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.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): January 4, 2016

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: LRB-2005-02179, Richard and Joyce Sherwood, Form 1 of 2, Wetland A

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Ohio County/parish/borough: Erie City: Vermilion
Center coordinates of site (lat/long in degree decimal format): Lat. 41.39560°, Long. -82.36112°
Universal Transverse Mercator: 17
Name of nearest waterbody: Edson Creek (off-site)
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Lake Erie
Name of watershed or Hydrologic Unit Code (HUC): 04100012, Huron-Vermilion

☑ 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: December 8, 2015

☑ Field Determination. Date(s): October 6, 2015,

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There are no "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review 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: *Click here to enter text.*

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There are "*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): [1]

☐ TNWs, including territorial seas

☐ Wetlands adjacent to TNWs

☐ Relatively permanent waters[2] (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: Wetland A- 11.19 acres.

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual

Elevation of established OHWM (if known):

2. 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: *Click here to enter text.*

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[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: *Click here to enter text.*

Summarize rationale supporting determination: *Click here to enter text.*

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent": *Click here to enter text.*

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 waterbody[4] 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: Huron Vermilion- 764 Square Miles
Drainage area: <1 square mile

Average annual rainfall: 34.65 inches
Average annual snowfall: 23.3 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

☐ Tributary flows directly into TNW.

☑ Tributary flows through 2 tributaries before entering TNW.

Project waters are 2-5 river miles from TNW.
Project waters are 1 (or less) river miles from RPW.
Project waters are 1-2 aerial (straight) miles from TNW.
Project waters are 1 (or less) aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: Waters do not cross or serve as stats boundaries.

Identify flow route to TNW[5]: Wetland A drains north off-site into an unnamed ephemeral tributary. The unnamed tributary continues in a northerly direction, continues under State Route 2, and then drains into Edson Creek. Edson Creek is a tributary to Lake Erie, a Section 10 navigable water of the U.S.
Tributary stream order, if known: 1

(b) General Tributary Characteristics (check all that apply):

Tributary is:

☑ Natural

☐ Artificial (man-made). Explain: *Click here to enter text.*

☑ Manipulated (man-altered). Explain: The unnamed ephemeral ttributary is culverted under State Route 2. Aerial photographs (Google Earth) indicate that a pond was constructed in-line with the unnamed tributary north of State Route 2 between 2006 and 2009.

[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.

Tributary properties with respect to top of bank (estimate):
Average width: 1-5 feet
Average depth: 1-3 feet
Average side slopes: 2:1

Primary tributary substrate composition (check all that apply):

☑ Silts	☑ Sands	☐ Concrete
☐ Cobbles	☑ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover: *Click here to enter text.*	
☐ Other. Explain: *Click here to enter text.*		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Relatively stable with some areas of eroding banks.

Presence of run/riffle/pool complexes. Explain: Unknown
Tributary geometry: Relatively Straight
Tributary gradient (approximate average slope): ~1%

(c) Flow:
Tributary provides for: Ephemeral Flow
Estimate average number of flow events in review area/year: 11-20
Describe flow regime: Tributary flows during wet periods, during and after rain events, during and after snowmelt, and during other times of high surface water input.
Other information on duration and volume: Aerial photographs indicate water in the channel in the downstream portion during seasonally wet periods of the year and the channel appears dry during dry seasons.

Surface flow is: Confined Characteristics: Surface flow is confined to a defined channel with defined bed and banks.

Subsurface flow: Unknown Explain findings: *Click here to enter text.*
☐ Dye (or other) test performed: *Click here to enter text.*

Tributary has (check all that apply):
☑ Bed and banks
☑ OHWM[6] (check all indicators that apply):

☑ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☑ sediment sorting
☐ leaf litter disturbed or washed away	☑ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community *Click here to enter text.*
☐ other (list): *Click here to enter text.*	

☐ Discontinuous OHWM.[7] Explain: *Click here to enter text.*

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list): *Click here to enter text.*	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: Water was not observed in the tributary. A portion of the unnamed tributary has been culverted and rerouted through a constructed pond. Known impairments within the Lake Erie watershed include land development, siltation and sedimentation, loss of wetlands, flow alteration, enrichment of nutrients, changes in fish populations, presence of exotic species, PCBs, phosphorus, and effects of certain chemicals on human health (Binational, 2014; OEPA, 2004; USEPA, 2008).

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[6]A 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.
[7]Ibid.

Known causes of impairment include but are not limited to: agriculture, loss of riparian and forested habitat, development, wastewater treatment, and channelization of streams (OEPA, 2004).

Identify specific pollutants, if known: Tributary receives road runoff containing sand and salt via input from roadside ditches and State Route 2.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☑ Riparian corridor. Characteristics (type, average width): Unnamed tributary has a riparian corridor ranging between 0 feet and over 1000 feet. The riparian vegetation is predominantly forested with some emergent, scrub-shrub, and disturbed/cleared habitat.
- ☑ Wetland fringe. Characteristics: Wetland A directly abuts the unnamed tributary.
- ☑ Habitat for:
  - ☐ Federally Listed species. Explain findings: *Click here to enter text.*
  - ☐ Fish/spawn areas. Explain findings: *Click here to enter text.*
  - ☐ Other environmentally-sensitive species. Explain findings: *Click here to enter text.*
  - ☑ Aquatic/wildlife diversity. Explain findings: Unnamed tributary provides habitat for aquatic flora and fauna as well as terrestrial mammals and birds.

