

APPENDIX D

WATER RESOURCES

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APPENDIX D WATER RESOURCES

Appendix D provides additional information on surface water, floodplains, wetlands, and water quality within the project area. No information about groundwater was deemed necessary beyond that provided in the Supplemental EA, Section 3.5.

Water resources were identified using the following federal and state sources:

- U.S. Geological Survey (USGS) 7.5-minute series quadrangle topographic maps
- USGS National Hydrography Dataset (NHD)
- USGS National Elevation Dataset (NED)
- USGS watershed boundaries (geographic information system [GIS] files)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil surveys (including Soil Survey Geographic [SSURGO] databases for each state)
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM)
- Lists of impaired waters for Indiana, Ohio, and Kentucky prepared under Section 303(d) of the Clean Water Act (CWA)
- A list of navigable waters in Indiana from the Indiana Natural Resources Commission
- U.S. Environmental Protection Agency (USEPA) Reach Address Database
- USEPA Safe Drinking Water Information System
- Publicly available aerial photographs
- Wetland delineations performed at the sites of the potential Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge on the L&I Line

The review examined water resources that would potentially be impacted by operational changes resulting from the Proposed Transaction on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and the Louisville Connection, as well as by construction of the Elvin and Brook siding extensions, if deemed necessary for rail operations, and the proposed replacement of the Flatrock River Bridge on the Louisville & Indiana Railroad Company rail line (L&I Line).

Operational activities that could have potential impacts on water resources may be regulated by several state and federal agencies. Although USEPA has administration oversight over Sections 402 and 404 of the CWA, as well as the Safe Drinking Water Act, USACE administers and enforces Section 404 of the CWA. Most states, including Indiana, Ohio, and Kentucky, have been delegated with the authority to enforce Section 402 of the CWA and the Safe Drinking Water Act. The federal and state agencies that regulate activities that may affect the quantity or quality of water resources are as follows:

- USEPA
 - Section 402 of the CWA – The National Pollutant Discharge Elimination System (NPDES) authorizes stormwater discharges to waters of the U.S., including wetlands.
 - Section 404 of the CWA – USEPA reviews and comments on USACE Section 404 permit applications for compliance with the Section 404(b) (1) guidelines and other statutes and authorities within its jurisdiction.
 - Safe Drinking Water Act (42 U.S.C. § 300f et seq.) protects the quality of public drinking water and its sources.
- USACE
 - Section 10 of the Rivers and Harbors Act regulates placement of wharfs, piers, jetties, and other structures over, under, or within waters of the U.S.
 - Section 404 of the CWA regulates discharge of fill material to waters of the U.S.
 - EO 11990, Protection of Wetlands (24 May 1977)
 - EO 11988, Floodplain Management (24 May 1977)
- U.S. Coast Guard
 - Section 9 of the Rivers and Harbors Act regulates placement of bridges, dams, dikes, and causeways over, under, or within navigable waters of the U.S.
- IDEM, Ohio EPA, and Kentucky Department for Environmental Protection (Kentucky DEP)
 - Section 401 of the CWA – Water Quality Certification; and
 - Section 402 of the CWA – General NPDES permit for construction-related stormwater discharges.

D.1 SURFACE WATER

Surface water resources crossed by the Indianapolis Line Subdivision, the Indianapolis Terminal Subdivision – Louisville Secondary Branch, and the areas affected by the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement on the L&I Line are listed in Table D.1-1. The Louisville Connection does not cross any NHD-mapped streams.

Table D.1-1. Surface Flow Crossings

Surface Flow Name	County and State	Flow Type ^{a, b}	Rail Line
India Branch	Marion County, IN	Perennial	Indianapolis Line Subdivision
Indian Creek	Marion County, IN	Perennial	Indianapolis Line Subdivision
Osborn Ditch	Marion County, IN	Intermittent	Indianapolis Line Subdivision
Pogues Run	Marion County, IN	Intermittent	Indianapolis Line Subdivision
Unnamed stream	Marion County, IN	Intermittent	Indianapolis Line Subdivision
Dry Branch	Hancock County, IN	Perennial	Indianapolis Line Subdivision
Flatfork Creek	Hancock County, IN	Intermittent	Indianapolis Line Subdivision

