CLAY or HARDPAN [0 pt] 0	Max = 40
GRAVEL (2-64 mm) [9 pts]	20 MUCK [0 pts] 0	15
SAND (<2 mm) [6 pts]	5 ARTIFICIAL [3 pts] 0	
Total of Percentages of	(A) (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBST		
		<u> </u>
	aximum pool depth within the 61 meter (200 ft) evaluation reach at the time of culverts or storm water pipes) (Check ONLY one box):	Pool Depth Max = 30
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15 pts]	
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS This is an ephemeral chan	nnel with some dry scour holes. MAXIMUM POOL DEPTH (centimeters):	
	<u> </u>	<u> </u>
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	average of 3-4 measurements) (Check <i>ONLY</i> one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐ ≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	4.5	30
COMMENTS	AVERAGE BANKFULL WIDTH (meters)	
RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH	This information <u>must</u> also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ FLOODPLAIN QUALITY	
L R (Per Bank) Wide >10m	L R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Tillage	
☐ ☐ Moderate 5-10m	Urban or Industrial	
	Field Open Pasture Row	
□ □ Narrow <5m □ □ None	Residential, Park, New Field Crop Fenced Pasture	
COMMENTS	Fenced Fasture	_
FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS	Moist Channel, isolated pools, no flow (Intermitter	t)
` ~	er 61 m (200 ft) of channel) (Check ONLY one box):	
None 0.5	1.0	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft	100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Tyes No QHEI Score N/A (If Yes, Attac	h Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	_ Distance from Evaluated Stream
☐ CWH Name:	
☐ EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED A	AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Pa	age: N/A NRCS Soil Map Stream Order
County: Henderson County Township / City: Henderson	n
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	Quantity: NA
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): Canopy (% open):	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. ar	nd attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.)	A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not, please explain: N/A	
Additional comments/description of pollution impacts: Soil erosion and herbicides from the stream/ditch.	e adjacent agricultural area likely affect this
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. ID number. Include appropriate field data sheets from the Principle.	·
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrate	Voucher? (Y/N) No es Observed? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology:	
Approximately 428 feet of this channel are in the right-of-way and approximately 273 fe	et would be enclosed in a culvert.

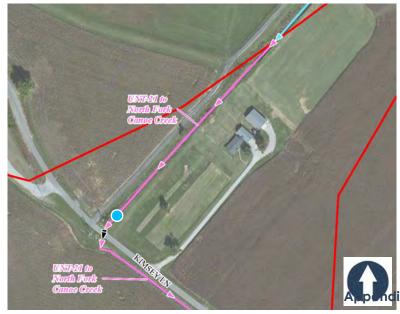




SITE NAME/LOCATION UNT-21 to North Fork Canoe Creek SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) 0.73	
	-
LENGTH OF STREAM REACH (ft) 200 LAT. 37.84837 LONG87.56449 RIVER CODE N/A RIVER MILE N/A	
DATE 09/21/18 SCORER Luke F. Eggering COMMENTS Intermittent stream/ditch	_
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions	
STREAM CHANNEL	
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	=1
TYPE PERCENT TYPE PERCENT Metr	ic
BLDR SLABS [16 pts]	เร
BEDROCK [16 pt] 0 FINE DETRITUS [3 pts] 0	
COBBLE (65-256 mm) [12 pts] 0 CLAY or HARDPAN [0 pt] 0	40
GRAVEL (2-64 mm) [9 pts] 20 MUCK [0 pts] 0 SAND (<2 mm) [6 pts] 5 ARTIFICIAL [3 pts] 15	
Table of Department of	
Total of Percentages of (A) Bldr Slabs, Boulder, Cobble, Bedrock 0 12	i
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool De	— ∍pth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max =	30
22.5 - 30 cm [30 pts] < 5 cm [5 pts] 0	
□ > 10 - 22.5 cm [25 pts] ■ NO WATER OR MOIST CHANNEL [0 pts]	4
COMMENTS This is an ephemeral channel with some scour holes. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): Bankfi	ull
□ > 4.0 meters (> 13') [30 pts]	
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	
COMMENTSAVERAGE BANKFULL WIDTH (meters)	
This information <u>must</u> also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Most Predominant per Bank) L R	
Wide >10m	
☐ ☐ Moderate 5-10m ☐ ☐ Urban or Industrial	
Field Narrow <5m Residential Park New Field Open Pasture, Row	
Field Narrow <5m Residential, Park, New Field None Fenced Pasture Mining or Construction	
Field Open Pasture, Row Crop	
Field Narrow <5m Residential, Park, New Field Open Pasture, Row Crop None COMMENTS FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Narrow <5m	
Field Narrow <5m	
Narrow <5m	
Narrow <5m	
Field Open Pasture, Row Crop None	

ADDITIONAL STREAM INFORMATION (This Information Must Also be Complete	eted):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score(If Ye	es, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream 1.4 miles
CWH Name:	
EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATE	RSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soi	il Map Page: NRCS Soil Map Stream Order
County: Henderson County Township / City:	Henderson
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:Unknown	Quantity:
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): $\underline{\hspace{1cm}^{N/A}}$ (Note lab sample no.	. or id. and attach results) Lab Number:
Field Measures: Temp (°C) $\underline{\hspace{1cm}}^{N/A}$ Dissolved Oxygen (mg/l) $\underline{\hspace{1cm}}^{N/A}$ pH (8	S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream $(Y/N) \frac{N/A}{}$ If not, please expl	lain:
Additional comments/description of pollution impacts: Soil erosion and herbicides stream/ditch.	from the adjacent agricultural area likely affect this
BIOTIC EVALUATION	
,	optional. NOTE: all voucher samples must be labeled with the site mather than the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvelle (Y/N) No Voucher? (Y/N) No Aquatic Macroinvelle (Y/N) No Aquatic Macroinve	
Comments Regarding Biology:	
Approximately 628 feet of this channel are in the right-of-way and approximately	ly 484 feet are within the construction limits

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



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HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME UNT-21 North Fork Canoe Creek	LOCATION Henderson, Kentucky		
STATION # NA RIVERMILE NA	STREAM CLASS Intermittent		
LAT <u>37.84837</u> LONG <u>-87.56449</u>	RIVER BASIN Ohio River		
STORET # N/A	AGENCY N/A		
INVESTIGATORS L. Eggering			
FORM COMPLETED BY L. Eggering	DATE 09/21/18 TIME 12:00 AM PM REASON FOR SURVEY I-69 ORX Project WOTUS Report		

	Habitat	Condition Category					
	Parameter	Optimal	Suboptimal	Marginal	Poor		
	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.		
each	SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.		
uate	score 7	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
rs to be eval	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.		
mete	score 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
Para	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.		
	SCORE 5	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.		
	SCORE 2	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat						
	Parameter	Optimal	Suboptimal	Marginal	Poor		
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.		
	SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
pling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.		
sam	score 3	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.		
eva	SCORE 7 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0		
to be	SCORE 8 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0		
Parameters t	9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.		
	SCORE 7 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0		
	SCORE 8 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0		
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.		
	SCORE 2 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0		
	SCORE 2 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0		

Total Score 75

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAMEUNT-21 to North Fork Canoe Creek	LOCATION Henderson, Kentucky		
STATION #_N/A_ RIVERMILE_N/A_	STREAM CLASS Intermittent		
LAT <u>37.84837</u> LONG <u>-87.56449</u>	RIVER BASIN Ohio River		
STORET # N/A	AGENCY N/A		
investigators L. Eggering			
FORM COMPLETED BY L. Eggering	DATE 09/21/18 TIME 12:30 PM AM PM	REASON FOR SURVEY I-69 ORX Project	

STREAM CHARACTERIZATION STREAM CHARACTERIZATION CHARACTERIZATION CHARACTERIZATION CHARACTERIZATION CHARACTERIZATION CHAR	WEATHER CONDITIONS	Now	storm (heavy rain)	Past 24 hours	Has there been a heavy rain in the last 7 days? Yes ■ No
STREAM CHARACTERIZATION Stream Subsystem Perennial Intermittent Tidal Stream Type Perennial Claidial Spring-fed Catchment Area 1.9 km² Glacial Non-glacial montane Mixture of origins Wixture of origins Mixture of origins Mixture of origins Mixture of origins Mixture of origins		_25_% _	rain (steady rain) showers (intermittent) %cloud cover	<u>30</u> %	Air Temperature_27_0 C Other
STREAM CHARACTERIZATION Stream Subsystem Perennial Intermittent Tidal Coldwater Warmwater Stream Origin Glacial Spring-fed Catchment Area 1.9 km² Mixture of origins Non-glacial montane Mixture of origins	SITE LOCATION/MAP	Draw a map	of the site and indicate th	he areas sam	pled (or attach a photograph)
Stream Origin Glacial Spring-fed Non-glacial montane Spring-fed Mixture of origins Catchment Area 1.9 km² Mixture of origins		See attache	ed Primary Headwater Ha	abitat Evalu	ation Index (HHEI) Form.
Stream Origin Glacial Spring-fed Non-glacial montane Spring-fed Mixture of origins Catchment Area 1.9 km² Mixture of origins					
Stream Origin Glacial Spring-fed Non-glacial montane Spring-fed Mixture of origins Catchment Area 1.9 km² Mixture of origins					
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Stream Origin Glacial Spring-fed Non-glacial montane Spring-fed Mixture of origins Catchment Area 1.9 km² Mixture of origins					
Glacial Spring-fed Non-glacial montane ■ Mixture of origins	STREAM CHARACTERIZATION	Stream Sub Perennial	system Intermittent Tic	dal	Stream Type Coldwater Warmwater
		Glacial Non-glacia	Spring-fe	of origins	Catchment Area 1.9 km ²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse Forest Commercial ■ Field/Pasture Industrial Agricultural Other Residential	Local Watershed NPS Pollution No evidence Some potential sources Obvious sources Local Watershed Erosion None Moderate Heavy
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the dominatives Shrubs dominant species present Johnsongrass is the dominant	Grasses Herbaceous
INSTREAM FEATURES	Estimated Reach Length 200m Estimated Stream Width 3m Sampling Reach Area 600m² Area in km² (m²x1000) 0.0006 _ km² Estimated Stream Depth 1.8m Surface Velocity (at thalweg) <1m/sec	Canopy Cover Partly open Partly shaded Shaded High Water Mark 2.7 m Proportion of Reach Represented by Stream Morphology Types Riffle % Run 95 % Pool 5 % Run 95 % Pool 5 % No Dam Present Yes No
LARGE WOODY DEBRIS	LWD N/A m² Density of LWD N/A m²/km² (LWD/ reach	ı area)
AQUATIC VEGETATION	Indicate the dominant type and record the dominal Rooted emergent Rooted submergent Attached Algae dominant species present Aquatic vegetation absent. Portion of the reach with aquatic vegetation Output Description:	nnt species present Rooted floating Free floating %
WATER QUALITY	Temperature N/A C Specific Conductance N/A Dissolved Oxygen N/A pH N/A Turbidity N/A WQ Instrument Used N/A	Water Odors Normal/None Sewage Petroleum Chemical Fishy Other Water Surface Oils Slick Sheen Globs Flecks None Other Turbidity (if not measured) Clear Slightly turbid Turbid Opaque Stained Other
SEDIMENT/ SUBSTRATE	Odors Normal Sewage Petroleum Chemical Anaerobic ■ None Other Oils ■ Absent Slight Moderate Profuse	Deposits Sludge Sawdust Paper fiber Sand Relict shells Other Looking at stones which are not deeply embedded, are the undersides black in color? Yes ■ No

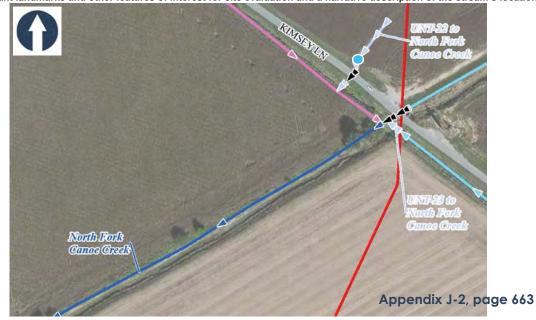
INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant	_
Boulder	> 256 mm (10")	0		materials (CPOM)	5
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic	_
Gravel	2-64 mm (0.1"-2.5")	20]	(FPOM)	5
Sand	0.06-2mm (gritty)	5	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	75	1		U
Clay	< 0.004 mm (slick)	0	1		



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SITE NAME/LOCATION UNT-22 to North Fork C	anoe Creek		
		DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200			/A
DATE 08/03/18 SCORER Luke F. Egge	ing COMMENTS Ephemeral stream	m/ditch	
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Man	ual for Ohio's PHWH Streams" for Instr	uctions
STREAM CHANNEL	IRAL CHANNEL	RECOVERING TRECENT OR NO REC	OVERY
MODIFICATIONS:			
 SUBSTRATE (Estimate percent of ever (Max of 32). Add total number of significa 		JLY two predominant substrate TYPE boxes at metric score is sum of boxes A & B	HHEI
TYPE PE	RCENT TYPE	PERCENT	Metric
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]	0 SILT [3 pt] 0 LEAF PACK/	WOODY DEBRIS [3 pts] 0	Points
□ □ BEDROCK [16 pt]	0		Substrate Max = 40
COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts]		RDPAN [0 pt]0	IVIAX - 40
☐ ☐ GRAVEL (2-64 mm) [9 pts] ☐ ■ SAND (<2 mm) [6 pts]	0 MUCK [0 pts 10 ARTIFICIAL	·	11
Total of Percentages of		(B)	
	<u>o</u> (A) 9	(B) 2	A + B
SCORE OF TWO MOST PREDOMINATE SUBST	RATE TYPES: TOTAL I	NUMBER OF SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the ma		,	Pool Depth
evaluation. Avoid plunge pools from road > 30 centimeters [20 pts]	culverts or storm water pipes) (Check	,	Max = 30
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pt	(S) OR MOIST CHANNEL [0 pts]	0
		0	
COMMENTS This is an ephemeral chan	nel with some scour holes. MAXI	MUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the a		(Check <i>ONLY</i> one box): 5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	≤ 1.0 m (≤ 3		Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		1.2	15
COMMENTS	AVER	RAGE BANKFULL WIDTH (meters)	
RIPARIAN ZONE AND FLOODPI	This information must also be co AIN QUALITY ☆NOTE: River Left	ompleted (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH	FLOODPLAIN QUALITY		
L R (Per Bank) Wide >10m	L R (Most Predominant per Bar Mature Forest, Wetland	ık) L R ☐ Conservation Tillage	
☐ ☐ Moderate 5-10m	Immature Forest, Shrub or	Old	
☐ ☐ Narrow <5m	Field Residential, Park, New Fiel	Open Pasture, Row	
Nanow Sill	Fenced Pasture	Crop Mining or Construction	
COMMENTS			_
FLOW REGIME (At Time of Evalu	ation) (Check ONLY one box):		
Stream Flowing Subsurface flow with isolated pools		st Channel, isolated pools, no flow (Intermittent) channel, no water (Ephemeral))
COMMENTS	(Interstitial)	Chainer, no water (Ephemeral)	_
SINUOSITY (Number of bends pe	61 m (200 ft) of channel) (Check ON	LY one box):	
None `	1.0 2.0	3.0	
0.5	1.5	□	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft) ☐ Mo	oderate to Severe	00 ft)
- I de to Moderato	(2.0.00.1)		

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.5 miles
CWH Name: Distance from Evaluated Stream
BWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
This should be a sectional feature within an arrivational field. The heads of this
Additional comments/description of pollution impacts: This channel is an erosional feature within an agricultural field. The banks of this
channel are unvegetated.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology: Approximately 150 feet of this eroded ephemeral channel are within the right-of-way.