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: 11.2 acres

Wetland type. Explain: Forested

Wetland quality. Explain: Moderate to high

Project wetlands cross or serve as state boundaries. Explain: No

(b) General Flow Relationship with Non-TNW:

Flow is: Ephemeral Flow Explain: Wetland drains to unnamed tributary during wet periods, during and after rain events, during snowmelt, and during periods of surface water runoff.

Surface flow is: Confined

Characteristics: Wetland A directly abuts and drains in the unnamed tributary off-site.

Subsurface flow: Unknown Explain findings: *Click here to enter text.*

- ☐ Dye (or other) test performed: *Click here to enter text.*

(c) Wetland Adjacency Determination with Non-TNW:

- ☑ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: *Click here to enter text.*
  - ☐ Ecological connection. Explain: *Click here to enter text.*
  - ☐ Separated by berm/barrier. Explain: *Click here to enter text.*

(d) Proximity (Relationship) to TNW

Project wetlands are 2-5 river miles from TNW.

Project waters are 1-2 aerial (straight) miles from TNW.

Flow is from: Wetland to Navigable Waters

Estimate approximate location of wetland as within the 500 year floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: Water color of standing water in wetland was generally clear. Known impairments within the Lake Erie watershed include land development, siltation and sedimentation, loss of wetlands, flow alteration, enrichment of nutrients, changes in fish populations, presence of exotic species, PCBs, phosphorus, and effects of certain chemicals on human health (Binational, 2014; OEPA, 2004; USEPA, 2008). Known causes of impairment include but are not limited to: agriculture, loss of riparian and forested habitat, development, wastewater treatment, and channelization of streams (OEPA, 2004).

Identify specific pollutants, if known: *Click here to enter text.*

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☑ Riparian buffer. Characteristics (type, average width): Forested and emergent buffer ranging from 0-1600 feet persists around Wetlands B and C.
- ☑ Vegetation type/percent cover. Explain: PFO 100%
- ☑ Habitat for:
  - ☐ Federally Listed species. Explain findings: *Click here to enter text.*

☐ Fish/spawn areas. Explain findings: *Click here to enter text.*

☐ Other environmentally-sensitive species. Explain findings: *Click here to enter text.*

☑ Aquatic/wildlife diversity. Explain findings: Wetland provides habitat for aquatic flora and fauna as well as terrestrial species.

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: *Choose an item.*

Approximately (#) acres in total are being considered in the cumulative analysis. For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)
Wetland A Y	11.19 acres		

Summarize overall biological, chemical and physical functions being performed: The wetland provides the following functions and services: hydrologic flux and storage including floodwater and runoff attenuation and release; sediment and nutrient transport and retention; pollutant attenuation and release; biogeochemical cycling and storage; stream channel stability via serving as a natural buffer; biological productivity of micro/macro flora and fauna, decomposition, and community structure; and wildlife support including providing habitat.

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: *Click here to enter text.*

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:

   A hydrologic connection is visible and traceable between Wetland A, the off-site unnamed ephemeral tributary to Edson Creek (herein refered to as "unnamed tributary"), and Lake Erie, a Section 10 Traditional Navigable water of the U.S. Wetland A extends north off-site and drains into the off-site unnamed tributary; Wetland A directly abuts the off-site unnamed tributary just north of the subject parcel limits and also carries flow via a shallow non-jurisdictional drainage feature (lacking defined bed and banks) to the off-site unnamed tributary. The unnamed tributary then continues in a northerly direction, flows under State Route 2, and then flows into Edson Creek. Edson Creek is a tributary to Lake Erie. Wetland A and the unnamed tributary are less than three river miles and less than two aerial miles from Lake Erie. The unnamed tributary and its associated wetland have hydrologic connectivity to Lake Erie, thereby providing a significant nexus between the stream and its adjacent wetland and the downstream TNW.

   A review of multiple aerial photos and USFWS NWI maps indicates there are no other similarly situated wetlands adjacent to the relevant reach of the unnamed tributary.

   Known impairments within the Lake Erie watershed include land development, siltation and sedimentation, loss of wetlands, flow alteration, enrichment of nutrients, changes in fish populations, presence of exotic species, PCBs, phosphorus, and effects of certain chemicals on human health (Binational, 2014; OEPA, 2004; USEPA, 2008). Known causes of impairment include but are not limited to: agriculture, loss of riparian and forested habitat, development, wastewater treatment, and channelization of streams (OEPA, 2004).

According to a report issued by USEPA, "the scientific literature unequivocally demonstrates that streams, individually or cumulatively, exert a strong influence on the integrity of downstream waters. All tributary streams, including perennial, intermittent, and ephemeral streams, are physically, chemically, and biologically connected to downstream rivers via channels and associated alluvial deposits where water and other materials are concentrated, mixed, transformed, and transported" (USEPA, 2015). While ephemeral in its flow regime, the unnamed tributary influences the chemistry and physical conditions of the downstream TNW through its hydrologic input and storage and transport of sediments, nutrients, chemicals, pollutants, and energy. Rainfall, snowmelt, and stormwater runoff within the drainage area of the unnamed tributary provide hydrology to the downstream receiving waters. The unnamed tributary receives input from highway ditches along State Route 2 which carry road runoff containing sand and road salt, input from agricultural lands carrying loose soil sediment/silt and agricultural nutrients/chemicals, surrounding forested areas, and input from Wetland A.