Surface Flow Name	County and State	Flow Type^{a, b}	Rail Line
Jackson Ditch	Hancock County, IN	Perennial	Indianapolis Line Subdivision
North Fork Dry Branch	Hancock County, IN	Intermittent	Indianapolis Line Subdivision
Stansbury Ditch	Hancock County, IN	Perennial	Indianapolis Line Subdivision
Bronnenberg Ditch	Madison County, IN	Perennial	Indianapolis Line Subdivision
Chesterfield Branch	Madison County, IN	Perennial	Indianapolis Line Subdivision
Fall Creek	Madison County, IN	Perennial	Indianapolis Line Subdivision
Lick Creek	Madison County, IN	Perennial	Indianapolis Line Subdivision
Pittsford Ditch	Madison County, IN	Perennial	Indianapolis Line Subdivision
Prairie Creek	Madison County, IN	Perennial	Indianapolis Line Subdivision
Unnamed stream	Madison County, IN	Intermittent	Indianapolis Line Subdivision
Buck Creek	Delaware County, IN	Artificial Path	Indianapolis Line Subdivision
Mud Creek	Delaware County, IN	Perennial	Indianapolis Line Subdivision
Small Branch	Delaware County, IN	Perennial	Indianapolis Line Subdivision
Truitt Ditch	Delaware County, IN	Intermittent	Indianapolis Line Subdivision
White River	Delaware County, IN	Artificial Path	Indianapolis Line Subdivision
Little Ditch	Randolph County, IN	Intermittent	Indianapolis Line Subdivision
Peach Creek	Randolph County, IN	Perennial	Indianapolis Line Subdivision
Price Ditch	Randolph County, IN	Perennial	Indianapolis Line Subdivision
Salt Creek	Randolph County, IN	Perennial	Indianapolis Line Subdivision
Shelley Ditch	Randolph County, IN	Intermittent	Indianapolis Line Subdivision
Sugar Creek	Randolph County, IN	Perennial	Indianapolis Line Subdivision
White River	Randolph County, IN	Perennial	Indianapolis Line Subdivision
Perennial tributary of White River	Randolph County, IN	Perennial	Indianapolis Line Subdivision
3 unnamed streams	Randolph County, IN	Intermittent	Indianapolis Line Subdivision
South Fork Stillwater River	Darke County, OH	Perennial	Indianapolis Line Subdivision
Stillwater River	Darke County, OH	Perennial	Indianapolis Line Subdivision
Perennial tributary of Stillwater River	Darke County, OH	Perennial	Indianapolis Line Subdivision
Swamp Creek	Darke County, OH	Perennial	Indianapolis Line Subdivision
Perennial tributary of Swamp Creek	Darke County, OH	Perennial	Indianapolis Line Subdivision
Woodington Run	Darke County, OH	Perennial	Indianapolis Line Subdivision
Loramie Creek	Shelby County, OH	Canal/Ditch	Indianapolis Line Subdivision
Mill Creek	Shelby County, OH	Perennial	Indianapolis Line Subdivision
Ninemile Creek	Shelby County, OH	Intermittent	Indianapolis Line Subdivision
Turtle Creek	Shelby County, OH	Artificial path	Indianapolis Line Subdivision
16 unnamed streams	Shelby County, OH	Intermittent	Indianapolis Line Subdivision

Surface Flow Name	County and State	Flow Type ^{a, b}	Rail Line
Lick Creek	Marion County, IN	Artificial Path	Indianapolis Terminal Subdivision – Louisville Secondary Branch
Little Buck Creek	Marion County, IN	Perennial	Indianapolis Terminal Subdivision – Louisville Secondary Branch
Pleasant Run	Marion County, IN	Artificial Path	Indianapolis Terminal Subdivision – Louisville Secondary Branch
8 unnamed tributaries of Young's Creek	Johnson County, IN	Intermittent	L&I Line – potential Elvin siding extension
2 unnamed streams	Johnson County, IN	Ephemeral	L&I Line – potential Elvin siding extension
Unnamed stream	Bartholomew County, IN	Intermittent	L&I Line – potential Brook siding extension
Flatrock River	Bartholomew County, IN	Artificial Path	L&I Line – proposed Flatrock River Bridge replacement

Sources: USGS, 2013, *National Hydrography Dataset (digital spatial data) for Indiana, Ohio, and Kentucky*, December 10, accessed May 8, 2014, <ftp://nhdftp.usgs.gov/DataSets/Staged/States/FileGDB/HighResolution/>.

USGS, 2014a, "Science in Your Watershed: General Introduction and Hydrologic Definitions," March 5, accessed September 12, 2014, <http://water.usgs.gov/wsc/glossary.html>.

USGS, 2014b, "National Hydrography Dataset (NHD) Model (v2.2)," May 27, available online at http://nhd.usgs.gov/NHDv2.2_poster_052714.pdf.

Notes:

^a Flow types are defined by USGS (2014a and 2014b) as follows:

- Perennial streams are those in natural channels that flow continuously.
- Intermittent streams are those in natural channels that flow only at certain times of the year based on groundwater levels, precipitation, springs, or snowmelt.
- Ephemeral streams are those in natural channels that flow only during and immediately after precipitation or snowmelt.
- An artificial path is an abstraction to facilitate hydrologic modeling through open water bodies and along coastal and Great Lakes shorelines and to act as a surrogate for lakes and other water bodies.
- A canal or ditch is an artificial open waterway constructed to transport water, to irrigate or drain land, to connect two or more bodies of water, or to serve as a waterway for watercraft.

^b Ephemeral drainages are listed for only the areas mapped during the wetland delineations performed at the sites of the potential Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge on the L&I Line in April 2014.

D.2 FLOODPLAINS

Construction areas associated with the Proposed Transaction could impact floodplains associated with the Flatrock River. Proposed construction areas are associated with the potential Elvin and Brook siding extensions and the proposed replacement of the Flatrock River Bridge on the L&I Line. Areas of potential floodplain impacts include areas within regulated floodplains where fill material could be used for construction purposes. Regulated floodplains are defined as floodplains subject to FEMA; Indiana Department of Natural Resources (DNR); city of Columbus, Indiana; or Bartholomew County, Indiana, floodplain regulations, and include flood zones designated as shaded Zone X, Zone AE, and the floodway of the Flatrock River. Flood zone designations are defined in Table D.2-1.

Table D.2-1. FEMA Flood Zones Defined

Flood Zone	Definition^{a, b}	Subject to Federal, State, and Local Regulations
Unshaded Zone X (Outside of the 500-Year Floodplain)	“...areas outside the 1-percent and .2-percent-annual-chance floodplains.”	No
Shaded Zone X (500-Year Floodplain)	“...areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee.”	Yes
Zone AE (100-Year Floodplain)	“Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods.”	Yes
Regulatory Floodway (Located within 100-Year Floodplain)	“...the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.”	Yes

Source: FEMA, 2014a, “Flood Zones,” accessed May 6, 2014, <https://msc.fema.gov/webapp/wcs/stores/servlet/info?storeId=10001&catalogId=10001&langId=-1&content=floodZones&title=FEMA%2520Flood%2520Zone%2520Designations>.