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 32

Stream & Location: UNT-23 to North Fork Canoe Creek	<i>RM:</i> N/A	Date: 09/21/	18
Scorers Full Name & Affiliation:	Luke F. Egg	ering, PWS	
River Code: N/A STORET #: N/A Lat./ Long.: (NAD 83 - decimal) 37.8465	3, -87.56203	Offic.	e verified location
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present BEST TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE HARDPAN [4] 15 0 O ILIMESTONE [1] BOULDER [9] 0 0 DETRITUS [3] 0 0 ILILS [1] COBBLE [8] 0 0 O WETLANDS [0]	NE (Or 2 & av		Substrate 6 Maximum 20
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common quality; 2-Moderate amounts, but not of highest quality or in small amounts quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional 1 UNDERCUT BANKS [1] 0 POOLS > 70cm [2] 0 OXBOWS, BACKWATE 0 OVERHANGING VEGETATION [1] 0 ROOTWADS [1] 0 AQUATIC MACROPHYTO SHALLOWS (IN SLOW WATER) [1] 0 BOULDERS [1] 2 LOGS OR WOODY DEED COMMENTS	of highest large Chipools. ES [1] N	AMOUNT eck ONE (Or 2 & av. extensive >75% [7 MODERATE 25-75% SPARSE 5-<25% [3] NEARLY ABSENT <	11] [7] 1 5% [1]
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECENT OR NO RECOVERY [1] Comments		Chann o Maximui 2	ր 12
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (OR River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY ROOMS (OR FINE PROPERTY OF TH	TY R CON NSERVATION TILLA BAN OR INDUSTRIA ING / CONSTRUCTI edominant land use(s	AL [0] ON [0]	
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH Check ONE (ONLY!) > 1m [6] 0.7-<1m [4] 0.4-<0.7m [2] 0.2-<0.4m [1] <0.2-<0.4m [1] 0.2-<0.2m [0] Comments CURRENT VELOCITY Check ONE (Or 2 & average) TORRENTIAL [-1] SLOW [1] Very FAST [1] INTERSTIT INTERSTIT DIAGRATE [1] EDDIES [1] Indicate for reach - pools and rift Indicate for reac	TAL [-1] (c)	Recreation Poten Primary Conta Secondary Conta ircle one and comment on Curren Maximum 1	tact back)
Indicate for functional riffles; Best areas must be large enough to support a of riffle-obligate species: RIFFLE DEPTH BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] MAXIMUM > 50cm [1] BEST AREAS 5-10cm [1] MAXIMUM < 50cm [1] MAXIMUM < 50cm [1] MOD. STABLE (e.g., Cobble, Boulder) [2] MOD. STABLE (e.g., Large Gravel) [1] WINSTABLE (e.g., Fine Gravel, Sand) [0] Comments No riffles were present in the reach.	FLE / RUN E	NO RIFFLE MBEDDEDNES E [2] [1] ERATE [0] Riffle Ru Maximul	[metric=0]
6] GRADIENT (1.0 ft/mi) VERY LOW - LOW [2-4] %POOL: 5	%GLIDE:(0 Gradier	nt 3

METHOD BOAT WADE L. LINE OTHER DISTANCE	STAGE 1st -sample pass- 2nd HIGH UP NORMAL	There are some shallow poor	,	channel. Crayfish burro	r/Sampling observations, Concerns, Acc ws and frogs were observed. Tra ight-of-way.	,
□ 0.5 Km □ 0.2 Km □ 0.15 Km □ 0.12 Km □ 0THER □ others	CLARITY 1stsample pass 2nd < 20 cm □ 20-<40 cm □ 40-70 cm □ > 70 cm/ CTB □ SECCHI DEPTH□	☐ INVASIVE MACROPHYTES ☐ EXCESS TURBIDITY ☐ DISCOLORATION ☐ FOAM / SCUM	DJ MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED	Circle some & COMMENT	E] ISSUES WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPs-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE	FJ MEASUREMENTS \(\overline{x} \) width \(\overline{x} \) depth \(max. \) depth \(\overline{x} \) bankfull width \(bankfull \) \(\overline{x} \) depth
CANOP > 85%- OPI □ 55%-<85%	EN Sed cm	TRASH / LITTER NUISANCE ODOR SLUIDE DEPOSITS	RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED		FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT	W/D ratio bankfull max. depth floodprone x ² width entrench. ratio
☐ 30%-<55% ☐ 10%-<30% ☐ <10%- CLO	C] RECRE	EATION AREA DEPTH POOL: □>100ft2□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:

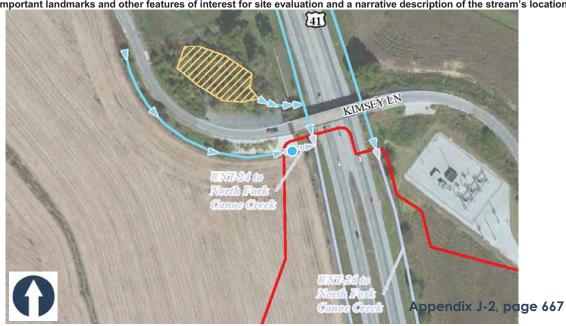




11

SITE NAME/LOCATION UNT-24 to North Fork C	anoe Creek	
SITE NUMBER_N/A	RIVER BASIN N/A	DRAINAGE AREA (mi²) <1
LENGTH OF STREAM REACH (ft) 81	AT. <u>37.84950</u> LONG. <u>-87.56781</u> RIVER	CODE N/A RIVER MILE N/A
DATE 09/21/18 SCORER Luke F. Egge	ring COMMENTS Ephemeral stream/ditch	
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Manual for Ohi	io's PHWH Streams" for Instructions
STREAM CHANNEL	JRAL CHANNEL RECOVERED RECOVE	ERING RECENT OR NO RECOVERY
MODIFICATIONS:		
	y type of substrate present. Check ONLY two pred nt substrate types found (Max of 8). Final metric sco	
,	RCENT TYPE	PERCENT Metric
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts] ☐	O SILT [3 pt] U LEAF PACK/WOODY DE	BRIS 13 nts1 Points
☐ ☐ BEDROCK [16 pt]	0 FINE DETRITUS [3 pts]	0 Substrate
COBBLE (65-256 mm) [12 pts]	CLAY or HARDPAN [0 p	ot]15 Max = 40
GRAVEL (2-64 mm) [9 pts] SAND (<2 mm) [6 pts]	5 MUCK [0 pts] 0 ARTIFICIAL [3 pts]	0 6
- (// [-] -]	AKTII TOTAL [3 pts]	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	0 (A) 3	(B) 3 A+B
SCORE OF TWO MOST PREDOMINATE SUBST	RATE TYPES: TOTAL NUMBER O	F SUBSTRATE TYPES:
2. Maximum Pool Depth (Measure the ma	ximum pool depth within the 61 meter (200 ft) eva	aluation reach at the time of Pool Depth
evaluation. Avoid plunge pools from road > 30 centimeters [20 pts]	culverts or storm water pipes) (Check <i>ONLY</i> one > 5 cm - 10 cm [15 pts]	, I
> 22.5 - 30 cm [30 pts]	< 5 cm [5 pts]	0
□ > 10 - 22.5 cm [25 pts]	NO WATER OR MOIST	CHANNEL [0 pts]
COMMENTS This is an ephemeral chan	nel with some scour holes. MAXIMUM POOL	. DEPTH (centimeters):
3. BANK FULL WIDTH (Measured as the a		NLY one box): Bankfull
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		4' 8") [15 pts] Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		0.9
COMMENTS	AVERAGE BANK	
DIDADIAN ZONE AND EL CODDI	This information must also be completed	ht (D) and a disconding and
RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH	AIN QUALITY ☆NOTE: River Left (L) and RigI FLOODPLAIN QUALITY	nt (R) as looking downstream 🔀
I D (DDI-)		
L R (Per Bank)	L R (Most Predominant per Bank)	L R
☐ Wide >10m	Mature Forest, Wetland	Conservation Tillage
☐ ☐ Wide >10m ☐ ☐ Moderate 5-10m	Mature Forest, Wetland Immature Forest, Shrub or Old Field	Conservation Tillage Urban or Industrial
Wide >10m Moderate 5-10m Narrow <5m	Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field	Conservation Tillage Urban or Industrial Open Pasture, Row Crop
Wide >10m Moderate 5-10m Narrow <5m None	Mature Forest, Wetland Immature Forest, Shrub or Old Field	Conservation Tillage Urban or Industrial Open Pasture, Row
 Wide >10m Moderate 5-10m Narrow <5m None COMMENTS 	Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture	Conservation Tillage Urban or Industrial Open Pasture, Row Crop
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing	Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture ation) (Check ONLY one box): Moist Channel, is	Conservation Tillage Urban or Industrial Open Pasture, Row Crop
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools	Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture ation) (Check ONLY one box): Moist Channel, is	Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS	Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture ation) (Check ONLY one box): Interstitial) Moist Channel, is Dry channel, no	Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction solated pools, no flow (Intermittent) water (Ephemeral)
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS	Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture ation) (Check ONLY one box): Moist Channel, is	Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction solated pools, no flow (Intermittent) water (Ephemeral)
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends pe	Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture ation) (Check ONLY one box): In (Interstitial) Moist Channel, is Dry channel, no	Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction solated pools, no flow (Intermittent) water (Ephemeral)
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None	Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture ation) (Check ONLY one box): (Interstitial) Moist Channel, is Dry channel, no	Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction solated pools, no flow (Intermittent) water (Ephemeral) 3.0 >3

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.2 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: Soil erosion and herbicides from road maintenance and the adjacent agricultural area likely affect this stream/ditch.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the sit ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y
Comments Regarding Biology:
This is an ephemeral agricultural stream/ditch. Approximately 30 feet of this channel are within the right-of-way. UNT-24 to North Fork





	anoe Creek		
SITE NUMBER_N/A	RIVER BASIN N/A	DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200	LAT. 37.84594 LONG87.56666 RIV	/ER CODE N/A RIVER MILE N/A	
DATE 09/21/18 SCORER Luke F. Egge	ring COMMENTS Ephemeral stream/ditch		
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Manual for	Ohio's PHWH Streams" for Instructi	ions
STREAM CHANNEL	URAL CHANNEL ☐ RECOVERED ■ REC	COVERING TRECENT OR NO RECOVE	RY
MODIFICATIONS:			
` .	y type of substrate present. Check ONLY two nt substrate types found (Max of 8). Final metric	··	HHEI
TYPE PE	RCENT TYPE	PERCENT N	/letric
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]	0 SILT [3 pt] 0 LEAF PACK/WOODY		oints
□ □ BEDROCK [16 pt]	0	pts] 0	ubstrate //ax = 40
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ GRAVEL (2-64 mm) [9 pts]	0 CLAY or HARDPAN 5 MUCK [0 pts]	[0 pt] 10 0	
☐ GRAVEL (2-64 mm) [9 pts] GRAVEL (2-64 mm) [9 pts]			6
Total of Percentages of	(A)	(B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock	0 3	3 1	A 1 D
SCORE OF TWO MOST PREDOMINATE SUBST	RATE TYPES: TOTAL NUMBE	R OF SUBSTRATE TYPES:	
	ximum pool depth within the 61 meter (200 for culverts or storm water pipes) (Check ONLY		ool Depth Max = 30
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15		
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MO	DIST CHANNEL [0 pts]	0
COMMENTS This is an ephemeral chan	nel with some scour holes. MAXIMUM Po	OOL DEPTH (centimeters):	
		<u>`</u>	Bankfull
> 4.0 meters (> 13') [30 pts]	> 1.0 m - 1.5 m (> 3'	' 3" - 4' 8") [15 pts]	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	≤ 1.0 m (≤ 3' 3") [5 p		Max=30
	AVERAGE B.	ANKEUL WIDTH (motors)	5
COMMENTS	AVERAGE B.	ANTI-OLE WIDTH (Illeters)	
	This information must also be complete	ed	
RIPARIAN ZONE AND FLOODPI	AIN QUALITY ☆NOTE: River Left (L) and	ed I Right (R) as looking downstream分	
RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank)	LAIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank)	l Right (R) as looking downstream☆ L R	
RIPARIAN WIDTH L R (Per Bank) Wide >10m	LAIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) ☐ ☐ Mature Forest, Wetland	Right (R) as looking downstream☆	
RIPARIAN WIDTH L R (Per Bank)	LAIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY LR (Most Predominant per Bank)	Right (R) as looking downstream☆ L R Conservation Tillage Urban or Industrial	
RIPARIAN WIDTH L R (Per Bank) Wide >10m	AIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field	Right (R) as looking downstream☆ L R Conservation Tillage	
RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None	AIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field	Right (R) as looking downstream☆ L R Conservation Tillage Urban or Industrial Open Pasture, Row	
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS	AIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture	Right (R) as looking downstream☆ L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop	
RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None	AIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture	Right (R) as looking downstream☆ L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop	
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation of Evalu	AIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Interval 1	Right (R) as looking downstream☆ Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction	
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS	AIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Changes (Interstitial)	L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction nel, isolated pools, no flow (Intermittent) I, no water (Ephemeral)	
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS	AIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Interval 1	L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction nel, isolated pools, no flow (Intermittent) I, no water (Ephemeral)	
RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per	AIN QUALITY NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Changes (Interstitial) (Check ONLY one box): (Interstitial) (Check ONLY one box): (Check ONLY one box):	L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction mel, isolated pools, no flow (Intermittent) I, no water (Ephemeral)	
RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None	AIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Change of the Control of Check ONLY one 1.0 (Check ONLY one 1.0	L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction mel, isolated pools, no flow (Intermittent) I, no water (Ephemeral) box): 3.0 >3	