A review of aerial imagery indicates Wetland A experiences seasonal saturation and inundation during wet periods. Standing water and water marks on trees were observed within Wetland A and were also noted in the submitted wetland delineation report. Wetland A receives the majority of its hydrology input via precipitation and runoff as well as groundwater (high water table within the upper 12 inches of the surface as per NRCS Web Soil Survey and visual observation of many areas being saturated to the surface or inundated). Wetland A is largely surrounded by forested habitat with some modified/cleared areas to the west and an active golf course to the west. Input from the golf course includes runoff containing lawn maintenance chemicals/nutients. Input from the surounding forested areas includes silt and sediment as the forested areas largely lack understory vegetation (overland flow results in exposed soil silt/sediment to be picked up and tranported by the water).

Wetland A and the unnammed tributary directly affect the nature of the water flowing to downstream receiving waters, both in quantity and chemical/physical attributes. Wetland A's seasonal saturation and inundation is indicative that the wetland stores and releases hydrology to downstream waters. Wetland A reduces the runoff rates of water received by the unnamed tributary resulting from attenuation and storage of floodwaters (saturation capacity, inundation capacity, and mature trees storing water); capture of water through evapotranspiration; storage of runoff; and filtering and/or storage of nutrients, chemicals, and sediments contained in rainfall, runoff, or other hydrologic inputs. As Wetland A captures, retains, and ephemerally releases these hydrologically-carried elements, Wetland A and the unnamed tributary which transport these elements reduce impairments to the Lake Erie watershed including siltation, sedimentation, and nutrient enrichment. The unnamed tributary in conjunction with Wetland A significantly affect the velocity of flow reaching the TNW as well as the chemical and physical make-up of Lake Erie through its ability to retain, filter, and convey water containing sediments, chemicals, nutrients, and contaminants downstream to Lake Erie and therefore have a significant nexus with Lake Erie.

During high water events, organic carbon leached from soil and organic material contained in Wetland A is transferred to the unnamed tributary, a portion of which is subsequently transferred downstream to Lake Erie. Organic carbon is an important part of the carbon cycle and serves as a primary food source for aquatic system food webs (Bruckner, 2012). By contributing carbon to the immediate and downstream system, Wetland A and the unnamed tributary have more than a speculative or insubstantial effect on the chemical, physical, and biological integrity of Lake Erie.

The conservation of Wetland A and the unnamed tributary aids in reducing habitat and riparian loss impairments within the Lake Erie watershed which results from land development and loss of wetland and riparian habitat. A recommended watershed improvement by OEPA for the watershed is to prevent riparian and forested habitat destruction (OEPA, 2004); preservation and maintenance of Wetland A and the unnamed tributary help accomplish this goal and protect the overall health of the Lake Erie watershed.

Due to the physical, biological, and chemical connectivity of Wetland A and the unnamed tributary to the downstream TNW, it has been determined that Wetland A and the unnamed tributary have a significant nexus with the downstream TNW, Lake Erie as the functions and services provided by Wetland A and the unnamed tributary provide more than a speculative effect on the physical integrity of Lake Erie.

Sources:

-Alexander, R.B., E.W. Boyer, R.A. Smith, G.E. Schwartz, and R.B. Moore. 2007. The Role of Headwater Streams in Downstream Water Quality. Journal of the American Water Resources Association 43.
-Freeman, M.C., C.M. Pringle, and C.R. Jackson. 2007. Hydrologic Connectivity and the Contribution of Stream Headwaters to Ecological Integrity at Regional Scales. Journal of the American Water Resources Association. 43:5-14.
-Meyer, J.L., D.L. Strayer, J.B. Wallace, S.L. Eggert, G.S. Helfman, and N.E. Leonard. 2007. The Contribution of Headwater Streams to Biodiversity in River Networks. Journal of the American Water Resources Association. 43: 86-103.
-USEPA. 2013. Streams. http://water.epa.gov/type/rsl/streams.cfm. Accessed 6 February 2013.
-USEPA. 2015. Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-14/475F.
-Bruckner, Monica Z. 2012. Measuring Dissolved and Particulate Organic Carbon (DOC and POC). Montana State University Bozeman. http://serc.carleton.edu/microbelife/research_methods/biogeochemical/organic_carbon.html. Accessed 8 December 2015.
-OEPA. 2012. 2012 Integrated Report. http://www.epa.state.oh.us/portals/35/tmdl/2012IntReport/IR12SectionAfinal.pdf. Accessed 8 December 2015.
-USEPA. 2008. Waterbody Quality Assessment Report: 2008 Waterbody Report for Lake Erie Central Basin Shoreline. http://iaspub.epa.gov/tmdl_waters10/attains_watershed.control?p_huc=04100012&p_cycle=&p_report_type=T. Accessed 8 December 2015.
-OEPA. 2004. Biological and Water Quality Study of the Vermilion River, Old Woman Creek, Chappel Creek, Sugar Creek, and Select Lake Erie Tributaries. http://www.epa.state.oh.us/portals/35/documents/VermilionTSD2004.pdf. Accessed 8 December 2015.
- Binational, 2014; Lake Erie Lakewide Action and Management Plan- Annual Report 2014. http://www.epa.gov/glnpo/lakeerie/status/lampstat99.pdf. Accessed 8 December 2015.

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: *Click here to enter text.*

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: *Click here to enter text.*.
   - ☐ 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: *Click here to enter text.*.