Notes:

^a A 1-percent-annual-chance flood = 100-year flood.

^b A 0.2-percent-annual-chance flood = 500 year flood.

The potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement would likely use fill material for construction purposes. However, only the Flatrock River Bridge and portions of the potential Brook siding extension occur within flood zones

considered to be regulated as a floodway and flood fringe¹ (City of Columbus 2013). Floodplain regulations are detailed in Section D.2.4, below. Accordingly, only the potential Brook siding extension and the proposed Flatrock River Bridge replacement were evaluated for impacts on floodplains.

D.2.1 Methodology

Floodplains that could be impacted by the Proposed Transaction were identified using FEMA's Map Service Center (MSC) (FEMA 2014b). The MSC provides FIRMs that depict FEMA-mapped flood zones that identify where flooding could occur and the likelihood (the annual percent chance) of flooding in a particular flood zone. FEMA-mapped floodplains and areas where fill material could be used were digitally overlaid onto 2012 Environmental Systems Research Institute (Esri) aerial imagery to determine where areas that could receive fill material and floodplains overlap. Areas of floodplain and fill material overlap were considered areas where floodplain impacts could occur.

Potential floodplain impacts caused by the Proposed Transaction were estimated using information provided by CSX Transportation, Inc. (CSXT), the USGS NED (USGS 2014c), and assumed construction criteria detailed in Section D.2.3, below. Based on this information, the total amount of fill material that could be placed within regulated floodplains was estimated. Potential impacts on regulated floodplains were calculated as volume of fill placed within a regulated floodplain, as discussed in Section D.2.3, below.

FEMA, Indiana DNR, and the city of Columbus websites were used to determine what federal, state, and local regulations apply to construction activities occurring within regulated floodplains.²

D.2.2 Encountered Floodplains

The potential Elvin siding extension would be constructed between milepost (MP) 20.8 and MP 22.9 (see Figure D.2-1). The potential Brook siding extension would be constructed between MP 37.9 and MP 40.0, and the proposed Flatrock River Bridge replacement would be constructed at MP 40.19 (see Figure D.2-2). Both the potential Brook siding extension and the proposed Flatrock River Bridge replacement would be located on the western edge of the city of Columbus in Bartholomew County, Indiana. Areas where construction activities associated with the potential Elvin siding extension would occur are depicted on FIRM map panels 18081C0231D, 18081C0223D, and 18081C0234D. Areas where construction activities associated with the potential Brook siding extension and the proposed Flatrock River Bridge replacement would occur are depicted on FIRM map panels 1800070020D and 1800070010D (see Attachment D-1) (FEMA 2014b). The potential Elvin siding extension is located outside of the 500-year floodplain and is mapped by FEMA as an unshaded Zone X flood zone area. Unshaded Zone X flood zones are not considered regulated flood zones. The potential Brook siding extension and the proposed Flatrock River Bridge replacement would encounter the FEMA-mapped flood zones listed in Table D.2-2.

¹ The Columbus and Bartholomew County Zoning Ordinance defines flood fringe as "those portions of the floodplain lying outside the floodway" (City of Columbus 2013).

² The city of Columbus Planning Department is acting Floodplain Administrator for the city of Columbus and Bartholomew County.