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): **QHEI PERFORMED?** - \square Yes \blacksquare No QHEI Score $^{N/A}$ (If Yes, Attach Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream CWH Name: Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name:___ ___ NRCS Soil Map Page:____ NRCS Soil Map Stream Order ___ Township / City:__ Henderson County County: **MISCELLANEOUS** Unknown Date of last precipitation: Base Flow Conditions? (Y/N):___ Quantity: NA Photograph Information: Photos attached. Elevated Turbidity? (Y/N): No ____ Canopy (% open): ___ Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A Additional comments/description of pollution impacts:_____ area likely affect this stream/ditch. **BIOTIC EVALUATION** Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Fish Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Comments Regarding Biology: This is a well-maintained ephemeral roadside stream/ditch. Approximately 1,648 feet of this channel are within the right-of-way and approximately 1,369 feet of channel are within the construction limits: Note: The direct channel impacts will be calculated when the I-69 south interchange design is completed. UNT-25 to North Fork Canoe Creek enters UNT-27 to North Fork Canoe Creek approximately 257 feet from North Fork Canoe Creek.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



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SITE NAME/LOCATION UNT-26 to North Fork Ca	anoe Creek	
SITE NUMBER N/A	RIVER BASIN N/A DRAINAGE AREA (mi^2) <1	
LENGTH OF STREAM REACH (ft) 200 L DATE 09/21/18 SCORER Luke F. Egger	LAT. 37.84578 LONG87.56601 RIVER CODE N/A RIVER MILE N/A comments. Ephemeral stream/ditch	
	- Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruc	tions
MODIFICATIONS:	URAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOV	ERY
	y type of substrate present. Check ONLY two predominant substrate TYPE boxes nt substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HĤĒI
BLDR SLABS [16 pts]	0 SILT [3 pt] 85	Metric Points
☐ ☐ BOULDER (>256 mm) [16 pts] ☐ ☐ BEDROCK [16 pt]	0 FINE DETRITUS [3 pts] 0	Substrate
COBBLE (65-256 mm) [12 pts]	0 CLAY or HARDPAN [0 pt]	Max = 40
GRAVEL (2-64 mm) [9 pts] SAND (<2 mm) [6 pts]	5 □ □ MUCK [0 pts] 0 10 □ □ □ 0	12
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	0 (A) 9	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTR	RATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
		ool Depth Max = 30
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15 pts]	IVIAX - 30
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	0
COMMENTS This is an ephemeral chann	0 11	
3. BANK FULL WIDTH (Measured as the a	average of 3-4 measurements) (Check ONLY one box):	Bankfull
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		
COMMENTS	AVERAGE BANKFULL WIDTH (meters)	20
RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH	3 1 () 1 3 1 () 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
<u>L R</u> (Per Bank)	L R (Most Predominant per Bank) L R	
Wide >10m	☐ ☐ Mature Forest, Wetland ☐ ☐ Conservation Tillage ☐ ☐ Immature Forest, Shrub or Old ☐ ☐ ☐	
☐ ☐ Moderate 5-10m	Field Urban or Industrial	
☐ ■ Narrow <5m	Residential, Park, New Field Open Pasture, Row Crop	
□ □ None COMMENTS	☐ ☐ Fenced Pasture ☐ ☐ Mining or Construction	
FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS_	Moist Channel, isolated pools, no flow (Intermittent)	
SINUOSITY (Number of bends per None 0.5	er 61 m (200 ft) of channel) (Check <i>ONLY</i> one box): 1.0	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)	t)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): **QHEI PERFORMED?** - \square Yes \blacksquare No QHEI Score $^{N/A}$ (If Yes, Attach Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream CWH Name: __ Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name:_ NRCS Soil Map Page: N/A NRCS Soil Map Stream Order Township / City:__ Henderson County County: **MISCELLANEOUS** Unknown Date of last precipitation: Base Flow Conditions? (Y/N):____ Photograph Information: Photos attached. Elevated Turbidity? (Y/N): No ____ Canopy (% open): ___ Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A Additional comments/description of pollution impacts:________Soil erosion and herbicides from road maintenance and the adjacent agricultural area ;likely affect this stream/ditch. Crayfish burrows were observed. Some vegetation was rooted in the channel. **BIOTIC EVALUATION** Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Fish Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Comments Regarding Biology:

This is a well-maintained ephemeral roadside stream/ditch. The channel is dry with cracked soils. Approximately 1,600 feet of this channel is within the right-of-way and approximately 1,581 feet of channel are within the construction limits. Note: The direct channel impacts will be calculated when the I-69 south interchange design is completed.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):



ChicEPA

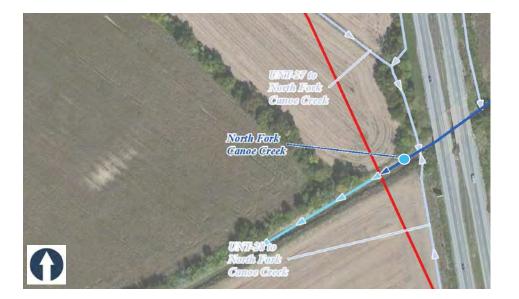
Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 38

Stream & Location: North Fork Canoe Creek	<i>RM:</i> N/A	Date: (08/01/18
Scorers Full Name & Affiliation:			
River Code: N/A STORET #: N/A Lat./ Long.: (NAD 83 - decimal) 37.84439	9, -87.566	58	Office verified location
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present BEST TYPES POOL RIFFLE OTHER TYPES BLDR /SLABS [10] 0 0	NE (Or 2 & a		TY] [E [-1] Substrate
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common quality; 2-Moderate amounts, but not of highest quality or in small amounts or quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional 0 UNDERCUT BANKS [1] 0 POOLS > 70cm [2] 0 OXBOWS, BACKWATER OVERHANGING VEGETATION [1] 0 ROOTWADS [1] 0 AQUATIC MACROPHYTER OF THE PROOF	of highest large pools. RS [1] [ES [1]	Check ONE (Or EXTENSIVE > MODERATE 2 SPARSE 5-<2 NEARLY ABS	2 & average) -75% [11] 25-75% [7] -5% [3]
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECENT OR NO RECOVERY [1] Comments			Channel 12
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (One River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY RIPARIAN WIDTH FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD PLAIN QUALITY RESIDENTIAL, PARK, PA	TY R C C C C C M Indicate	ONSERVATION RBAN OR INDI INING / CONST predominant lar om riparian.	JSTRIAL [0] RUCTION [0]
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH Check ONE (ONLY!) > 1m [6] 0.7-<1m [4] 0.4-<0.7m [2] 0.2-<0.4m [1] <0.2-<0.4m [1] 0.2-<0.2m [0] Comments CHANNEL WIDTH Check ONE (Or 2 & average) POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] VERY FAST [1] MODERATE [1] Indicate for reach - pools and rife Comments	ENT [-2]		Contact Contact
Indicate for functional riffles; Best areas must be large enough to support a of riffle-obligate species: RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFF BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] MAXIMUM > 50cm [1] MAXIMUM > 50cm [1] MOD. STABLE (e.g., Large Gravel) [1] UNSTABLE (e.g., Fine Gravel, Sand) [0] Comments No riffles were present in the reach.	LE / RUN □ NO □ LO □ MO	EMBEDDE NE [2]	IFFLE [metric=0] DNESS Riffle /
6] GRADIENT (1.0 ft/mi) VERY LOW - LOW [2-4] %POOL: 5	%GLIDE:		Gradient 3

METHOD BOAT WADE L. LINE OTHER DISTANCE	L that apply STAGE	Approximately 1,526 feet of Fork Canoe Creek will be sp	North Fork Canoe Creek are	within the right-of-way a	r/Sampling observations, Concerns, Acc and 570 feet are within the const s will be calculated when the I-69	ruction limits. North
☐ 0.5 Km ☐ 0.2 Km	CLARITY	B] AESTHETICS	D] MAINTENANCE	Circle some & COMMENT	E] ISSUES	F] MEASUREMENTS
☐ 0.15 Km ☐ 0.12 Km ☐ OTHER ☐	stsample pass 2nd	☐ INVASIVE MACROPHYTES ☐ EXCESS TURBIDITY ☐ DISCOLORATION ☐ FOAM / SCUM ☐ OIL SHEEN	PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS		WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPS-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON	x width x depth max. depth x bankfull width bankfull x depth W/D ratio
■ > 85%- OPEN □ 55%-<85% □ 30%-<55%	σ	 NUISANCE ODOR SLUDGE DEPOSITS CSOs/SSOs/OUTFALLS 	MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED		WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT	bankfull max. depth floodprone x ² width entrench. ratio
☐ 10%-<30% ☐ <10%- CLOSE	C] RECRE	ATION AREA DEPTH POOL: □>100ft2□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:



HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME North Fork Canoe Creek	LOCATION Henderson, k	Kentucky	
STATION # NA RIVERMILE NA	STREAM CLASS Perennial		
LAT <u>37.84431</u> LONG <u>-87.56637</u>	RIVER BASIN Ohio River		
STORET # N/A	AGENCY N/A		
INVESTIGATORS L. Eggering			
FORM COMPLETED BY L. Eggering	DATE 05/16/19 TIME 09:30 AM PM	REASON FOR SURVEY I-69 ORX Project	

	_ Habitat	Condition Category				
	Parameter	Optimal	Suboptimal	Marginal	Poor	
	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
each	SCORE 10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.	
uate	score 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
rs to be eval	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.	
mete	score 9	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
Para	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	
	score 10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.	
	SCORE 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat				
	Parameter	Optimal	Suboptimal	Marginal	Poor
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	SCORE 11	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
npling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
ı san	score 3	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
eva	SCORE 5 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
to be	SCORE <u>5</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
Parameters	9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
	SCORE 7 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	SCORE 7 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
	SCORE 4 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	SCORE 6 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 98

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME North Fork Canoe Creek	LOCATION Evansville,	Indiana		
STATION #_N/A_ RIVERMILE_N/A_ STREAM CLASS Perennial				
LAT <u>37.84431</u> LONG <u>-87.56637</u>	RIVER BASIN Ohio Rive	er		
STORET # N/A	AGENCY N/A			
investigators L. Eggering				
FORM COMPLETED BY L. Eggering	DATE 05/16/19 TIME 09:30 AM AM PM	REASON FOR SURVEY I-69 ORX Project		

WEATHER CONDITIONS	Now , , , , , , , , , , , , , , , , , , ,	storm (heavy rain) rain (steady rain) showers (intermittent) %cloud cover clear/sunny	Past 24 hours	Has there been a heavy rain in the last 7 days? 'Yes ■ No Air Temperature 20 ° C Other
SITE LOCATION/MAP		of the site and indicate the		ation Index (QHEI) Form.
STREAM CHARACTERIZATION	Stream Subsy Perennial Stream Origit ' Glacial ' Non-glacial ' Swamp and	stem ' Intermittent ' Tida n ' Spring-fec montane Mixture o bog ' Other	1	Stream Type ' Coldwater

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse ' Forest ' Commercial ' Field/Pasture ' Industrial Agricultural ' Other Residential	Local Watershed NPS Pollution ' No evidence ' Some potential sources Obvious sources Local Watershed Erosion None ' Moderate ' Heavy	
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the domin Trees Shrubs dominant species present Johnsongrass and scattered by		
INSTREAM FEATURES	Estimated Reach Length 60 m Estimated Stream Width 4.1 m Sampling Reach Area 246 m² Area in km² (m²x1000) 0.000246 km² Estimated Stream Depth 1.0 m Surface Velocity 0.5 m/sec (at thalweg)	Canopy Cover ' Partly open Partly shaded ' Shaded High Water Mark 3.4 m Proportion of Reach Represented by Stream Morphology Types ' Riffle 10 % ' Run 90 % ' Pool 0 % Channelized Yes ' No Dam Present ' Yes No	
LARGE WOODY DEBRIS	LWD N/A m² Density of LWD N/A m²/km² (LWD/ reach area)		
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present ■ Rooted emergent 'Rooted submergent 'Rooted floating 'Free floating 'Free floating 'Attached Algae 'Attached Algae 'Johnsongrasson sloughing banks ■ Portion of the reach with aquatic vegetation 2 %		
WATER QUALITY	Temperature 15.9 0 C Specific Conductance 513.0 SPC Dissolved Oxygen 129.5% pH 8.09 Turbidity 9.98 NTU WQ Instrument Used YSI ProDSS	Water Odors Normal/None ' Sewage ' Petroleum ' Chemical ' Fishy ' Other Water Surface Oils ' Slick ' Sheen ' Globs ' Flecks None ' Other Turbidity (if not measured) ' Clear Slightly turbid ' Turbid ' Opaque ' Stained ' Other	
SEDIMENT/ SUBSTRATE	Odors Normal 'Sewage 'Petroleum' Chemical 'Anaerobic 'None Other Oils Absent 'Slight 'Moderate 'Profuse	Deposits 'Sludge 'Sawdust 'Paper fiber 'Sand Other No deposits. Looking at stones which are not deeply embedded, are the undersides black in color? 'Yes 'No No stones present.	