   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: *Click here to enter text.*

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: *Click here to enter text.*

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: *Click here to enter text.*
     - ☐ 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: *Click here to enter text.*

   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: 11.19 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).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]

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[8] See 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.*

- ☐ 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: *Click here to enter text.*
- ☐ Other factors. Explain: *Click here to enter text.*

Identify water body and summarize rationale supporting determination: *Click here to enter text.*

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: *Click here to enter text.*
- ☐ 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: *Click here to enter text.*
- ☐ Other: (explain, if not covered above): *Click here to enter text.*

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole 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: *Click here to enter text.*.
- ☐ 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: *Click here to enter text.*.
- ☐ Wetlands: # acres.

SECTION IV: DATA SOURCES.

A. 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: Wetland Delineation and Location Maps Dated August 2015
- ☑ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☑ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: *Click here to enter text.*
- ☐ Corps navigable waters' study: *Click here to enter text.*
- ☑ U.S. Geological Survey Hydrologic Atlas: USACE ORM NHD Dataset
  - ☑ USGS NHD data.
  - ☑ USGS 8 and 12 digit HUC maps.
- ☑ U.S. Geological Survey map(s). Cite scale & quad name: 7.5 Minute, OH-Vermilion East Quad
- ☑ USDA Natural Resources Conservation Service Soil Survey. Citation: NRCS Web Soil Survey
- ☑ National wetlands inventory map(s). Cite name: USACE ORM NWI Dataset
- ☐ State/Local wetland inventory map(s): *Click here to enter text.*
- ☑ FEMA/FIRM maps: USACE ORM FEMA Flood Hazard Zone Dataset
- ☐ 100-year Floodplain Elevation is: *Click here to enter text.* (National Geodectic Vertical Datum of 1929)

☑ Photographs: ☑ Aerial (Name & Date): Google Earth (April 1997, February 2002, December 2009, October 2011, May 2012, August 2014), Bing Maps Aerial and Birds Eye View
☑ or ☑ Other (Name & Date): Site photographs contained in August 2015 Delineation Report
☑ Previous determination(s). File no. and date of response letter: 2005-02179 - September 2010
☐ Applicable/supporting case law: *Click here to enter text.*
☐ Applicable/supporting scientific literature: *Click here to enter text.*
☐ Other information (please specify): *Click here to enter text.*

B. ADDITIONAL COMMENTS TO SUPPORT JD: *Click here to enter text.*

-SIGNED-

Susan Baker
Project Manager

January 4, 2016
Date

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.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): January 4, 2016

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: LRB-2005-02179, Richard and Joyce Sherwood, Form 2 of 2, Wetlands B and C

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Ohio County/parish/borough: Erie City: Vermilion
Center coordinates of site (lat/long in degree decimal format): Lat. 41.39560°, Long. -82.36112°
Universal Transverse Mercator: 17
Name of nearest waterbody: Edson Creek (off-site)
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Lake Erie
Name of watershed or Hydrologic Unit Code (HUC): 04100012, Huron-Vermilion

☑ 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: December 8, 2015

☑ Field Determination. Date(s): October 6, 2015

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There are no "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review 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: *Click here to enter text.*

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There are "*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): [1]

☐ TNWs, including territorial seas

☐ Wetlands adjacent to TNWs

☐ Relatively permanent waters[2] (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: Wetland B- 1.7 acres, Wetland C- 7.9 acres acres.

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual

Elevation of established OHWM (if known): *Click here to enter text.*

2. 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: *Click here to enter text.*

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[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: *Click here to enter text.*

   Summarize rationale supporting determination: *Click here to enter text.*

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": *Click here to enter text.*

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 waterbody[4] 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: Huron-Vemilion- 764 square miles
   Drainage area: 1-2 square miles

   Average annual rainfall: 34.65 inches
   Average annual snowfall: 23.3 inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:

   ☐ Tributary flows directly into TNW.

   ☑ Tributary flows through 2 tributaries before entering TNW.

   Project waters are 2-5 river miles from TNW.
   Project waters are 1 (or less) river miles from RPW.
   Project waters are 1-2 aerial (straight) miles from TNW.
   Project waters are 1 (or less) aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: No
   Identify flow route to TNW[5]: The tributary flows north and drains into Edson Creek. Edson Creek is a tributary to Lake Erie.
   Tributary stream order, if known: 1

   (b) General Tributary Characteristics (check all that apply):

   Tributary is: ☐ Natural

   ☑ Artificial (man-made). Explain: Tributary is a constructed relatively permanent roadside ditch.

   ☑ Manipulated (man-altered). Explain: Tributary is maintained and culverted along many sections.

[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.

Tributary properties with respect to top of bank (estimate):
Average width: 2-5 feet
Average depth: 2-5 feet
Average side slopes: 3:1

Primary tributary substrate composition (check all that apply):

☑ Silts	☑ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☑ Muck
☐ Bedrock	☑ Vegetation. Type/% cover: Phalaris varies from 0-100% coverage.	
☐ Other. Explain: *Click here to enter text.*		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Stable
Presence of run/riffle/pool complexes. Explain: None observed
Tributary geometry: Relatively Straight
Tributary gradient (approximate average slope): <4%

(c) Flow:
Tributary provides for: Seasonal Flow
Estimate average number of flow events in review area/year: 11-20
Describe flow regime: Tributary flows the majority of the year including wet periods, during and after rainfall, during and after snowmelt, during periods of high groundwater input. Tributary ceases flow during dry periods. Aerial photographs identify water in the tributary during wet seasons and site visit notes related to a 2010 enforcement action indicate fish observed in the channel.
Other information on duration and volume: *Click here to enter text.*

Surface flow is: Confined Characteristics: Surface flow is confined to a defined bed and banks.