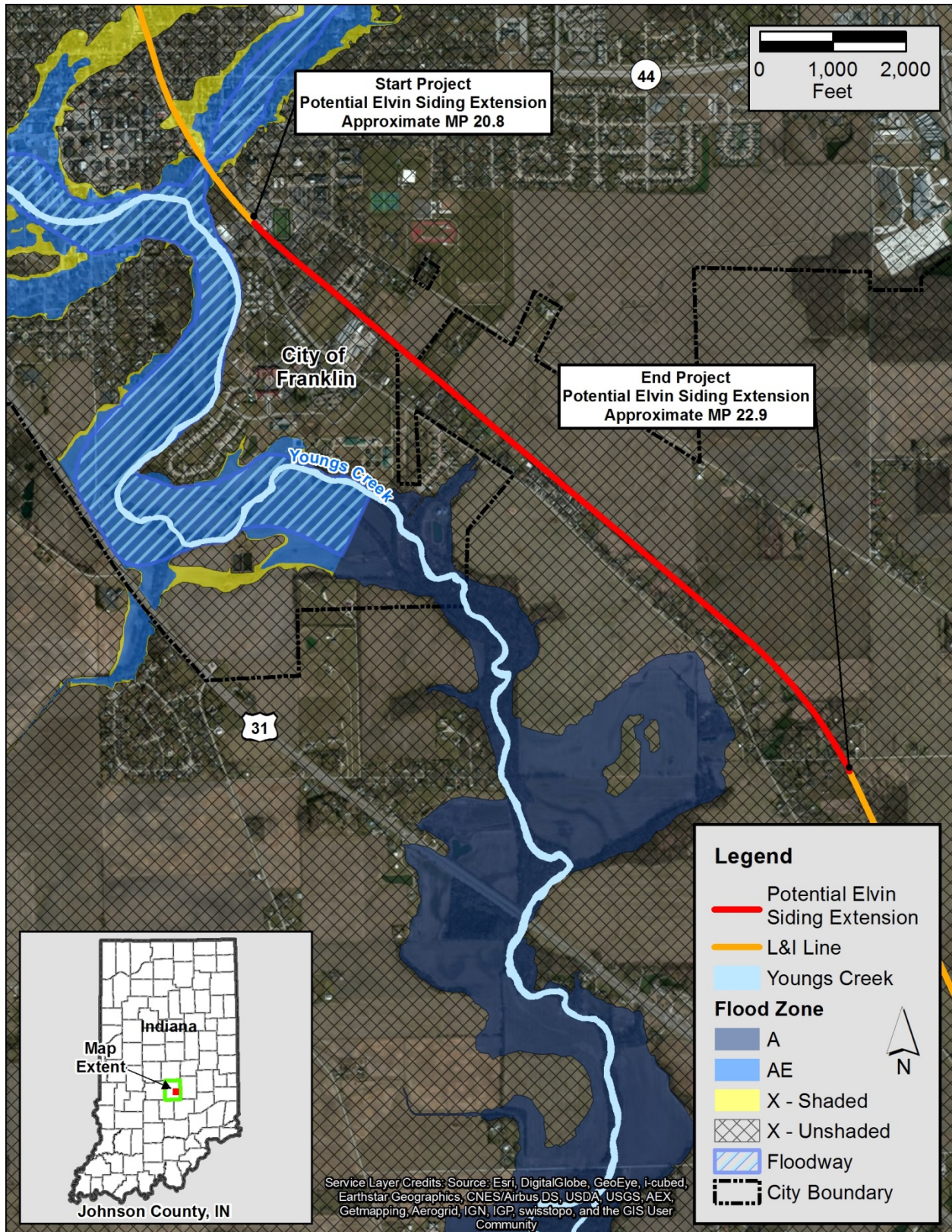


Figure D.2-1. Flood Zones near the Potential Elvin Siding Extension

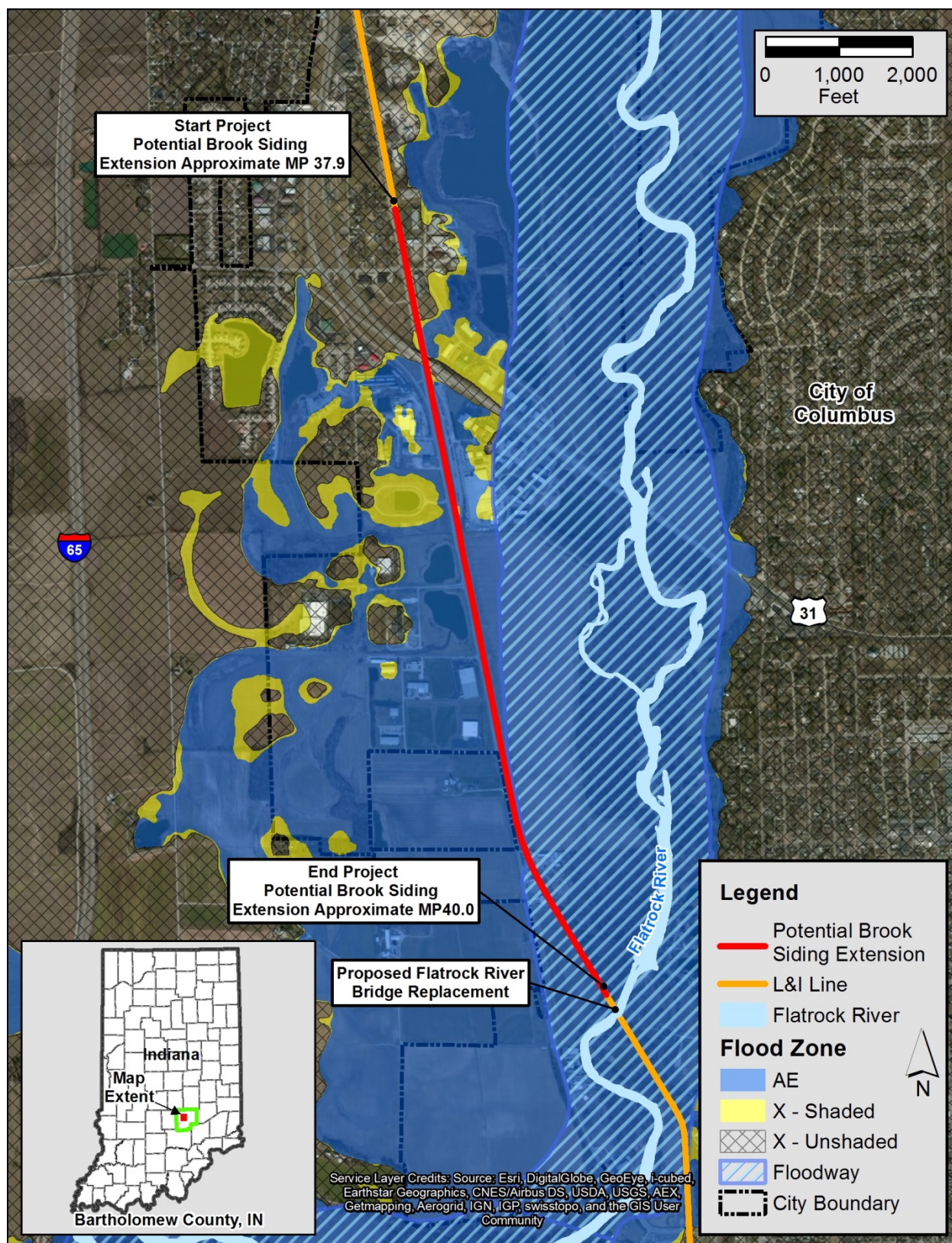


Figure D.2-2. Flood Zones near the Potential Brook Siding Extension and Proposed Flatrock River Bridge Replacement

Table D.2-2. Flood Zones Encountered by Potential or Proposed Construction Areas

Encountered FEMA-mapped Flood Zone	Potential or Proposed Construction Area	Length of Construction Area in Flood Zone (linear feet)
Unshaded Zone X	Brook Siding Extension	1,873
Shaded Zone X	Brook Siding Extension	430
Zone AE	Brook Siding Extension	6,655
Floodway (within Zone AE)	Brook Siding Extension and Flatrock River Bridge Replacement	2,711 ^a
	Total	11,669