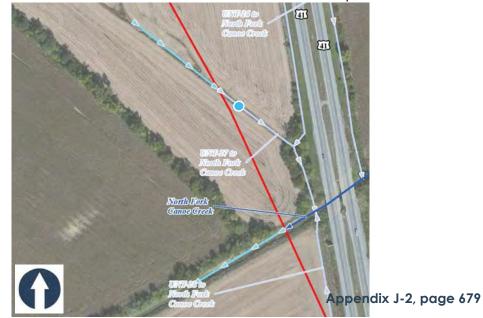
INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)		ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant	2
Boulder	> 256 mm (10")	0		materials (CPOM)	2
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic	1
Gravel	2-64 mm (0.1"-2.5")	10	(F.	(FPOM)	I
Sand	0.06-2mm (gritty)	10	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	40]		U
Clay	< 0.004 mm (slick)	40			

5% is comprised of artificial material.



TYPE PERCENT TYPE PERCENT MO PERCENT MO PERCENT PERCENT 90 PC □ □ BOULDER (>256 mm) [16 pts] □ □ □ LEAF PACK/WOODY DEBRIS [3 pts] □ □ Sut □ □ BEDROCK [16 pt] □ □ □ FINE DETRITUS [3 pts] □ □ Sut Ma □ □ CCLAY or HARDPAN [0 pt] □ □ □ □ MUCK [0 pts] □	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruction STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVER MODIFICATIONS: 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE PERCENT TYPE SILT [3 pt] 90 BLDR SLABS [16 pts] 0 SILT [3 pt] 90 BEDROCK [16 pt] 0 SILT [3 pt] 0 BEDROCK [16 pt] 0 SILT [3 pt] 0 GRAVEL (2-64 mm) [9 pts] 0 MUCK [0 pts]	HEI etric points
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruction STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVER MODIFICATIONS: 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE PERCENT TYPE SILT [3 pt] 90 BDULDER (>256 mm) [16 pts] 0 SILT [3 pt] 90 BEDROCK [16 pt] 0 FINE DETRITUS [3 pts] 0 COBBLE (65-256 mm) [12 pts] 0 CLAY or HARDPAN [0 pt] 0 GRAVEL (2-64 mm) [9 pts] 0 MUCK [0 pts]	HEI etric points
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVER MODIFICATIONS: 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE PERCENT TYPE SILT [3 pt] 90 BDULDER (>256 mm) [16 pts] 0 SILT [3 pt] 90 BEDROCK [16 pt] 0 FINE DETRITUS [3 pts] 0 COBBLE (65-256 mm) [12 pts] 0 CLAY or HARDPAN [0 pt] 0 GRAVEL (2-64 mm) [9 pts] 0 MUCK [0 pts]	HEI etric points
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts] MODIFICATIONS: PERCENT TYPE SILT [3 pt] LEAF PACK/WOODY DEBRIS [3 pts] CLAY or HARDPAN [0 pt] GRAVEL (2-64 mm) [9 pts] MOUCK [0 pts]	HEI etric pints
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts] MODIFICATIONS: PERCENT TYPE SILT [3 pt] LEAF PACK/WOODY DEBRIS [3 pts] CLAY or HARDPAN [0 pt] GRAVEL (2-64 mm) [9 pts] MOUCK [0 pts]	HEI etric pints
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE PERCENT O SILT [3 pt] O SILT [3 pt] O SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. H MA PC Substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 8). Final metric score is sum of boxes A & B. H MA PC Substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 8). Final metric score is sum of boxes A & B. H MA PC Substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 8). Final metric score is sum of boxes A & B. H MA PC Substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 8). Final metric score is sum of boxes A & B. H MA PC Substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 8). Final metric score is sum of boxes A & B. H MA PC Substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 8). Final metric score is sum of boxes A & B. H MA PC Substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 8). Final metric score is sum of boxes A & B. H MA PC Substrate present. Check ONLY two predominant substrate types found (Max of 8). Final metric score is sum of boxes A & B. H MA PC GRAVEL (2-64 mm) [9 pts] O MUCK [0 pts]	etric bints ostrate x = 40
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE PERCENT TYPE PERCENT 90 □ □ BLDR SLABS [16 pts] □ □ □ SILT [3 pt] □ 0 □ □ LEAF PACK/WOODY DEBRIS [3 pts] □ □ Sut □ □ BEDROCK [16 pt] □ □ □ SINE DETRITUS [3 pts] □ □ Sut Max □ □ GRAVEL (2-64 mm) [9 pts] □ □ □ MUCK [0 pts] □ □ MUCK [0 pts]	etric bints ostrate x = 40
□ □ BEDROCK [16 pt] □ □ □ FINE DETRITUS [3 pts] □ □ Ma □ □ COBBLE (65-256 mm) [12 pts] □ □ □ CLAY or HARDPAN [0 pt] □ □ □ MUCK [0 pts] □ □ GRAVEL (2-64 mm) [9 pts] □ □ □ MUCK [0 pts] □ □ □ MUCK [0 pts]	x = 40
COBBLE (65-256 mm) [12 pts]	x = 40
GRAVEL (2-64 mm) [9 pts] 0 MUCK [0 pts] 0	1
SAND (<2 mm) [6 pts] 10 ARTIFICIAL [3 pts] 0	
Total of Percentages of (A) Bldr Slabs, Boulder, Cobble, Bedrock 0	+ B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Poo	l Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	x = 30
 → 30 centimeters [20 pts] → 22.5 - 30 cm [30 pts] → 5 cm - 10 cm [15 pts] ← 5 cm [5 pts] 	0
□ > 10 - 22.5 cm [25 pts] ■ NO WATER OR MOIST CHANNEL [0 pts] 0	
COMMENTS This is an ephemeral channel with some scour holes. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): Ba	nkfull
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] W	idth
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	x=30
COMMENTS AVERAGE BANKFULL WIDTH (meters)	30
AVERAGE BANKFOLL WIDTH (IIIelers)	
This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R Wide >10m D D Mature Forest, Wetland D D Conservation Tillage	
Moderate 5-10m Moderate 5-10m Moderate 5-10m Moderate 5-10m Moderate 5-10m Moderate 5-10m Moderate 5-10m Moderate 5-10m Moderate 5-10m Moderate 5-10m	
Field — Onen Pasture Row	
Crop	
☐ ☐ None ☐ ☐ Fenced Pasture ☐ ☐ Mining or Construction COMMENTS	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
■ None	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft)	

ADDITIONAL STREAM INFORMATION (This Information Mu	ust Also be Completed):
QHEI PERFORMED? - Tyes No QHEI Scor	e N/A (If Yes, Attach Completed QHEI Form)
	Distance from Evaluated Stream 1.4 miles Distance from Evaluated Stream
	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING	THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:Henderson, KY-IN	NRCS Soil Map Page: N/A NRCS Soil Map Stream Order
County: Henderson County	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): No Date of last precipitation Photograph Information: Photos attached.	Unknown Quantity: NA
Elevated Turbidity? (Y/N): No Canopy (% open): _	
	Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) $\underline{{\sf N/A}}$ Dissolved Oxygen (mg	//) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A	If not, please explain:
Additional comments/description of pollution impacts:	sion and herbicides from road maintenance and the adjacent agricultural
area likely affect this stream/ditch. Some vegetation was roo	oted in the channel.
BIOTIC EVALUATION	
	Voucher collections optional. NOTE: all voucher samples must be labeled with the site field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salama Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No	nders Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology:	
This is an agricultural stream/ditch west of US 41. The chantele I-69 south interchange design is completed.	nel is dry with cracked soils. The direct channel impacts will be calculated wher





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SITE NAME/LOCATION UNT-28 to North Fork Ca	anoe Creek	
SITE NUMBER_N/A	RIVER BASIN N/A DRAINAG	E AREA (mi²) <1
LENGTH OF STREAM REACH (ft) 200 L DATE 09/21/18 SCORER Luke F. Egger	AT. 37.84233 LONG87.56585 RIVER CODE N/A	_ RIVER MILE N/A
	- Refer to "Field Evaluation Manual for Ohio's PHWH Str	eams" for Instructions
·		
MODIFICATIONS:	RAL CHANNEL RECOVERED RECOVERING RECE	ENT OR NO RECOVERY
(Max of 32). Add total number of significar TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts]	type of substrate present. Check ONLY two predominant substrate tsubstrate types found (Max of 8). Final metric score is sum of boxe RCENT TYPE O SILT [3 pt] O LEAF PACK/WOODY DEBRIS [3 pts] O FINE DETRITUS [3 pts] O CLAY or HARDPAN [0 pt] MUCK [0 pts] ARTIFICIAL [3 pts]	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTF	0 (A) RATE TYPES: TOTAL NUMBER OF SUBSTRATE T	(B) 3 A + B
	timum pool depth within the 61 meter (200 ft) evaluation reach at	the time of Pool Depth
evaluation. Avoid plunge pools from road of > 30 centimeters [20 pts]	culverts or storm water pipes) (Check ONLY one box): 5 cm - 10 cm [15 pts]	Max = 30
> 22.5 - 30 cm [30 pts]	< 5 cm [5 pts]	0
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST CHANNEL [0 pts	
COMMENTS This is an ephemeral chann	nel with some scour holes. MAXIMUM POOL DEPTH (centim	eters):
3. BANK FULL WIDTH (Measured as the at > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	verage of 3-4 measurements) (Check <i>ONL</i> Y one box): > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts]	Bankfull Width Max=30
	AVERAGE BANKFULL WIDTH (m	1.2 15
RIPARIAN ZONE AND FLOODPL	This information must also be completed AIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking of the complete in the co	downstream \cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot
RIPARIAN WIDTH	3 ()	JOWIISHCAITIA
L R (Per Bank) Wide >10m	L R (Most Predominant per Bank) L R Mature Forest, Wetland D Cons	ervation Tillage
☐ ☐ Moderate 5-10m	Immature Forest, Shrub or Old	n or Industrial
☐ ■ Narrow <5m	Field Residential, Park, New Field Open	Pasture, Row
None None	Crop	g or Construction
COMMENTS		
FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS_	Moist Channel, isolated pools, no	,
SINUOSITY (Number of bends per None 0.5	61 m (200 ft) of channel) (Check <i>ONLY</i> one box): 1.0	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe	Severe (10 ft/100 ft)

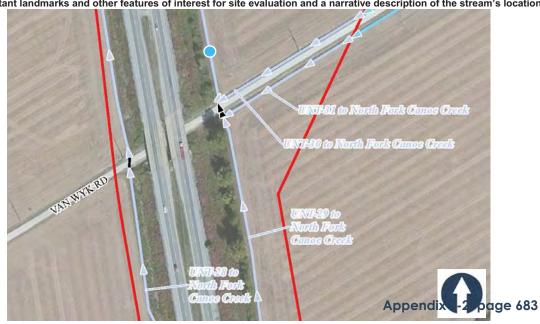
ADDITIONAL STREAM INFORM	MATION (This Information Must Als	o be Completed):		
QHEI PERFORMED?	- Tyes No QHEI Score N/A	(If Yes, Attach C	ompleted QHEI Form)	
DOWNSTREAM DESI WWH Name: Ohio River	GNATED USE(S)	D	istance from Evaluated Stream	miles
	OPIES OF MAPS, INCLUDING THE <u>EI</u>			
USGS Quadrangle Name:	erson, KY-IN	NRCS Soil Map Page:	N/A NRCS Soil Map Stream C	rder
	Town			
MISCELLANEOUS				
, ,	Date of last precipitation:	known	Quantity:	
Photograph Information: Photos	attached.			
Elevated Turbidity? (Y/N): No	Canopy (% open):			
Were samples collected for wate	r chemistry? (Y/N): N/A (Note la	b sample no. or id. and a	ttach results) Lab Number:	
Field Measures: Temp (°C)_N	I/A Dissolved Oxygen (mg/l) N/A	pH (S.U.)	Conductivity (μmhos/cm) N/A	
Is the sampling reach representa	ative of the stream (Y/N)	, please explain: N/A		
Additional comments/description area likely affect this stream/dit	of pollution impacts:Soil erosion an	d herbicides from road r	naintenance and the adjacent agric	cultural
BIOTIC EVALUATION	<u>v</u>			
	If Yes, Record all observations. Vouch D number. Include appropriate field da	· ·	· · · · · · · · · · · · · · · · · · ·	
	/oucher? (Y/N <u>) No</u> Salamanders (//N <u>) No</u> Voucher? (Y/N <u>) No</u> Aqua			۷ <u>) No</u>
Comments Regarding Biology:				
This is a well-maintained agricu when the I-69 south interchange	ultural stream/ditch. The channel is one design is completed.	dry with cracked soils. N	ote: The direct channel impacts wil	l be calculated