Subsurface flow: Unknown Explain findings: *Click here to enter text.*
☐ Dye (or other) test performed: *Click here to enter text.*

Tributary has (check all that apply):
☑ Bed and banks
☑ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☑ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☑ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☑ water staining	☑ abrupt change in plant community Change from phalaris to upland plant species.
☐ other (list): *Click here to enter text.*	

☐ Discontinuous OHWM.[7] Explain: *Click here to enter text.*

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list): *Click here to enter text.*	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: Water in the channel was turbid. Tributary was constructed to carry flow from the roadway. Known impairments within the Lake Erie watershed include land development, siltation and sedimentation, loss of wetlands, flow alteration, enrichment of nutrients, changes in fish populations, presence of exotic species, PCBs, phosphorus, and effects of certain chemicals on human health (Binational, 2014; OEPA, 2004; USEPA, 2008). Known causes of impairment include but are not

[6]A 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.
[7]Ibid.

limited to: agriculture, loss of riparian and forested habitat, development, wastewater treatment, and channelization of streams (OEPA, 2004).

Identify specific pollutants, if known: Tributary receives road runoff containing sand and salt.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☑ Riparian corridor. Characteristics (type, average width): While the tributary is largely along the roadway and developed areas, some portions of the tributary have a forested riparian corridor to the east ranging from 10-1000 feet in width.
- ☐ Wetland fringe. Characteristics: *Click here to enter text.*
- ☑ Habitat for:
  - ☐ Federally Listed species. Explain findings: *Click here to enter text.*
  - ☑ Fish/spawn areas. Explain findings: During a 2010 site visit, minnows were observed in the channel
  - ☐ Other environmentally-sensitive species. Explain findings: *Click here to enter text.*
  - ☑ Aquatic/wildlife diversity. Explain findings: Tributary provides habitat for aquatic flora and fauna as well as terrestrial species.

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: Wetland B 1.7 acres, Wetland C 7.9 acres

Wetland type. Explain: Wetlands constitute a single wetland complex as they are hydrologically and functionally integrated. Wetland B is predominantly PFO and PSS whereas Wetland C is predominantly PEM/PSS. Wetland C habitat was modified within the last 6 years including clearing and grading; Wetland C used to have a more similar habitat type to Wetland B as per aerial photography and historic delineation information.

Wetland quality. Explain: Moderate to high quality.

Project wetlands cross or serve as state boundaries. Explain: Wetlands do not cross or serve as state boundaries.

(b) General Flow Relationship with Non-TNW:

Flow is: Intermittent Flow Explain: Wetland flows to the RPW tributary most of the year with the exception of dry periods. Wetlands B and C are functionally part of the same wetland complex with a very minor upland separation. Wetland B drains directly into Wetland C and is conveyed through Wetland C (drainage patterns observed).

Surface flow is: Overland sheetflow and Confined

Characteristics: Wetlands B and C flow to the tributary via constructed drainage swales as well as via overland sheetflow.

Subsurface flow: Unknown Explain findings: *Click here to enter text.*

- ☐ Dye (or other) test performed: *Click here to enter text.*

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☑ Not directly abutting
  - ☑ Discrete wetland hydrologic connection. Explain: Wetlands B and C are hydrologically connected to the tributary via drainage swales and overland sheetflow.
  - ☐ Ecological connection. Explain: *Click here to enter text.*
  - ☐ Separated by berm/barrier. Explain: *Click here to enter text.*

(d) Proximity (Relationship) to TNW

Project wetlands are 2-5 river miles from TNW.

Project waters are 1-2 aerial (straight) miles from TNW.

Flow is from: Wetland to Navigable Waters

Estimate approximate location of wetland as within the 500-year or greater floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: No obvious impairment to wetland water quality was observed. Known impairments within the Lake Erie watershed include land development, siltation and sedimentation, loss of wetlands, flow alteration, enrichment of nutrients, changes in fish populations, presence of exotic species, PCBs, phosphorus, and effects of certain chemicals on human health (Binational, 2014; OEPA, 2004; USEPA, 2008). Known causes of impairment include but are not limited to: agriculture, loss of riparian and forested habitat, development, wastewater treatment, and channelization of streams (OEPA, 2004).

Identify specific pollutants, if known: *Click here to enter text.*

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☑ Riparian buffer. Characteristics (type, average width): Forested and emergent buffer ranging from 0-1600 feet persists around Wetlands B and C.
- ☑ Vegetation type/percent cover. Explain: Wetland B PFO/PSS 100% and Wetland C PEM/PSS 100%

☑ Habitat for:

☐ Federally Listed species. Explain findings: *Click here to enter text.*

☐ Fish/spawn areas. Explain findings: *Click here to enter text.*

☐ Other environmentally-sensitive species. Explain findings: *Click here to enter text.*

☑ Aquatic/wildlife diversity. Explain findings: Wetlands provide habitat for aquatic flora and fauna as well as terrestrial species. Crayfish burrows were observed within the wetlands.