Note:

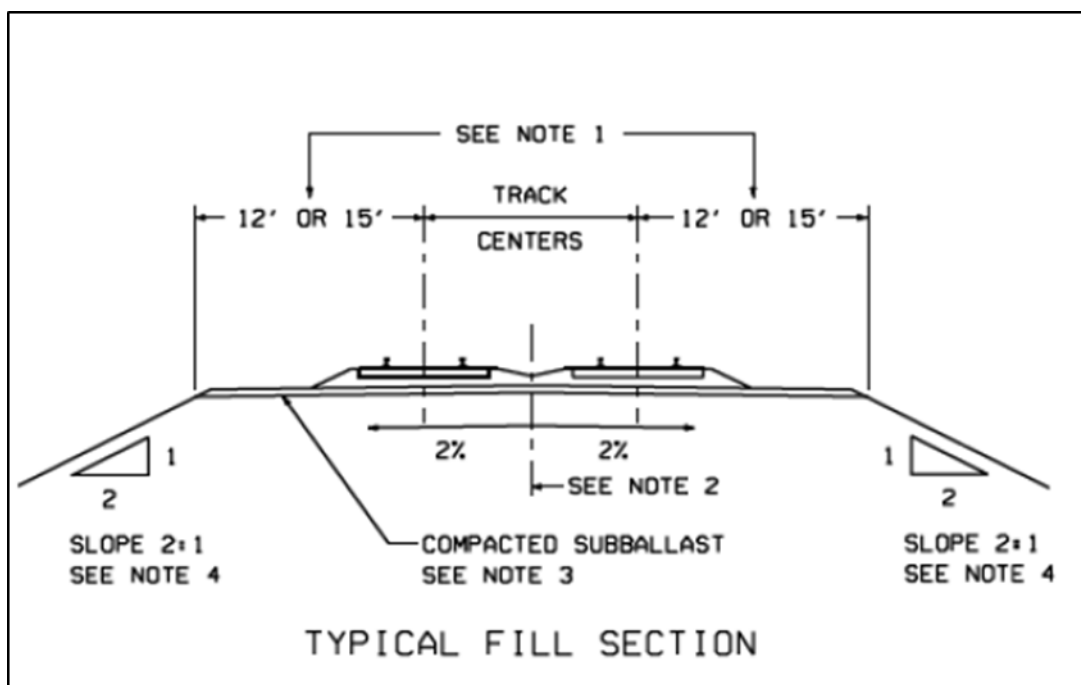
^a The proposed Flatrock River Bridge replacement would be approximately 500 feet long.

D.2.3 Estimated Quantity of Fill Within Regulated Floodplains

Estimates of fill related to the potential Brook siding extension were based on CSXT's *Standard Specifications for the Design and Construction of Private Sidetracks*, Diagram: Roadbed Sections (2601) (see Figure D.2-3) (CSXT 2007) and the NED (USGS 2014c). In addition, the following assumptions were made regarding the potential Brook siding extension:

1. The existing top of subgrade elevation would be maintained for the Brook siding extension, was estimated based on NED elevations along the existing track, and was approximated to average 5 feet above top of existing grade.
2. The existing siding is assumed to meet typical design criteria detailed in CSXT's "Standard Specifications for the Design and Construction of Private Sidetracks," Diagram: Roadbed Sections (2601).
3. Five feet of vertical fill with 2H:1V side slope embankments would be used for the construction of the Brook siding extension.
4. CSXT's "Standard Specifications for the Design and Construction of Private Sidetracks," Diagram: Roadbed Sections (2601) (see Figure D.2-3), provides dimensions that would be used for the construction of the Brook siding extension.
5. The distance between track centerlines would be 20 feet.
6. The distance from track centerlines to the edge of subgrade would be 15 feet.

Based on these assumptions and the design criteria depicted in Figure D.2-3, an estimate for fill material placed within each flood zone was calculated and is presented in Table D.2-3. These are estimates only; fill quantity calculations would be updated during design to confirm floodplain impacts.



Source: CSXT, 2007, *Standard Specifications for the Design and Construction of Private Sidetracks*, Office of Vice President–Engineering, Jacksonville, Florida, June 1, available online at http://www.csx.com/share/wwwcsx_mura/assets/File/Customers/Services_and_Partners/CSX_Industrial_Sidetrack_Manual_063003.pdf.

Note: Only the portion of the diagram relevant to the proposed Brook siding extension is shown. The entire diagram is available at the source listed above.

Figure D.2-3. Standard Specifications for the Design and Construction of Private Sidetracks,” Diagram: Roadbed Sections (2601)

Table D.2-3. Estimated Quantity of Fill for the Potential Brook Siding Extension

Flood Zone	Linear Feet	Cross-Sectional Area (ft ²)	Volume (ft ³)	Volume (acre-ft)
Shaded Zone X	430	100	43,000	0.99
Zone AE	6,655	100	665,500	15.28
Floodway (Within Zone AE)	2,211	100	221,100	5.08
Total	9,296	N/A	929,600	21.35

The proposed Flatrock River Bridge replacement would involve constructing a new bridge with longer spans and fewer piers. As a result, there would be minor fill associated with the new piers; however, because the proposed replacement bridge has not yet been designed, no fill material estimates were made for the proposed structure. Clearance under the proposed replacement bridge would be increased to pass the current 100-year flood elevation.³ However, a Construction in a Floodway permit would be required, and hydrologic and hydraulic modeling would be needed to determine what impacts, if any, the proposed replacement bridge would have on the 100-year and 500-year floodplains and base-flood elevations.