30

	anoe Creek		
SITE NUMBER_N/A	RIVER BASIN N/	A DRAIN	AGE AREA (mi²) <1
LENGTH OF STREAM REACH (ft) $\underline{200}$ LAT. $\underline{37.84309}$ LONG. $\underline{-87.56512}$ RIVER CODE $\underline{\text{N/A}}$ RIVER MILE $\underline{\text{N/A}}$			
DATE 09/21/18 SCORER Luke F. Egge	ring COMMENTS Ephemera	al stream/ditch	
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation	n Manual for Ohio's PHWH \$	Streams" for Instructions
STREAM CHANNEL	JRAL CHANNEL	RED RECOVERING RE	ECENT OR NO RECOVERY
MODIFICATIONS:			
SUBSTRATE (Estimate percent of every (Max of 32). Add total number of significal			
,	RCENT TYPE	o). Final metric score is sum of bi	PERCENT Metri
BLDR SLABS [16 pts]	0 SILT		$\frac{85}{0}$ Point
☐ ☐ BOULDER (>256 mm) [16 pts] ☐ ☐ BEDROCK [16 pt]		PACK/WOODY DEBRIS [3 pts] DETRITUS [3 pts]	0 Substra
COBBLE (65-256 mm) [12 pts]		or HARDPAN [0 pt]	0 Max = 4
GRAVEL (2-64 mm) [9 pts]		< [0 pts]	0 15
SAND (<2 mm) [6 pts]	5	FICIAL [3 pts]	0
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	0 (A) 12		(B) 3 A+B
SCORE OF TWO MOST PREDOMINATE SUBST		OTAL NUMBER OF SUBSTRAT	1 ~ 11
Maximum Pool Depth (Measure the ma.	ximum pool depth within the 6	11 meter (200 ft) evaluation reach	at the time of Pool Dep
evaluation. Avoid plunge pools from road	culverts or storm water pipes)	(Check ONLY one box):	Max = 3
> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts]	_	cm - 10 cm [15 pts] cm [5 pts]	
> 10 - 22.5 cm [25 pts]	NO V	WATER OR MOIST CHANNEL [0	
COMMENTS This is an ephemeral chan	nel with some scour holes.	_ MAXIMUM POOL DEPTH (cen	1 ' 11
3. BANK FULL WIDTH (Measured as the a	verage of 3-4 measurements)	(Check ONLY one box)	: Bankfu
> 4.0 meters (> 13') [30 pts]	> 1.0	0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	□ ≤ 1.0	0 m (≤ 3' 3") [5 pts]	Max=30
COMMENTS		AVERAGE BANKFULL WIDTH	(meters) 1.2 15
		_	(motoro)
	This information must als		
RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH	.AIN QUALITY ☆NOTE: Ri FLOODPLAIN QUALITY	ver Left (L) and Right (R) as looki	ng downstream☆
L R (Per Bank)	L R (Most Predominant	·	
` ′	☐ ☐ Mature Forest, Wetl		
☐ Wide >10m	Immatura Farant Cl	hrub or Old	onservation Tillage
` ′	Immature Forest, SI Field	nrub or Old Ur	ban or Industrial
☐ Wide >10m	Immature Forest, SI	hrub or Old Ur	3
Wide >10mModerate 5-10mNarrow <5mNone	Immature Forest, SI Field	hrub or Old Ur	ban or Industrial pen Pasture, Row
Wide >10mModerate 5-10mNarrow <5m	Immature Forest, SI Field Residential, Park, N	hrub or Old Ur	ban or Industrial pen Pasture, Row op
Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evalue)	Immature Forest, SI Field Residential, Park, N Fenced Pasture	nrub or Old Ur lew Field	ban or Industrial pen Pasture, Row op ning or Construction
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools	Immature Forest, SI Field Residential, Park, N Fenced Pasture ation) (Check ONLY one box):	nrub or Old Ur lew Field	ban or Industrial pen Pasture, Row op ning or Construction no flow (Intermittent)
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing	Immature Forest, SI Field Residential, Park, N Fenced Pasture ation) (Check ONLY one box):	nrub or Old Ur lew Field Op Cr Mi Moist Channel, isolated pools,	ban or Industrial pen Pasture, Row op ning or Construction no flow (Intermittent)
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends pe	Immature Forest, SI Field Residential, Park, N Fenced Pasture ation) (Check ONLY one box): (Interstitial)	nrub or Old Ur Iew Field Op Cr Mi Moist Channel, isolated pools, Dry channel, no water (Ephen	ban or Industrial pen Pasture, Row op ning or Construction no flow (Intermittent) neral)
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS	Immature Forest, SI Field Residential, Park, N Fenced Pasture ation) (Check ONLY one box):	Moist Channel, isolated pools, Dry channel, no water (Ephen	ban or Industrial pen Pasture, Row op ning or Construction no flow (Intermittent)
Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends pe	Immature Forest, SI Field Residential, Park, N Fenced Pasture ation) (Check ONLY one box): (Interstitial) r 61 m (200 ft) of channel) (Ch	Moist Channel, isolated pools, Dry channel, no water (Ephen	ban or Industrial pen Pasture, Row op ning or Construction no flow (Intermittent) neral)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.5 miles
CWH Name: Distance from Evaluated Stream
BWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): No Date of last precipitation: Unknown Quantity: NA
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: Soil erosion and herbicides from road maintenance and the adjacent agricultural area likely affect this stream/ditch.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (
Comments Regarding Biology:
This is a dry agricultural stream/ditch. The channel is dry with cracked soils. Approximately 1,634 feet of this channel are within the right-of-way and approximately 1,059 feet of channel are within the construction limit. Note: The direct channel impacts will be calculated when the I-69 south interchange design is completed.





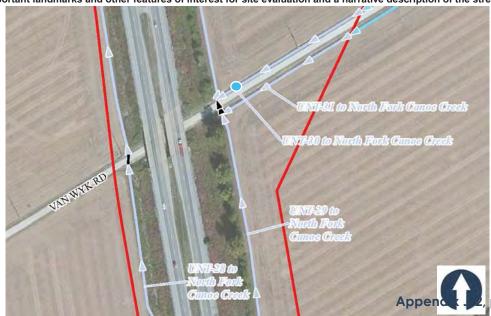
Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION UNT-30 to North Fork Canoe Creek	
SITE NUMBER_N/A RIVER BASIN_N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200 LAT. 37.84270 LONG87.56488 RIVER CODE N/A RIVER MILE N/A	
DATE 09/21/18 SCORER Luke F. Eggering COMMENTS Ephemeral stream/ditch	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruc	ctions
STREAM CHANNEL	/ERY
MODIFICATIONS:	
SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. TYPE PERCENT TYPE PERCENT	HHEI Metric
□ □ BLDR SLABS [16 pts] 0 SILT [3 pt] 85	Points
□ □ BOULDER (>256 mm) [16 pts] □ □ LEAF PACK/WOODY DEBRIS [3 pts] □ □ □ □ BEDROCK [16 pt] □ □ FINE DETRITUS [3 pts] □ □	Substrate
☐ COBBLE (65-256 mm) [12 pts] ☐ CLAY or HARDPAN [0 pt] ☐ 0	Max = 40
GRAVEL (2-64 mm) [9 pts] 10 MUCK [0 pts] 0	15
□ □ SAND (<2 mm) [6 pts] 5 □ □ ARTIFICIAL [3 pts] 0	
Total of Percentages of (A) Bldr Slabs, Boulder, Cobble, Bedrock 0 12	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
□ > 22.5 - 30 cm [30 pts] □ < 5 cm [5 pts]	0
□ > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS This is an ephemeral channel with some scour holes. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
□ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] □ ≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
□ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	15
COMMENTS AVERAGE BANKFULL WIDTH (meters)	
This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH FLOODPLAIN QUALITY L. D. (Most Prodominant nor Book)	
L R (Per Bank) L R (Most Predominant per Bank) L R (Most Predo	
☐ ☐ Moderate 5-10m ☐ ☐ Immature Forest, Shrub or Old Field ☐ Urban or Industrial	
■ ☐ Narrow <5m ☐ ☐ Residential Park New Field ☐ ■ Open Pasture, Row	
☐ None ☐ Fenced Pasture ☐ ☐ Mining or Construction	
COMMENTS	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)	
COMMENTS	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
■ None	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft)	ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): (If Yes, Attach Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) _____ Distance from Evaluated Stream 1.5 miles WWH Name: Ohio River CWH Name: Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name:__ NRCS Soil Map Page: NRCS Soil Map Stream Order 1 County: Henderson County _____ Henderson _____ Township / City:___ **MISCELLANEOUS** ____ Date of last precipitation:___ Quantity: NA Base Flow Conditions? (Y/N): No Photograph Information: ____ Photos attached. Elevated Turbidity? (Y/N): No ____ Canopy (% open): ____ Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: _____N/A $\text{Temp (°C)} \frac{\text{N/A}}{\text{Dissolved Oxygen (mg/l)}} \frac{\text{N/A}}{\text{pH (S.U.)}} \frac{\text{N/A}}{\text{pH (S.U.)}} \frac{\text{N/A}}{\text{Conductivity (μmhos/cm)}} \frac{\text{N/A}}{\text{N/A}}$ Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A Additional comments/description of pollution impacts:_____ area likely affect this stream/ditch. **BIOTIC EVALUATION** Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No Comments Regarding Biology: UNT-30 to North Fork Canoe Creek is a dry, well-maintained roadside channel north of Van Wyk Road. The channel is dry with cracked

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



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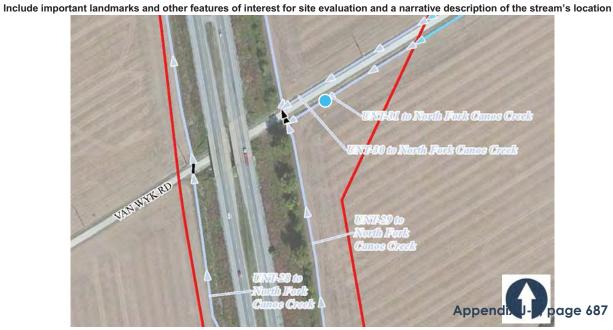


Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

30

	Canoe Creek	
SITE NUMBER_N/A	RIVER BASIN N/A DRAINAGE AREA (mi ²) \leq	1
	LAT. <u>37.84267</u> LONG. <u>-87.56476</u> RIVER CODE <u>N/A</u> RIVER MILE	I/A
DATE 09/21/18 SCORER Luke F. Egge	ering COMMENTS Ephemeral ditch.	
NOTE: Complete All Items On This Form	n - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Ins	ructions
STREAM CHANNEL	TURAL CHANNEL $\ \square$ RECOVERED $\ \blacksquare$ RECOVERING $\ \square$ RECENT OR NO REC	OVERY
MODIFICATIONS:		
	ry type of substrate present. Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes ant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
	ERCENT TYPE PERCENT	Metric Points
☐ ☐ BLDR SLABS [16 pts] ☐ ☐ BOULDER (>256 mm) [16 pts]	0	1 Onto
BEDROCK [16 pt]	0 FINE DETRITUS [3 pts]	Substrate Max = 40
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ GRAVEL (2-64 mm) [9 pts]	0	
SAND (<2 mm) [6 pts]	5 ARTIFICIAL [3 pts]	15
Total of Percentages of	(A) (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock	_0 12 3	A * B
SCORE OF TWO MOST PREDOMINATE SUBST	TRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
	aximum pool depth within the 61 meter (200 ft) evaluation reach at the time of disculverts or storm water pipes) (Check ONLY one box):	Pool Depth Max = 30
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15 pts]	Indx = 50
☐ > 22.5 - 30 cm [30 pts] ☐ > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	0
COMMENTS This is an ephemeral chan	0	
3. BANK FULL WIDTH (Measured as the a	average of 3-4 measurements) (Check ONLY one box):	
> 4.0 meters (> 13') [30 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	, , ,	
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] 1.0 m (≤ 3' 3") [5 pts]	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] \(\leq 1.0 m \) \(\leq 3' 3") [5 pts]	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters)	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream A	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆ FLOODPLAIN QUALITY	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) 1.2 This information must also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆ FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R Mature Forest, Wetland Conservation Tillage	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank)	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆ FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide >10m	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) 1.2 AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ♣ NOTE: River Left (L) and Right (R) as looking downstream ♣ FLOODPLAIN QUALITY L R (Most Predominant per Bank)	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) 1.2 AVERAGE BANKFULL WIDTH (meters) LAIN QUALITY ♣ NOTE: River Left (L) and Right (R) as looking downstream ♣ FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Wetland Immature Forest, Shrub or Old Field Onen Pasture Row	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ∠ 1.0 m (≤ 3' 3") [5 pts] AVERAGE BANKFULL WIDTH (meters) 1.2 AVERAGE BANKFULL WIDTH (meters) This information must also be completed PLAIN QUALITY ♣ NOTE: River Left (L) and Right (R) as looking downstream ♣ FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Shrub or Old Field Wrban or Industrial Open Pasture, Row Crop	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10 m Moderate 5-10 m Narrow < 5 m None COMMENTS FLOW REGIME (At Time of Evaluation of Eva	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10 m Moderate 5-10 m Narrow < 5 m None COMMENTS FLOW REGIME (At Time of Evaluation of Eval	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per	This information must also be completed PLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Shrub or Old Wrban or Industrial	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation	This information must also be completed PLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Shrub or Old Field Without Field Open Pasture, Row Crop Mining or Constructio Mining or Constructio Mining or Constructio Mining or Constructio Most Channel, isolated pools, no flow (Intermitter Dry channel, no water (Ephemeral) Dry channel, no water (Ephemeral) Dry channel, no water (Ephemeral) 1.2 AVERAGE BANKFULL WIDTH (meters) 1.2 AVERAGE BANKFULL WIDTH (meters	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide > 10m Moderate 5-10m Narrow < 5m None COMMENTS FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None	This information must also be completed PLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Conservation Tillage	Width Max=30

ADDITIONAL STREAM INFORMATION (This Information Must Also be Co	ompleted):
QHEI PERFORMED? - Tyes No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream
CWH Name:	Distance from Evaluated Stream
EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE V	VATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Henderson, KY-IN NRC	S Soil Map Page: N/A NRCS Soil Map Stream Order
County: Henderson County Township / C	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:Unknown	Quantity:
Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): $\underline{\hspace{1cm}^{N/A}}$ (Note lab samples	le no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream $(Y/N)_{\underline{\hspace{1cm}}}^{N/A}$ If not, please	e explain:
Additional comments/description of pollution impacts: Soil erosion and herbid	cides from road maintenance and the adjacent agricultural
area likely affect this stream/ditch.	
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collect ID number. Include appropriate field data sheet	ctions optional. NOTE: all voucher samples must be labeled with the site is from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Mac	
Comments Regarding Biology:	
This is a well-maintained ephemeral roadside stream/ditch. The channel is within the right-of-way and approximately 108 feet of channel are within the calculated when the I-69 south interchange design is completed.	e construction limits. Note: The direct channel impacts will be





Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION UNT-32 to North Fork C	anoe Creek		_
SITE NUMBER N/A	RIVER BASIN N/A	DRAINAGE AREA (mi²) <1	_
LENGTH OF STREAM REACH (ft) 200 L			_
DATE 09/21/18 SCORER Luke F. Egge	ring COMMENTS Roadside ditch.		_
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Manu	al for Ohio's PHWH Streams" for Instructions	5
STREAM CHANNEL	JRAL CHANNEL	RECOVERING RECENT OR NO RECOVERY	
MODIFICATIONS:			
		Y two predominant substrate TYPE boxes metric score is sum of boxes A & B.	EI
(Max of 32). Add total number of significal TYPE PE	RCENT TYPE	PERCENT Meti	ric
BLDR SLABS [16 pts]	0 SILT [3 pt]	90 Poir	nts
□ □ BOULDER (>256 mm) [16 pts] □ □ BEDROCK [16 pt]	0	OODY DEBRIS [3 pts] 0 Substi	trate
COBBLE (65-256 mm) [12 pts]	0 CLAY or HARD	Max =	= 40
GRAVEL (2-64 mm) [9 pts]	0 MUCK [0 pts]	0 11	
SAND (<2 mm) [6 pts]	10 ARTIFICIAL [3	pts]	
Total of Percentages of	0 (A) Q	(B) A + E	 В
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBST		UMBER OF SUBSTRATE TYPES:	
		(000 50	
 Maximum Pool Depth (Measure the maxed evaluation. Avoid plunge pools from road) 		` '	•
> 30 centimeters [20 pts]	> 5 cm - 10 c		
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts NO WATER (OR MOIST CHANNEL [0 pts]	
COMMENTS This is an ephemeral chan	nel with some scour holes. MAYIM	UM POOL DEPTH (centimeters):	
-			
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]		(Check <i>ONLY</i> one box): m (> 3' 3" - 4' 8") [15 pts] Widt	
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	≤ 1.0 m (≤ 3'		
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		0.8 5	
COMMENTS	AVERA	GE BANKFULL WIDTH (meters)	
			_
RIPARIAN ZONE AND FLOODPL	This information must also be con AIN QUALITY	npleted L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH	FLOODPLAIN QUALITY		
L R (Per Bank) Wide >10m	L R (Most Predominant per Bank Mature Forest, Wetland) LR ☐ Conservation Tillage	
Moderate 5-10m	Immature Forest, Shrub or O		
	Field	Open Pasture, Row	
☐ ☐ Narrow <5m	Residential, Park, New Field	Crop	
☐ ☐ None COMMENTS	☐ ☐ Fenced Pasture	☐ ☐ Mining or Construction	
FLOW REGIME (At Time of Evalu		Channel, isolated pools, no flow (Intermittent)	
Subsurface flow with isolated pools		nannel, no water (Ephemeral)	
COMMENTS			
SINUOSITY (Number of bends pe	r 61 m (200 ft) of channel) (Check <i>ONL</i> 1.0 2.0	Y one box):	
0.5	1.5	3.0	
STREAM GRADIENT ESTIMATE			
		erate to Severe	

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED LISE(S)	Distance from Evaluated Stream 2.4 miles
CWH Name:	Distance from Evaluated Stream
EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE EN	TIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:	NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Henderson County Towns	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	nown Quantity: NA
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): N/A (Note lab	sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not,	please explain:
Additional comments/description of pollution impacts: Soil erosion and	herbicides from road maintenance likely affect this stream/ditch.
BIOTIC EVALUATION	
· / ·	r collections optional. NOTE: all voucher samples must be labeled with the site a sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders O Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquat	
Comments Regarding Biology:	
This is an ephemeral stream within a roadside ditch. Note: The direct design is completed.	ct channel impacts will be calculated when the I-69 south interchange





Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

16

SITE NAME/LOCATION UNT-33 to North Fork C		
	RIVER BASIN N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200 L DATE 09/21/18 SCORER Luke F. Egge	LAT. 37.82579 LONG87.56576 RIVER CODE N/A RIVER MILE N/A	
	n - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruc	
·		
	TURAL CHANNEL TRECOVERED TRECOVERING TRECENT OR NO RECOVERING TRECENT OR T	/ERY
MODIFICATIONS:		
(Max of 32). Add total number of significan	0 SILT [3 pt] 90 0 LEAF PACK/WOODY DEBRIS [3 pts] 0 FINE DETRITUS [3 pts] 0	HHEI Metric Points Substrate Max = 40
Total of Percentages of	(A) (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBST	_0 2	АТБ
		Pool Depth
	culverts or storm water pipes) (Check ONLY one box):	Max = 30
3. BANK FULL WIDTH (Measured as the a		Bankfull Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS	AVERAGE BANKFULL WIDTH (meters)	5
	This information <u>must</u> also be completed LAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ FLOODPLAIN QUALITY	
L R (Per Bank) Wide >10m	L R (Most Predominant per Bank) L R Mature Forest, Wetland D Conservation Tillage	
Moderate 5-10m	☐ ☐ Immature Forest, Shrub or Old ☐ ☐ Urban or Industrial	
☐ ☐ Narrow <5m	Residential, Park, New Field Open Pasture, Row Crop	
□ □ None COMMENTS	Fenced Pasture Mining or Construction	
FLOW REGIME (At Time of Evalue Stream Flowing Subsurface flow with isolated pools COMMENTS	Moist Channel, isolated pools, no flow (Intermittent)	
SINUOSITY (Number of bends pe None 0.5	er 61 m (200 ft) of channel) (Check <i>ONLY</i> one box): 1.0	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)	ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	Distance from Evaluated Stream 2.4 miles
CWH Name:	Distance from Evaluated Stream
☐ EWH Name:	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE EN	TIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:	NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Towns	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): No Date of last precipitation: Unkr	nown Quantity: NA
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): No Canopy (% open): 100	
Were samples collected for water chemistry? (Y/N): (Note lab	sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A	pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not,	please explain: N/A
Additional comments/description of pollution impacts: Soil erosion and	herbicides from road maintenance likely affect this stream/ditch.
BIOTIC EVALUATION	
,	r collections optional. NOTE: all voucher samples must be labeled with the site a sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders O Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquat	
Comments Regarding Biology:	
This is an ephemeral roadside stream/ditch. Note: The direct channel completed.	el impacts will be calculated when the I-69 south interchange design is





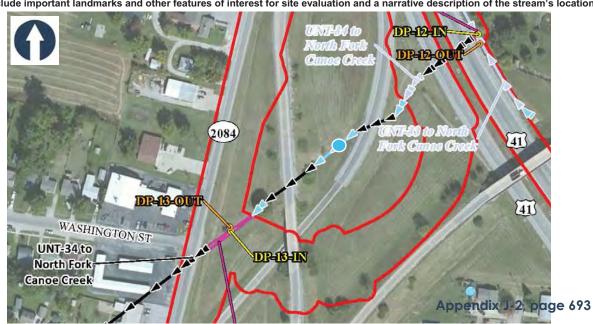
Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

16

SITE NAME/LOCATION UNT-34 to North Fork C	anoe Creek		
		DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 182 L DATE 09/21/18 SCORER Luke F. Egger		RIVER CODE N/A RIVER MILE N/A	Α
NOTE: Complete All Items On This Form		I for Ohio's PHWH Streams" for Instru	uctions
·	_		
STREAM CHANNEL IN NONE / NATUMENT MODIFICATIONS:	JRAL CHANNEL LJ RECOVERED ■	RECOVERING ☐ RECENT OR NO RECO	VERY
(Max of 32). Add total number of significar TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts] SAND (<2 mm) [6 pts] Total of Percentages of	y type of substrate present. Check ONLY nt substrate types found (Max of 8). Final nt RCENT TYPE SILT [3 pt] LEAF PACK/WCO FINE DETRITUS CLAY or HARDE MUCK [0 pts] ARTIFICIAL [3 pt] (A) 9	PERCENT 90 0	HHEI Metric Points Substrate Max = 40
SCORE OF TWO MOST PREDOMINATE SUBST		MBER OF SUBSTRATE TYPES:	
		NLY one box):	Pool Depth Max = 30
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]			Bankfull Width Max=30
COMMENTS	AVERAG	GE BANKFULL WIDTH (meters)	5
RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None) None 0.5	FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture ation) (Check ONLY one box):	and Right (R) as looking downstream ☆ L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction Channel, isolated pools, no flow (Intermittent) annel, no water (Ephemeral)	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft) ☐ Mode	erate to Severe	0 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score N/A (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 1.5 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: Soil erosion and herbicides from road maintenance likely affect this stream/ditch.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y
Comments Regarding Biology:
UNT-34 to North Fork Canoe Creek is dry, well-maintained roadside channel between the ramps to Highway 41. Note: The direct channel impacts will be calculated when the I-69 south interchange design is completed.





Primary Headwater Habitat Evaluation Form HHEI

_valdation i onni	10
Score (sum of metrics 1, 2, 3):	16

	Primary Headwater H	labitat Evaluation Forr HHEl Score (sum of metric	M cs 1, 2, 3) :	16
OTTE INF	SITE NUMBER N/A RIVER B.	ASIN N/A DRAINA	AGE AREA (mi²) <1	
	H OF STREAM REACH (ft) 181 LAT. 37.82194 LC	NG. <u>-87.56839</u> RIVER CODE <u>N/A</u>		
	9/21/18 SCORER Luke F. Eggering COMMENTS R			
	:: Complete All Items On This Form - Refer to "Field Ev			
	NM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ FICATIONS:	RECOVERED RECOVERING RE	CENT OR NO RECC	VERY
MODII	TOATIONS.			
TYPE	SUBSTRATE (Estimate percent of every type of substrate pre (Max of 32). Add total number of significant substrate types found BLDR SLABS [16 pts] BUDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts] SAND (<2 mm) [6 pts] Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0	·		HHEI Metric Points Substrate Max = 40 11
CORE	OF TWO MOST PREDOMINATE SUBSTRATE TYPES:	TOTAL NUMBER OF SUBSTRATI	E TYPES:	
	Maximum Pool Depth (Measure the maximum pool depth wite evaluation. Avoid plunge pools from road culverts or storm water > 30 centimeters [20 pts]	pipes) (Check <i>ONLY</i> one box): > 5 cm - 10 cm [15 pts]	pts] 0	Pool Depth Max = 30
	BANK FULL WIDTH (Measured as the average of 3-4 measure > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	ements) (Check <i>ONLY</i> one box): J > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (≤ 3' 3") [5 pts]		Bankfull Width Max=30
	COMMENTS	AVERAGE BANKFULL WIDTH	(meters)	5
	This information	must also be completed		

SCOR	RE OF TWO MOST PREDOMINATE SUBST	RATE TYPES	5: 🔲 т	OTAL NUMBER	OF SUBSTI	RATE TYPES:	
2.	Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): > 30 centimeters [20 pts]						
_				_			
3.	> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] ✓ 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]						
	COMMENTS			AVERAGE BAN	KFULL WII	OTH (meters)	
	RIPARIAN ZONE AND FLOODPI RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None	FLOODPLA	AIN QUALITY Most Predominant p Mature Forest, Wetle mmature Forest, Sh Field Residential, Park, N Fenced Pasture	per Bank) and irub or Old	L R	Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction	
	FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):						
	■ None □ □ 0.5	1.0 1.5		2.0 2.5		3.0 >3	
F	STREAM GRADIENT ESTIMATE flat (0.5 ft/100 ft)	☐ Modera	nte (2 ft/100 ft)	☐ Moderate to \$	Severe	Severe (10 ft/100 ft)	
October	24, 2002 Revision	F	PHWH Form Page -	1			

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream Distance from Evaluated Stream
EWH Name: Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Henderson, KY-IN NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): No Date of last precipitation: Unknown Quantity: NA
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
s the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A
Additional comments/description of pollution impacts: Soil erosion and herbicides from road maintenance likely affect this stream/ditch.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the sit ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Vouche
Comments Regarding Biology:
UNT-35 to North Fork Canoe Creek is dry, well-maintained roadside channel parallel to Highway 41. Note: The direct channel impacts will

be calculated when the I-69 south interchange design is completed.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 34.5