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: 2

Approximately (9.6) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)
Wetland B N	1.7	*Y/N*	#
Wetland C	7.9	*Y/N*	#

Summarize overall biological, chemical and physical functions being performed: The wetlands provide the following functions and services: hydrologic flux and storage including floodwater and runoff attenuation and release; sediment and nutrient transport and retention; pollutant attenuation and release; biogeochemical cycling and storage; stream channel stability via serving as a natural buffer; biological productivity of micro/macro flora and fauna, decomposition, and community structure; and wildlife support including providing habitat.

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: *Click here to enter text.*

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: *Click here to enter text.*

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:

A hydrologic connection is visible and traceable between Wetlands B and C, and the off-site unnamed intermittent roadside tributary to Edson Creek (herein refered to as "unnamed roadside tributary"), and Lake Erie, a Section 10 Traditional Navigable water of the U.S. Wetlands B and C constitute a single integrated wetland complex as they are hydrologically and functionally integrated with a minor upland separation less than 10 feet in width. Wetland B drains via overland sheetflow and shallow subsurface flow (evident upper soil saturation present and drainage patterns observed) to Wetland C. Wetlands B and C drain west via drainage swales and downslope overland sheetflow into the unnamed roadside tributary. The drainage swales were created and maintained as part of a 2010 restoration order related to an enforcement action on the subject parcel. The unnamed roadside tributary flows north and drains into Edson Creek. Edson Creek is a tributary to Lake Erie. Wetlands B and C, and the unnamed roadside tributary are less than three river miles and less than two aerial miles from Lake Erie. The unnamed roadside tributary and its associated wetlands have hydrologic connectivity to Lake Erie, thereby providing a significant nexus between the stream and its adjacent wetlands and the downstream TNW.

A review of multiple aerial photos and USFWS NWI maps indicates there are no other similarly situated wetlands adjacent to the relevant reach of the unnamed roadside tributary as it flows through a mostly developed area.

Known impairments within the Lake Erie watershed include land development, siltation and sedimentation, loss of wetlands, flow alteration, enrichment of nutrients, changes in fish populations, presence of exotic species, PCBs, phosphorus, and effects of certain chemicals on human health (Binational, 2014; OEPA, 2004; USEPA, 2008). Known causes of impairment include but are not limited to: agriculture, loss of riparian and forested habitat, development, wastewater treatment, and channelization of streams (OEPA, 2004).

According to a report issued by USEPA, "the scientific literature unequivocally demonstrates that streams, individually or cumulatively, exert a strong influence on the integrity of downstream waters. All tributary streams, including perennial, intermittent, and ephemeral streams, are physically, chemically, and biologically connected to downstream rivers via channels and associated alluvial deposits where water and other materials are concentrated, mixed, transformed, and transported" (USEPA, 2015). While intermittent in its flow regime, the unnamed tributary influences the chemistry and physical conditions of the downstream TNW through its hydrologic input and storage and transport of sediments, nutrients, chemicals, pollutants, and energy. Rainfall, snowmelt, stormwater runoff, and groundwater within the drainage area of the unnamed tributary provide hydrology to the downstream receiving waters. The unnamed roadside tributary receives hydrologic input from the adjacent road and several intersecting roadside ditches which carry road runoff containing sand and road salt, input from agricultural lands carrying loose soil sediment/silt and agricultural nutrients/chemicals, residential and commercial properties with contributing impervious surfaces, and input from Wetlands B and C and the surrounding uplands.

A review or aerial imagery indicates Wetlands B and C experience seasonal saturation during wet periods. Water stained leaves, microtopographic concave relief, and crayfish burrows were observed on-site as well as noted in the submitted wetland delineation report. Wetlands B and C receive hydrology input via precipitation and runoff as well as groundwater input (high water table within the upper 12 inches of the surface as per NRCS Web Soil Survey and visual observation of many areas being saturated to the surface). Wetlands B and C are surrounded by forested habitat with some modified/cleared areas, development to the south, and a major roadway to the west. Input from the roadway includes runoff with sand and salt and input from the forested areas which largely lack understory vegetation included sediment/silt (overland flow results in exposed soil silt/sediment to be picked up by the water).

Wetlands B and C and the unnammed roadside tributary directly affect the nature of the water flowing to downstream receiving waters, both in quantity and chemical/physical attributes. Wetland B and C's seasonal saturation is indicative that the wetland stores and releases hydrology to downstream waters via intermittent drainage to the unnamed tributary. Wetlands B and C reduce the runoff rates of water received by the unnamed tributary resulting from attenuation and storage of floodwaters (saturation capacity, inundation capacity, and mature trees storing water); capture of water through evapotranspiration; storage of runoff; and filtering and/or storage of nutrients, chemicals, and sediments contained in rainfall, runoff, or other hydrologic inputs. Ultimately, this affects the downstream TNW, Lake Erie, as the wetlands alter the amount and velocity of flow reaching the TNW and furthermore, any additional matter such as nutrients, chemicals, sediments, and pollutants carried in that flow. As Wetlands B and C capture, retain, and intermittently release these hydrologically-carried elements, Wetlands B and C and the unnamed roadside tributary which transport these elements reduce impairments to the Lake Erie watershed including siltation, sedimentation, and nutrient enrichment. The unnamed roadside tributary in conjunction with Wetlands B and C significantly affect the chemical and physical make-up of Lake Erie through its ability to retain and convey water containing sediments, chemicals, nutrients, and contaminants downstream to Lake Erie and therefore have a significant nexus with Lake Erie.