D.2.4 Federal, State, and Local Floodplain Regulations

D.2.4.1 Federal Regulations

The National Flood Insurance Program (NFIP) Regulations in 44 Code of Federal Regulations (C.F.R.) § 60.3(d) provides floodplain management criteria for flood-prone areas. 44 C.F.R. § 60.3 states that when a regulatory floodway has been designated, the community shall

prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

Standard engineering practice for demonstrating that the proposed encroachment would not result in the increase in flood levels is to obtain the effective hydraulic model (EHM) used by FEMA for the encountered floodway. The EHM would be used to produce the following models: duplicate effective model (DEM), corrected effective model (CEM), existing conditions model (ECM), and proposed conditions model (PCM). The models are described in the following sections.

Duplicate Effective Model

The DEM is a copy of the hydraulic analysis used in the effective Flood Insurance Study (FIS), referred to as the effective model. The EHM should be obtained and then reproduced on the requester's equipment to produce the DEM. This is required to ensure that data from the EHM has been transferred correctly to the requester's equipment and to ensure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

If data from the EHM is available and the same modeling program is being used, the requester must generate models that duplicate the FIS profiles and the elevations shown in the Floodway Data Table in the FIS report to within 0.1 foot.

If the EHM is not available, the new effective model must be calibrated to reproduce the FIS profiles within 0.5 foot. If an alternative hydraulic model is used, it must be shown that the use

³ The current bridge does not pass the 100-year flood elevation.

of the original model is inappropriate, and the new model must be calibrated to reproduce the FIS profiles within 0.5 foot.

Corrected Effective Model

The CEM is the model that corrects any errors that occur in the DEM when compared to the EHM, adds any additional cross sections to the DEM, or incorporates more detailed topographic information than information used in the current EHM. The CEM must not reflect any human-made physical changes since the date of the EHM.

Existing Conditions Model

The DEM or CEM is modified to produce the ECM to reflect any modifications that have occurred within the floodplain since the date of the EHM but prior to the construction of the project. If no modification has occurred since the date of the effective model, then this model would be identical to the CEM or DEM. The ECM may be required to support conclusions about the actual impacts of the project associated with the PCM or to establish more up-to-date models on which to base the PCM.

It is conventional to conduct a bridge and hydrologic and hydraulic survey to obtain existing cross-section and bridge geometry so that current ground elevations/bridge dimensions are reflected in the model and to ensure that the channel/bridge geometry has not changed.

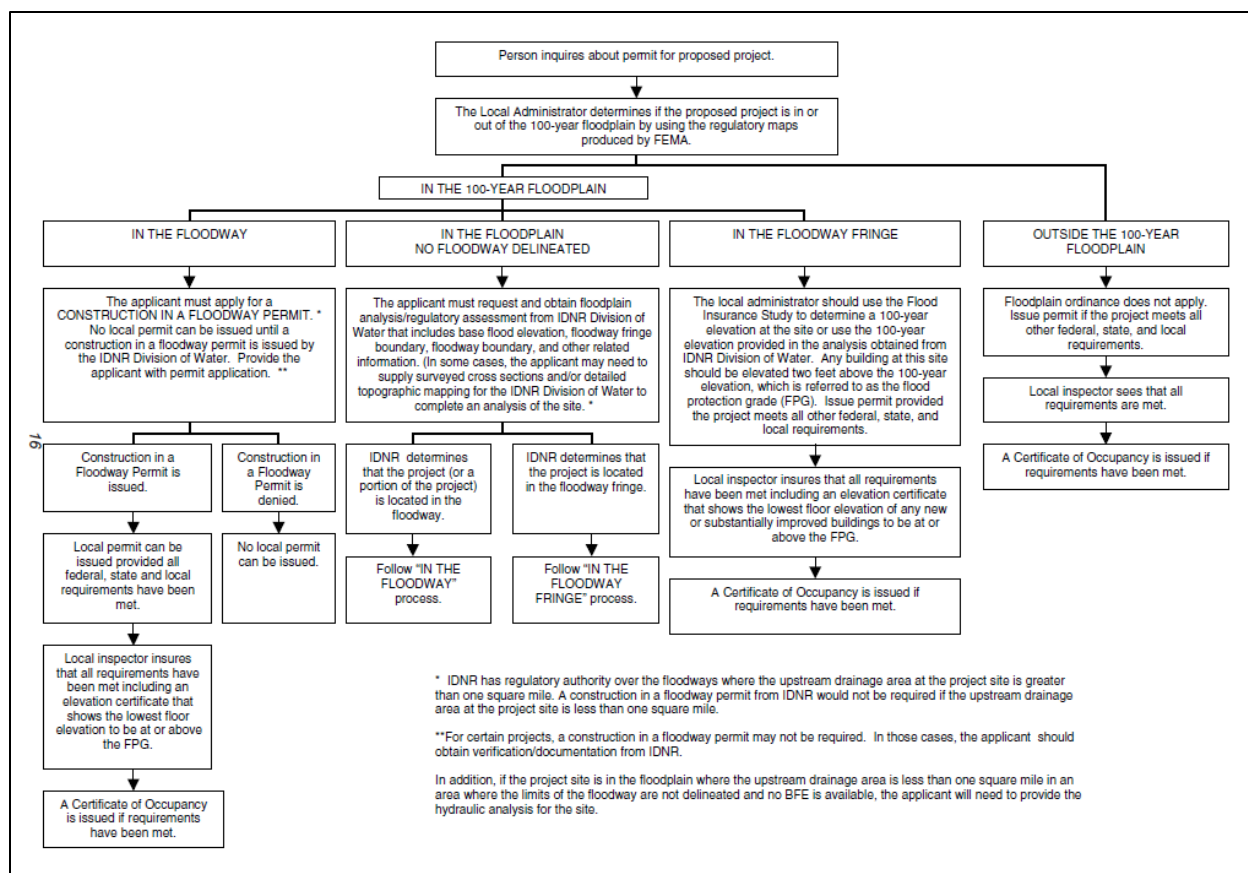
Proposed Conditions Model

The ECM (or DEM or CEM, as appropriate) is modified to reflect revised or post -project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project.