Stream & Location: UNT-36 North Fork Canoe Creek	<i>RM:</i> N/A	Date: 04/23	3/19
Scorers Full Name & Affiliation:	Luke F. Eg	gering, PWS	
River Code: N/A STORET #: N/A Lat./ Long.: (NAD 83 - decimal) 37.8146			ice verified location
11 SUBSTRATE Check ONLY Two substrate TYPE BOXES:)NE (Or 2 & a		
estimate % or note every type present BEST TYPES POOL RIFFLE ORIGIN ORIGIN	INE (OI Z & a	QUALITY	
\square BLDR /SLABS [10] \square \square \square \square HARDPAN [4] \square \square \square LIMES IONE [1]		☐ HEAVY [-2]	
□□ BOULDER [9] 0 0 □□ DETRITUS [3] 0 0 □ TILLS [1] □□ COBBLE [8] 0 0 □□ MUCK [2] 0 0 ■ WETLANDS [0]	SILT	■ MODERATE [-1 ■ NORMAL [0]	Substrate
CRAVEL [7] 20 0 D SUT [2] 80 0 D HARDPAN [0]		□ EDEE [4]	9
SAND [6] 0 0 ARTIFICIAL [0] 0 0 SANDSTONE [0]	&DDEO.	EXTENSIVE [-2]	
□ BEDROCK [5] 0 0 (Score natural substrates; ignore □ RIP/RAP [0] NUMBER OF BEST TYPES: □ 4 or more [2] sludge from point-sources) □ LACUSTURINE [0]	WII YES	MODERATE [-1	Maximum 20
NUMBER OF BEST TYPES: 4 or more [2] Sludge from point-sources	_	☐ EXTENSIVE [-2] ☐ MODERATE [-1] ■ NORMAL [0] ☐ NONE [1]	20
The sample point is at a scour hole just upstream from the US 41 double culvert.			
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more commo	n of marginal	AMOUNT	
quality; 2-Moderate amounts, but not of highest quality or in small amounts quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water	of highest	heck ONE (Or 2 & a	verage)
diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional	pools.	EXTENSIVE >75%	
UNDERCUT BANKS [1] 1 POOLS > 70cm [2] 0 OXBOWS, BACKWATE OVERHANGING VEGETATION [1] 0 ROOTWADS [1] 0 AQUATIC MACROPHY		MODERATE 25-75° SPARSE 5-<25%	
0 SHALLOWS (IN SLOW WATER) [1] 0 BOULDERS [1] 1 LOGS OR WOODY DEE		NEARLY ABSENT	-
O ROOTMATS [1] Comments		Cov	
The park has dumped concrete and asphalt in places along the channel.		Maxim	20 7
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)			
SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY			
☐ HIGH [4] ☐ EXCELLENT [7] ☐ NONE [6] ☐ HIGH [3]			
□ MODERATE [3] □ GOOD [5] ■ RECOVERED [4] ■ MODERATE [2] ■ LOW [2] □ FAIR [3] □ RECOVERING [3] □ LOW [1]			
□ NONE [1] □ RECENT OR NO RECOVERY [1]		Chan	
Comments		Maxim	um 9 20
Concrete has helped stabilize the bank. 4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (One in each category for EACH BANK)	r 2 nor hank 8	average)	
River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY		average)	
EROSION WIDE > 50m [4] FOREST, SWAMP [3]		INSERVATION TILL	
■ NONE / LITTLE [3] □ MODERATE 10-50m [3] ■ □ SHRUB OR OLD FIELD [2] ■ □ MODERATE [2] □ □ NARROW 5-10m [2] ■ RESIDENTIAL, PARK, NEW FIELD		RBAN OR INDUSTR NING / CONSTRUC	
☐ ☐ HEAVY / SEVERE [1] ☐ VERY NARROW < 5m [1] ☐ ☐ FENCED PASTURE [1]		oredominant land use	
□ ■ NONE [0] □ OPEN PASTURE, ROWCROP [0]	past 100r	m riparian. Ripar i	ian
Comments The comple point is in Depoid "Hugh" McCormick Handerson County Edirground and Freedom Bark		Maximu	₁₀ 4.5
The sample point is in Donald "Hugh" McCormick Henderson County Fairground and Freedom Park. 51 POOL / GLIDE AND RIFFLE / RUN QUALITY			
MAXIMUM DEPTH CHANNEL WIDTH CURRENT VELOCITY		Recreation Pote	ential
Check ONE (ONLY!) Check ONE (Or 2 & average) Check ALL that apply		Primary Cont	11
□ > 1m [6] □ POOL WIDTH > RIFFLE WIDTH [2] □ TORRENTIAL [-1] ■ SLOW [1] □ 0.7-<1m [4] ■ POOL WIDTH = RIFFLE WIDTH [1] □ VERY FAST [1] □ INTERSTIT		Secondary Col	
□ 0.4-<0.7m [2] □ POOL WIDTH < RIFFLE WIDTH [0] □ FAST [1] □ INTERMIT	TENT [-2]	(Circle one and comment	ill back)
■ 0.2-<0.4m [1]		Poe Curre	- III
Comments		Maxim	um
No riffles were observed at the sample location.			12
Indicate for functional riffles; Best areas must be large enough to support a of riffle-obligate species: Check ONE (Or 2 & average).	a population	on ■NO RIFFLE	[metric=0]
RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFF	FLE / RUN	EMBEDDEDNE	SS
☐ BEST AREAS > 10cm [2] ☐ MAXIMUM > 50cm [2] ☐ STABLE (e.g., Cobble, Boulder) [2]	NON		
□ BEST AREAS 5-10cm [1] □ MAXIMUM < 50cm [1] □ MOD. STABLE (e.g., Large Gravel) [1] □ BEST AREAS < 5cm □ UNSTABLE (e.g., Fine Gravel, Sand) [0]	□ LOV □ MOI	DERATE [0] Riff	
[metric=0]	□ EXT	TENSIVE [-1] Maxim	um 0
No filles were present in the reach.			8
6] GRADIENT (0.5 ft/mi) VERY LOW - LOW [2-4] %POOL: 100	%GLIDE:(0 Gradi	ent
DRAINAGE AREA MODERATE [6-10] WELLIN: O WELLI	%RIFFI F:(Maxim Maxim	um 2

METHOD BOAT WADE L. LINE OTHER DISTANCE	LL that apply STAGE	UNT-36 to North Fork Canoculverts. UNT-36 to North Fo	e Creek is a tributary that flow	s under the Edward T. be a perennial stream.	r/Sampling observations, Concerns, Acc Breathitt Pennyrile Parkway via At the time of the survey, the are	two 14-foot box
☐ 0.5 Km ☐ 0.2 Km	CLARITY	B] AESTHETICS	D] MAINTENANCE	Circle some & COMMENT	E] ISSUES	F] MEASUREMENTS
☐ 0.15 Km ☐ 0.12 Km ☐ OTHER	S	INVASIVE MACROPHYTES EXCESS TURBIDITY DISCOLORATION FOAM / SCUM OIL SHEEN TERMINISTER	PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED		WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPs-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT	▼ width ▼ depth max. depth ▼ bankfull width bankfull \(\overline{X} \) depth W/D ratio bankfull max. depth floodprone x² width entrench. ratio
☐ 10%-<30% ☐ <10%- CLOS	C] RECRE	ATION AREA DEPTH POOL: □>100ft²□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:



HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME	LOCATION	
STATION # RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS		
FORM COMPLETED BY	DATE	REASON FOR SURVEY

	Habitat	Condition Category				
	Parameter	Optimal	Suboptimal	Marginal	Poor	
	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
each	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.	
uate	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
ers to be eval	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.	
mete	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
Para	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.	
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat	Condition Category					
	Parameter	Optimal	Suboptimal	Marginal	Poor		
Parameters to be evaluated broader than sampling reach	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.		
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.		
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.		
eva	SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0		
to be	SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0		
Parameters to be	9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.		
	SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0		
	SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0		
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.		
	SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0		
	Ī	Right Bank 10 9	8 7 6	5 4 3	2 1 0		

Total	Score	

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME UNT-36 to North Fork Canoe Creek	LOCATION Evansville, Indiana		
STATION # N/A RIVERMILE N/A	STREAM CLASS Perennial		
LAT <u>37.81475</u> LONG <u>-87.56277</u>	RIVER BASIN Ohio Rive	er	
STORET # N/A	AGENCY N/A		
investigators L. Eggering			
FORM COMPLETED BY L. Eggering	DATE 05/16/19 TIME 08:30 AM AM PM	REASON FOR SURVEY I-69 ORX Project	

WEATHER CONDITIONS	Now , , , , , , , , , , , , , , , , , , ,	storm (heavy rain) rain (steady rain) showers (intermittent) %cloud cover clear/sunny	Past 24 hours	Has there been a heavy rain in the last 7 days? 'Yes ■ No Air Temperature 18 C Other
SITE LOCATION/MAP	Draw a maj	Draw a map of the site and indicate the areas sampled (or attach a photograph)		
	See attac	ched Qualitative Ha	ibitat Evalu	uation Index (QHEI) Form.
STREAM CHARACTERIZATION	Stream Sub Perennial	osystem ' Intermittent ' Ti	idal	Stream Type ' Coldwater
	Stream Ori ' Glacial ' Non-glaci ' Swamp ar	al montane Spring-	fed e of origins	Catchment Area 6.3 km ²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES RIPARIAN VEGETATION (18 meter buffer)	Predominant Surrounding Landuse 'Forest Commercial 'Field/Pasture Industrial 'Agricultural Other Residential 'Other Indicate the dominant type and record the dominant rees dominant species present Cottonwood	Local Watershed NPS Pollution ' No evidence ' Some potential sources Obvious sources Local Watershed Erosion ' None Moderate ' Heavy ant species present Grasses ' Herbaceous
INSTREAM FEATURES	Estimated Reach Length 40 m m	Canopy Cover Partly open ' Partly shaded ' Shaded High Water Mark 0.7 m Proportion of Reach Represented by Stream Morphology Types ' Riffle 9 % ' Run 100 % ' Pool 0 9% Channelized Yes ' No Dam Present ' Yes No
LARGE WOODY DEBRIS	LWD N/A m² Density of LWD N/A m²/km² (LWD/ reacht)	h area)
AQUATIC VEGETATION	Indicate the dominant type and record the domin ■ Rooted emergent ' Floating Algae dominant species present Portion of the reach with aquatic vegetation I Rooted submergent Attached Algae Green bullrush	Rooted floating ' Free floating
WATER QUALITY	Temperature 16.2 0 C Specific Conductance 724.0 SPC Dissolved Oxygen 95.5% pH 7.75 Turbidity 8.91 NTU WQ Instrument Used YSI ProDSS	Water Odors Normal/None ' Sewage ' Petroleum ' Chemical ' Fishy ' Other Water Surface Oils ' Slick ' Sheen ' Globs ' Flecks None ' Other Turbidity (if not measured) ' Clear Slightly turbid ' Turbid ' Opaque ' Stained ' Other
SEDIMENT/ SUBSTRATE	Odors Normal 'Sewage 'Petroleum' Chemical 'Anaerobic 'None Other Oils Absent 'Slight 'Moderate 'Profuse	Deposits 'Sludge 'Sawdust 'Paper fiber 'Sand' Relict shells Other No deposits. Looking at stones which are not deeply embedded, are the undersides black in color? 'Yes 'No No stones present.

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)		ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant	10
Boulder	> 256 mm (10")	0	1	materials (CPOM)	10
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic	10
Gravel	2-64 mm (0.1"-2.5")	30	1	(FPOM)	10
Sand	0.06-2mm (gritty)	10	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	10	1		0
Clay	< 0.004 mm (slick)	50	1		

5% is comprised of artificial material.



Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION UNT-37 to North Fork C	anoe Creek	
	RIVER BASIN N/A DRAINAGE AREA (mi²) <1	
DATE 05/16/19 SCORER Luke F. Egge	ring COMMENTS Roadside stream/ditch	
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Insti	uctions
	JRAL CHANNEL ☐ RECOVERED ■ RECOVERING ☐ RECENT OR NO REC	
MODIFICATIONS:	DRAL CHANNEL D RECOVERED TRECOVERING D RECENT OF NO REC	OVERT
MODII IOATIONS.		
` .	y type of substrate present. Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes nt substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE PE BLDR SLABS [16 pts]	RCENT TYPE PERCENT 0 □ ■ SILT [3 pt] 90	Metric Points
BOULDER (>256 mm) [16 pts]	0 LEAF PACK/WOODY DEBRIS [3 pts] 0	Cubatrata
☐ ☐ BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts]	0 ☐ ☐ FINE DETRITUS [3 pts]0 0 ☐ ☐ CLAY or HARDPAN [0 pt]0	Substrate Max = 40
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ GRAVEL (2-64 mm) [9 pts]	0	
SAND (<2 mm) [6 pts]	10 ARTIFICIAL [3 pts] 0	11
Total of Percentages of	(A)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTI	0 9	^.5
SCORE OF TWO MOST PREDOMINATE SUBSTI	RATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
• •	ximum pool depth within the 61 meter (200 ft) evaluation reach at the time of culverts or storm water pipes) (Check ONLY one box):	Pool Depth Max = 30
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15 pts]	
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	5
	0	
COMMENTS	MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts]	verage of 3-4 measurements) (Check <i>ONLY</i> one box):	Bankfull Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	≤ 1.0 m (< 3' 3") [5 pts]	Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	1.0	5
COMMENTS	AVERAGE BANKFULL WIDTH (meters)	
RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH	This information <u>must</u> also be completed AIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ FLOODPLAIN QUALITY	
L R (Per Bank)	L R (Most Predominant per Bank) L R	
☐ ☐ Wide >10m ☐ ☐ Moderate 5-10m	☐ ☐ Mature Forest, Wetland ☐ ☐ Conservation Tillage ☐ ☐ ☐ Urban or Industrial	
☐ ☐ Moderate 5-10m	Field	
Narrow <5m	Residential, Park, New Field Open Pasture, Row Crop	
□ □ None COMMENTS	Fenced Pasture	_
Stream Flowing Subsurface flow with isolated pools COMMENTS	Moist Channel, isolated pools, no flow (Intermittent) -
SINUOSITY (Number of bends pe None 0.5	1.0 (Check <i>ONLY</i> one box): 2.0 3.0 1.5 2.5 3	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate	☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/1	00 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 2.8 miles
CWH Name: Distance from Evaluated Stream
Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not, please explain: N/A
Additional comments/description of pollution impacts: Soil erosion and herbicides from road maintenance likely affect this stream/ditch.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology:
UNT-37 to North Fork Canoe Creek is dry, well-maintained roadside channel parallel to Highway 41.

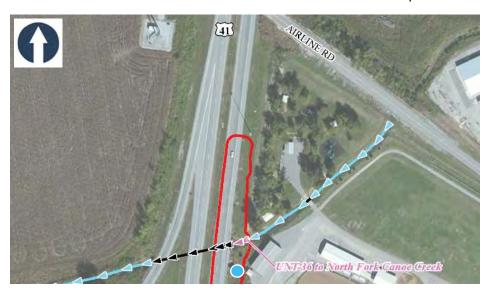




Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION UNT-38 to North Fork Canoe Creek	
SITE NUMBER_N/A RIVER BASIN_N/A DRAINAGE AREA (mi²)_<1	
LENGTH OF STREAM REACH (ft) 200 LAT. 37.81400 LONG87.56299 RIVER CODE N/A RIVER MILE N/A	4
DATE 05/16/19 SCORER Luke F. Eggering COMMENTS Roadside stream/ditch	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru	ictions
STREAM CHANNEL	VERY
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE PERCENT TYPE PERCENT	Metric Points
□ □ BLDR SLABS [16 pts] 0 □ SILT [3 pt] 80 □ □ □ □ LEAF PACK/WOODY DEBRIS [3 pts] 0	Points
BEDROCK [16 pt] 0 FINE DETRITUS [3 pts] 0	Substrate Max = 40
COBBLE (65-256 mm) [12 pts] 0 CLAY or HARDPAN [0 pt] 0 MUCK [0 pts]	Wax - 40
☐ ☐ GRAVEL (2-64 mm) [9 pts]	11
Total of Percentages of (A) (B)	
Bldr Slabs, Boulder, Cobble, Bedrock0 9	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:	
, ,	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
 → 22.5 - 30 cm [30 pts] → 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] 	5
0	
COMMENTS Road ditch appears to be dry most of the year. MAXIMUM POOL DEPTH (centimeters):	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
2 > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (≤ 3' 3") [5 pts]	Max=30
□ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	5
COMMENTS Road ditch appears to be maintained. AVERAGE BANKFULL WIDTH (meters)	
This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R	
L R (Per Bank) L R (Most Predominant per Bank) L R (Most Predominant per Bank) L R (Most Predominant per Bank) Conservation Tillage	
☐ ☐ Moderate 5-10m ☐ ☐ Immature Forest, Shrub or Old ☐ ☐ Urban or Industrial	
Narrow <5m Residential Park New Field Open Pasture, Row	
None	
COMMENTS The ditch is at the top of the slope for US 41.	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing Subsurface flow with isolated pools (Interstitial) Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)	
COMMENTS The area appears to be ephemeral in normal conditions.	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
■ None □ 1.0 □ 2.0 □ 3.0 □ 0.5 □ 1.5 □ 2.5 □ >3	
STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft)	Oft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):
QHEI PERFORMED? - ☐ Yes ■ No QHEI Score (If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River Distance from Evaluated Stream 2.9 miles
CWH Name: Distance from Evaluated Stream
Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson
MISCELLANEOUS
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information: Photos attached.
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (μmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not, please explain: N/A
Additional comments/description of pollution impacts: Soil erosion and herbicides from road maintenance likely affect this stream/ditch.
BIOTIC EVALUATION
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No
Comments Regarding Biology:
UNT-38 to North Fork Canoe Creek is dry, well-maintained roadside channel parallel to Highway 41.