During high water events, organic carbon leached from soil and organic material contained in Wetlands B and C is transferred into the unnamed roadside tributary, a portion of which is subsequently transferred downstream to Lake Erie. Organic carbon is an important part of the carbon cycle and serves as a primary food source for aquatic system food webs (Bruckner, 2012). By contributing carbon to the immediate and downstream system, Wetlands B and C, and the unnamed roadside tributary have more than a speculative or insubstantial effect on the chemical, physical, and biological integrity of Lake Erie.

The conservation of Wetlands B and C, and the unnamed roadside tributary aids in reducing habitat and riparian loss impairments within the Lake Erie watershed which results from land development and loss of wetland and riparian habitat. An OEPA recommended improvement for the watershed is to prevent riparian and forested habitat destruction (OEPA, 2004); preservation and maintenance of Wetlands B and C, and the unnamed roadside tributary help accomplish this goal and protect the overall health of the Lake Erie watershed.

The unnamed roadside tributary and its associated wetlands have hydrologic connectivity to Lake Erie, thereby providing a significant nexus between the stream and its adjacent wetland and the downstream TNW. Due to the physical, biological, and chemical connectivity of Wetland B and C, and the unnamed roadside tributary to the downstream TNW, it has been determined that Wetlands B and C, and the unnamed tributary have a significant nexus with the downstream TNW, Lake Erie as the functions and services provided by Wetlands B and C and the unnamed tributary provide more than a speculative effect on the physical integrity of Lake Erie.

Sources:

-Alexander, R.B., E.W. Boyer, R.A. Smith, G.E. Schwartz, and R.B. Moore. 2007. The Role of Headwater Streams in Downstream Water Quality. Journal of the American Water Resources Association 43.
-Freeman, M.C., C.M. Pringle, and C.R. Jackson. 2007. Hydrologic Connectivity and the Contribution of Stream Headwaters to Ecological Integrity at Regional Scales. Journal of the American Water Resources Association. 43:5-14.
-Meyer, J.L., D.L. Strayer, J.B. Wallace, S.L. Eggert, G.S. Helfman, and N.E. Leonard. 2007. The Contribution of Headwater Streams to Biodiversity in River Networks. Journal of the American Water Resources Association. 43: 86-103.
-USEPA. 2013. Streams. http://water.epa.gov/type/rsl/streams.cfm. Accessed 6 February 2013.

-USEPA. 2015. Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-14/475F.
-Bruckner, Monica Z. 2012. Measuring Dissolved and Particulate Organic Carbon (DOC and POC). Montana State University Bozeman. http://serc.carleton.edu/microbelife/research_methods/biogeochemical/organic_carbon.html. Accessed 8 December 2015.
-OEPA. 2012. 2012 Integrated Report. http://www.epa.state.oh.us/portals/35/tmdl/2012IntReport/IR12SectionAfinal.pdf. Accessed 8 December 2015.
-USEPA. 2008. Waterbody Quality Assessment Report: 2008 Waterbody Report for Lake Erie Central Basin Shoreline. http://iaspub.epa.gov/tmdl_waters10/attains_watershed.control?p_huc=04100012&p_cycle=&p_report_type=T. Accessed 8 December 2015.
-OEPA. 2004. Biological and Water Quality Study of the Vermilion River, Old Woman Creek, Chappel Creek, Sugar Creek, and Select Lake Erie Tributaries. http://www.epa.state.oh.us/portals/35/documents/VermilionTSD2004.pdf. Accessed 8 December 2015.
- Binational, 2014; Lake Erie Lakewide Action and Management Plan- Annual Report 2014. http://www.epa.gov/glnpo/lakeerie/status/lampstat99.pdf. Accessed 8 December 2015.

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: *Click here to enter text.*.
   - ☐ 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: *Click here to enter text.*.

   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: *Click here to enter text.*

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: *Click here to enter text.*

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: *Click here to enter text.*
     - ☐ 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: *Click here to enter text.*

   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: Wetland B 1.7 acres, Wetland C 7.9 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.

[8]See Footnote # 3.

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).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH 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: *Click here to enter text.*
- ☐ Other factors. Explain: *Click here to enter text.*

Identify water body and summarize rationale supporting determination: *Click here to enter text.*

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: *Click here to enter text.*
- ☐ 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: *Click here to enter text.*
- ☐ Other: (explain, if not covered above): *Click here to enter text.*

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole 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: *Click here to enter text.*.
- ☐ 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: *Click here to enter text.*.
- ☐ Wetlands: # acres.

SECTION IV: DATA SOURCES.

A. 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: Wetland Delineation and Location Maps Dated August 2015
- ☑ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☑ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.

[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.*

- ☐ Data sheets prepared by the Corps: *Click here to enter text.*
- ☐ Corps navigable waters' study: *Click here to enter text.*
- ☑ U.S. Geological Survey Hydrologic Atlas: USACE ORM NHD Dataset
  - ☑ USGS NHD data.
  - ☑ USGS 8 and 12 digit HUC maps.
- ☑ U.S. Geological Survey map(s). Cite scale & quad name: 7.5 Minute, OH-Vermilion East Quad
- ☑ USDA Natural Resources Conservation Service Soil Survey. Citation: NRCS Web Soil Survey
- ☑ National wetlands inventory map(s). Cite name: USACE ORM NWI Dataset
- ☐ State/Local wetland inventory map(s): *Click here to enter text.*
- ☑ FEMA/FIRM maps: USACE ORM FEMA Flood Hazard Zone Dataset
- ☐ 100-year Floodplain Elevation is: *Click here to enter text.* (National Geodectic Vertical Datum of 1929)
- ☑ Photographs: ☑ Aerial (Name & Date): Google Earth (April 1997, February 2002, December 2009, October 2011, May 2012, August 2014), Bing Maps Aerial and Birds Eye View
  ☑ or ☑ Other (Name & Date): Site photographs contained in August 2015 Delineation Report
- ☑ Previous determination(s). File no. and date of response letter: 2005-02179 - September 2010
- ☐ Applicable/supporting case law: *Click here to enter text.*
- ☐ Applicable/supporting scientific literature: *Click here to enter text.*
- ☐ Other information (please specify): *Click here to enter text.*