D.2.4.2 State Regulations

In the state of Indiana, the Natural Resources Commission is responsible for regulating floodplain activities; the Natural Resources Commission has given authority to Indiana DNR to regulate flood control activities in the state of Indiana (Indiana DNR 2002). Indiana Code (IC) specifies that a permit from Indiana DNR must be obtained prior to construction activities within a floodway (IC 14-28-1). Figure D.2-4 depicts the Indiana DNR permitting process for floodplains. All Indiana DNR regulations related to floodplains are detailed in IC 14-28-1.

The Proposed Transaction would not include any construction in Ohio or Kentucky; therefore, the floodplain regulations of those states are not summarized.



Source: Indiana DNR, 2002, *Local Floodplain Administrator's Guide*, Indiana DNR Division of Water, available online at <http://www.in.gov/dnr/water/files/FloodAdmGuide.pdf>.

Figure D.2-4. Indiana Permit Procedure Flow Chart

D.2.4.3 Local Regulations

The Columbus and Bartholomew County Zoning Ordinance details local (that is, city of Columbus and Bartholomew County) floodplain regulations. The zoning ordinances for these two municipalities have been combined into a single set of ordinances. Section 4.7 of the zoning ordinance states flood zones Shaded X and AE are under the jurisdiction of local regulations and that any development within these areas would require a floodplain permit.

In addition, Section 4.7 states:

No development shall be allowed which acting alone or in combination with existing or future development, will increase the regulatory flood more than 0.14 of one foot. The increase in the regulatory flood resulting from any development shall be determined by IDNR as an element of the permit review process. In no instance shall the City of Columbus or Bartholomew County be assumed to have responsibility for this determination. (City of Columbus 2013)

Additional details regarding local floodplain regulations are available in the Columbus and Bartholomew County Zoning Ordinance, Section 4.7.

As discussed in Section D.2.2, the potential Elvin siding extension is not located within FEMA mapped floodplains or a regulated flood zone. Therefore, the local floodplain regulations of the City of Franklin and Johnson County were not reviewed.

D.3 WETLANDS

The locations of wetlands and other waters of the U.S. identified for the Proposed Transaction and additional details of wetland delineation methodologies are presented in the Wetland Delineation Report, provided in Attachment D-2.

D.4 WATER QUALITY

Section 303(d) impaired waters crossed by the Indianapolis Line Subdivision and the Indianapolis Terminal Subdivision – Louisville Secondary Branch are listed in Table D.4-1; their designated uses and 303(d)-listed impairments are also identified. The Louisville Connection, the potential Elvin and Brook siding extensions, and the proposed Flatrock River Bridge replacement do not cross impaired waters.

Table D.4-1. Clean Water Act Section 303(d)-Listed Water Resources

Surface Flow Name	County and State	Designated Use	Impairment ^a	Rail Line
Poques Run	Marion County, IN	Fishing, recreation, aquatic life	E. Coli, Impaired Biotic Communities	Indianapolis Line Subdivision
Pleasant Run	Marion County, IN	Fishing, recreation, aquatic life	Impaired Biotic Communities, PCBs (fish tissue)	Indianapolis Terminal Subdivision – Louisville Secondary Branch
Lick Creek-Manifold/Mcfadden Ditches	Madison County, IN	Fishing, recreation, aquatic life	E. Coli	Indianapolis Line Subdivision
Prairie Creek	Madison County, IN	Fishing, recreation, aquatic life	E. Coli	Indianapolis Line Subdivision
Fall Creek	Madison County, IN	Fishing, recreation, aquatic life	E. Coli	Indianapolis Line Subdivision
Mud Creek and Other Tributaries	Delaware County, IN	Fishing, recreation, aquatic life	E. Coli	Indianapolis Line Subdivision
Shoemaker Ditch and Other Tributaries	Delaware County, IN	Fishing, recreation, aquatic life	E. Coli	Indianapolis Line Subdivision

Surface Flow Name	County and State	Designated Use	Impairment ^a	Rail Line
Buck Creek	Delaware County, IN	Fishing, recreation, aquatic life	E. Coli, PCBs (fish tissue)	Indianapolis Line Subdivision
White River	Delaware County, IN	Fishing, recreation, aquatic life	Impaired Biotic Communities, PCBs (fish tissue)	Indianapolis Line Subdivision
White River	Randolph County, IN	Fishing, recreation, aquatic life	E. Coli, PCBs (fish tissue)	Indianapolis Line Subdivision
Gettenger Ditch and Other Tributaries	Randolph County, IN	Fishing, recreation, aquatic life	PCBs (fish tissue)	Indianapolis Line Subdivision
White River	Randolph County, IN	Fishing, recreation, aquatic life	E. Coli, Impaired Biotic Communities, PCBs (fish tissue), Total Mercury (fish tissue)	Indianapolis Line Subdivision
Swamp Creek	Darke County, OH	Fishing, recreation, aquatic life	E.Coli, Nutrients	Indianapolis Line Subdivision
Mill Creek	Shelby County, OH	Fishing, recreation, aquatic life	Nutrients	Indianapolis Line Subdivision
Turtle Creek	Shelby County, OH	Fishing, recreation, aquatic life	Nutrients	Indianapolis Line Subdivision
Nine Mile Creek	Shelby County, OH	Fishing, recreation, aquatic life	Nutrients	Indianapolis Line Subdivision

Sources: 327 Indiana Administrative Code 2, Water Pollution Control Division, Water Quality Standards, available online at <http://www.in.gov/legislative/iac/T03270/A00020.PDF>.