CheEPA Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

– 1

SITE NAME/LOCATION UNT-39 to North Fork Canoe Creek	
SITE NUMBER_N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <1	
LENGTH OF STREAM REACH (ft) 200 LAT. 37.80921 LONG87.56422 RIVER CODE N/A RIVER MILE N	Α
DATE 05/16/19 SCORER Luke F. Eggering COMMENTS Roadside stream/ditch	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instr	uctions
STREAM CHANNEL	OVERY
MODIFICATIONS:	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE PERCENT TYPE PERCENT □ □ BLDR SLABS [16 pts] 0 □ □ SILT [3 pt] 90	Metric Points
□ □ BLDR SLABS [16 pts] 0 □ SILT [3 pt] 90 □ □ □ □ LEAF PACK/WOODY DEBRIS [3 pts] 0	
□ □ BEDROCK [16 pt] 0 □ □ FINE DETRITUS [3 pts] 0 □ □ □ CLAY or HARDPAN [0 pt] 0	Substrate Max = 40
□ □ COBBLE (65-256 mm) [12 pts] □ <td< td=""><td></td></td<>	
SAND (<2 mm) [6 pts] 10 ARTIFICIAL [3 pts] 0	11
Total of Percentages of (A)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock0	
	
 Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): 	Pool Depth Max = 30
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 - 30 cm [30 pts] < 5 cm [5 pts]	5
□ > 10 - 22.5 cm [25 pts] □ NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS Channel is dry except in the northwest corner. MAXIMUM POOL DEPTH (centimeters):	
3 BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfull
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	
COMMENTS Road ditch is more eroded upslope. AVERAGE BANKFULL WIDTH (meters)	5
This information <u>must</u> also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R □ □ Wide >10m □ □ Mature Forest, Wetland □ □ Conservation Tillage	
Moderate 5-10m Immature Forest, Shrub or Old Immature Forest, Shrub or Old	
Field Onen Pasture Row	
Residential, Park, New Field None Residential, Park, New Field Crop Mining or Construction	
COMMENTS The right decending bank is the slope of US 41 fill material.	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing Moist Channel, isolated pools, no flow (Intermittent) Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral)	
COMMENTS The area appears to be ephemeral in normal conditions.	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
■ None □ 1.0 □ 2.0 □ 3.0 □ 3.0 □ 5.5 □ >3	
STREAM GRADIENT ESTIMATE ☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/10 ft)	0 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Tyes No QHEI Score N/A (If Yes, Attach C	Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S) WWH Name: Ohio River	Distance from Evaluated Stream 2.8 miles
CWH Name:	istance from Evaluated Stream
D EWH Name: D	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED ARE	
USGS Quadrangle Name: NRCS Soil Map Page	N/A : NRCS Soil Map Stream Order
County: Henderson County Township / City: Henderson	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Date of last precipitation:	Quantity:
Photograph Information: Photos attached.	
Elevated Turbidity? (Y/N): Canopy (% open):	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and a	attach results) Lab Number:
Field Measures: Temp (°C) $\frac{N/A}{}$ Dissolved Oxygen (mg/l) $\frac{N/A}{}$ pH (S.U.) $\frac{N/A}{}$	Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) If not, please explain: N/A	
Additional comments/description of pollution impacts: Soil erosion and herbicides from road	maintenance likely affect this stream/ditch.
Some crayfish burrows were observed near the northwest corner of the channel.	
BIOTIC EVALUATION	
Performed? (Y/N): No (If Yes, Record all observations. Voucher collections optional. No ID number. Include appropriate field data sheets from the Primar	•
Fish Observed? (Y/N) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed?	
Comments Regarding Biology:	
UNT-39 to North Fork Canoe Creek is usually dry, well-maintained roadside channel para	llel to the Edward T. Breathitt Pennyrile Parkway.





APPENDIX F

Approved JD Forms

Intentionally blank. To be completed following agency field-checks.

APPROVED JURISDICTIONAL DETERMINATION FORM **U.S. Army Corps of Engineers**

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SEC A.	CTION I: BACKGROUND INFORMATION REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):
B.	DISTRICT OFFICE, FILE NAME, AND NUMBER:
C.	PROJECT LOCATION AND BACKGROUND INFORMATION: State: County/parish/borough: City: Center coordinates of site (lat/long in degree decimal format): Lat. Pick List, Long. Pick List. Universal Transverse Mercator: Name of nearest waterbody: Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Name of watershed or Hydrologic Unit Code (HUC): Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. Check if other sites (e.g., offsite mitigation sites, disposal sites, etc) are associated with this action and are recorded on a different JD form.
D.	REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY): Office (Desk) Determination. Date: Field Determination. Date(s):
	CTION II: SUMMARY OF FINDINGS RHA SECTION 10 DETERMINATION OF JURISDICTION.
revie	Pick List "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the ew area. [Required] Waters subject to the ebb and flow of the tide. Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:
	CWA SECTION 404 DETERMINATION OF JURISDICTION. re Pick List "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]
	1. Waters of the U.S. a. Indicate presence of waters of U.S. in review area (check all that apply): TNWs, including territorial seas Wetlands adjacent to TNWs Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs Non-RPWs that flow directly or indirectly into TNWs Wetlands directly abutting RPWs that flow directly or indirectly into TNWs Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs Impoundments of jurisdictional waters Isolated (interstate or intrastate) waters, including isolated wetlands
	b. Identify (estimate) size of waters of the U.S. in the review area: Non-wetland waters: linear feet: width (ft) and/or acres. Wetlands: acres.
	c. Limits (boundaries) of jurisdiction based on: Pick List Elevation of established OHWM (if known):
	 Non-regulated waters/wetlands (check if applicable):³ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: .

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.
² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1.	TNW Identify TNW:	
	Summarize rationale supporting determination: .	
2.	Wetland adjacent to TNW Summarize rationale supporting conclusion that wetland is "adjacent":	

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: Pick List Drainage area: Pick List Average annual rainfall: inches Average annual snowfall: inches (ii) Physical Characteristics: (a) Relationship with TNW: ☐ Tributary flows directly into TNW. Tributary flows through **Pick List** tributaries before entering TNW. Project waters are **Pick List** river miles from TNW. Project waters are **Pick List** river miles from RPW. Project waters are **Pick List** aerial (straight) miles from TNW. Project waters are **Pick List** aerial (straight) miles from RPW. Project waters cross or serve as state boundaries. Explain: Identify flow route to TNW⁵: Tributary stream order, if known:

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b)	General Tributary Characteristics (check all that apply): Tributary is: Natural Artificial (man-made). Explain: Manipulated (man-altered). Explain:
	Tributary properties with respect to top of bank (estimate): Average width: feet Average depth: feet Average side slopes: Pick List.
	Primary tributary substrate composition (check all that apply): Silts Sands Concrete Cobbles Gravel Muck Bedrock Vegetation. Type/% cover: Other. Explain:
	Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Presence of run/riffle/pool complexes. Explain: Tributary geometry: Pick List Tributary gradient (approximate average slope): %
(c)	Flow: Tributary provides for: Pick List Estimate average number of flow events in review area/year: Pick List Describe flow regime: Other information on duration and volume:
	Surface flow is: Pick List. Characteristics:
	Subsurface flow: Pick List. Explain findings: Dye (or other) test performed:
	Tributary has (check all that apply): Bed and banks OHWM ⁶ (check all indicators that apply): clear, natural line impressed on the bank changes in the character of soil destruction of terrestrial vegetation the presence of wack line sediment sorting sediment sorting sediment deposition multiple observed or predicted flow events abrupt change in plant community other (list): Discontinuous OHWM. ⁷ Explain:
	If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply): High Tide Line indicated by: oil or scum line along shore objects fine shell or debris deposits (foreshore) physical markings/characteristics tidal gauges other (list): Mean High Water Mark indicated by: survey to available datum; physical markings; vegetation lines/changes in vegetation types.
	emical Characteristics: racterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain: .
Iden	ntify specific pollutants, if known:

(iii)

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

	(iv)	Biol	logical Characteristics. Channel supports (check all that apply):
			Riparian corridor. Characteristics (type, average width):
		님	Wetland fringe. Characteristics:
		Ш	Habitat for:
			Federally Listed species. Explain findings: Fish/spawn areas. Explain findings:
			Other environmentally-sensitive species. Explain findings:
			Aquatic/wildlife diversity. Explain findings:
2.	Cha	ract	eristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW
	(i)	Phy	vsical Characteristics:
		(a)	General Wetland Characteristics:
			Properties:
			Wetland size: acres
			Wetland type. Explain: Wetland quality. Explain:
			Project wetlands cross or serve as state boundaries. Explain:
			110 Joet Westands 11050 01 Serve as state boundaries. Explain.
		(b)	General Flow Relationship with Non-TNW: Flow is: Pick List. Explain:
			Surface flow is: Pick List
			Characteristics: .
			Subsurface flow: Pick List. Explain findings: .
			Dye (or other) test performed:
		(c)	Wetland Adjacency Determination with Non-TNW:
			Directly abutting
			Not directly abutting
			Discrete wetland hydrologic connection. Explain:
			☐ Ecological connection. Explain: ☐ Separated by berm/barrier. Explain:
			Separated by bernivbarrier. Explain.
		(d)	Proximity (Relationship) to TNW
		` /	Project wetlands are Pick List river miles from TNW.
			Project waters are Pick List aerial (straight) miles from TNW.
			Flow is from: Pick List.
			Estimate approximate location of wetland as within the Pick List floodplain.
	(ii)	Che	emical Characteristics:
	(11)		racterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed
		OII.	characteristics; etc.). Explain:
		Ider	ntify specific pollutants, if known:
		.	
	(111)		logical Characteristics. Wetland supports (check all that apply): Riparian buffer. Characteristics (type, average width):
		H	Vegetation type/percent cover. Explain:
		H	Habitat for:
		ш	Federally Listed species. Explain findings:
			Fish/spawn areas. Explain findings:
			Other environmentally-sensitive species. Explain findings:
			Aquatic/wildlife diversity. Explain findings: .
3	Cha	root	oristics of all wotlands adjacent to the tributory (if any)
3.	CHa		eristics of all wetlands adjacent to the tributary (if any) wetland(s) being considered in the cumulative analysis: Pick List
			proximately () acres in total are being considered in the cumulative analysis.

_						
For	each	wetland,	specify	the	toll	owing:

<u>Directly abuts? (Y/N)</u> <u>Size (in acres)</u> <u>Directly abuts? (Y/N)</u> <u>Size (in acres)</u>

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

- 1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
- 2. Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
- 3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1.	TNWs and Adjacent Wetlands. Check all that apply and provide size estimates in review area:
	TNWs: linear feet width (ft), Or, acres.
	Wetlands adjacent to TNWs: acres.
_	
2.	RPWs that flow directly or indirectly into TNWs.
	Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that
	tributary is perennial:
	Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are
	jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows
	seasonally: .

	Provide estimates for jurisdictional waters in the review area (check all that apply): Tributary waters: linear feet width (ft). Other non-wetland waters: acres. Identify type(s) of waters: .
3.	Non-RPWs ⁸ that flow directly or indirectly into TNWs. Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.
	Provide estimates for jurisdictional waters within the review area (check all that apply): Tributary waters: linear feet width (ft). Other non-wetland waters: acres. Identify type(s) of waters: .
4.	Wetlands directly abutting an RPW that flow directly or indirectly into TNWs. Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands. Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
	Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
	Provide acreage estimates for jurisdictional wetlands in the review area: acres.
5.	Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs. Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.
	Provide acreage estimates for jurisdictional wetlands in the review area: acres.
6.	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs. Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.
	Provide estimates for jurisdictional wetlands in the review area: acres.
7.	Impoundments of jurisdictional waters. ⁹ As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional. Demonstrate that impoundment was created from "waters of the U.S.," or Demonstrate that water meets the criteria for one of the categories presented above (1-6), or Demonstrate that water is isolated with a nexus to commerce (see E below).
SUC	DLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, GRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY CH WATERS (CHECK ALL THAT APPLY): 10 which are or could be used by interstate or foreign travelers for recreational or other purposes. from which fish or shellfish are or could be taken and sold in interstate or foreign commerce. which are or could be used for industrial purposes by industries in interstate commerce. Interstate isolated waters. Explain: Other factors. Explain:
rae	ntify water body and summarize rationale supporting determination:

E.

 ⁸See Footnote # 3.
 9 To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
 10 Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

	Provide estimates for jurisdictional waters in the review area (check all that apply): Tributary waters: linear feet width (ft). Other non-wetland waters: acres. Identify type(s) of waters: Wetlands: acres.
F.	NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY): If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements. Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce. Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR). Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: Other: (explain, if not covered above):
	Provide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply): Non-wetland waters (i.e., rivers, streams): linear feet width (ft). Lakes/ponds: acres. Other non-wetland waters: acres. List type of aquatic resource: . Wetlands: acres.
	Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply): Non-wetland waters (i.e., rivers, streams): linear feet, width (ft). Lakes/ponds: acres. Other non-wetland waters: acres. List type of aquatic resource: Wetlands: acres.
	CTION IV: DATA SOURCES. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall 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.
	☐ 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: National wetlands inventory map(s). Cite name: 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): Previous determination(s). File no. and date of response letter: Applicable/supporting case law: Applicable/supporting scientific literature: Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD: . .

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