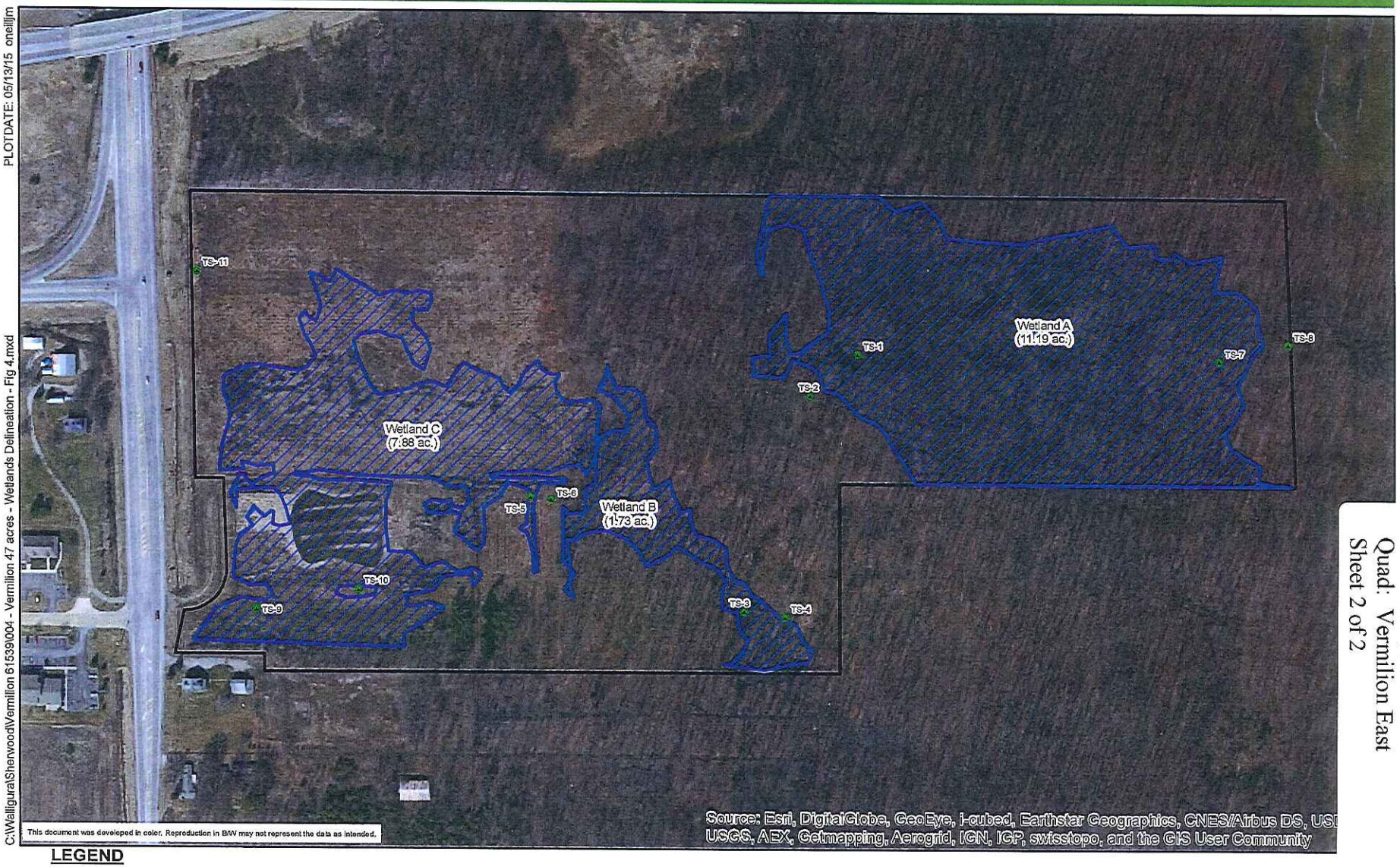
B. ADDITIONAL COMMENTS TO SUPPORT JD: *Click here to enter text.*

- SIGNED -

Susan Baker
Project Manager

January 4, 2016
Date

FIGURE 4



PLOTDATE: 05/13/15 oneilljm

C:\Wall\gural\Sherwood\Vermilion 61539\004 - Vermilion 47 acres - Wetlands Delineation - Fig 4.mxd

Richard and Joyce Sherwood
D/A Processing No. 2005-02179
Erie County, Ohio
Quad: Vermilion East
Sheet 2 of 2

LEGEND

- DELINEATED WETLAND
- TEST SITE LOCATION

UNDEVELOPED 47 ACRE SITE

DELINEATION MAP

AUGUST 2015
Wal-Sherwood

0 200 400 800
Feet

N

O'BRIEN & GERE