IDEM, 2010, "2010 Section 303(d) List of Impaired Waters," October 8, available online at <http://www.in.gov/idem/nps/3889.htm>.

IDEM, n.d., "Online e303d Tool" (interactive map), <http://www.in.gov/idem/nps/pages/e303d/index.html>.

Ohio EPA, 2012, Ohio 2012 Integrated Water Quality Monitoring and Assessment Report, March 20, available online at <http://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx>.

USEPA, 2014, Reach Address Database (Shapefiles), February 26, <http://water.epa.gov/scitech/datait/tools/waters/data/downloads.cfm>.

Note:

^a PCBs = polychlorinated biphenyls

D.5 REFERENCES

44 C.F.R. § 60.3. Flood Plain Management Criteria for Flood-prone Areas.

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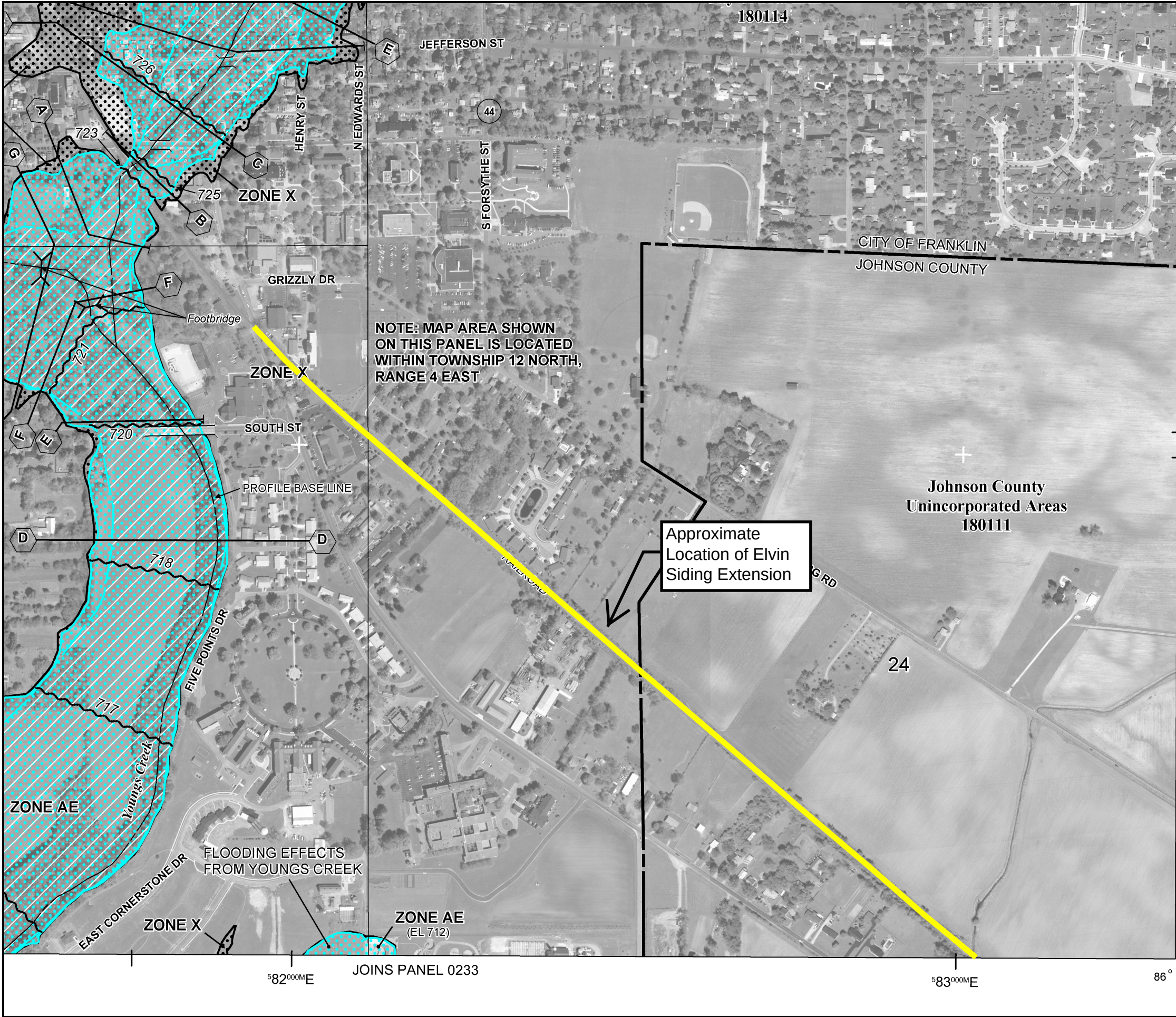
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ATTACHMENT D-1

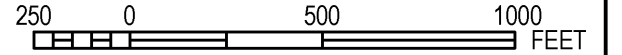
FEMA FLOOD INSURANCE RATE MAPS



National Flood Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'



PANEL 0231D

FIRM

FLOOD INSURANCE RATE MAP
JOHNSON COUNTY,
INDIANA
AND INCORPORATED AREAS

PANEL 231 OF 352
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN, CITY OF	180114	0231	D
JOHNSON COUNTY	180111	0231	D

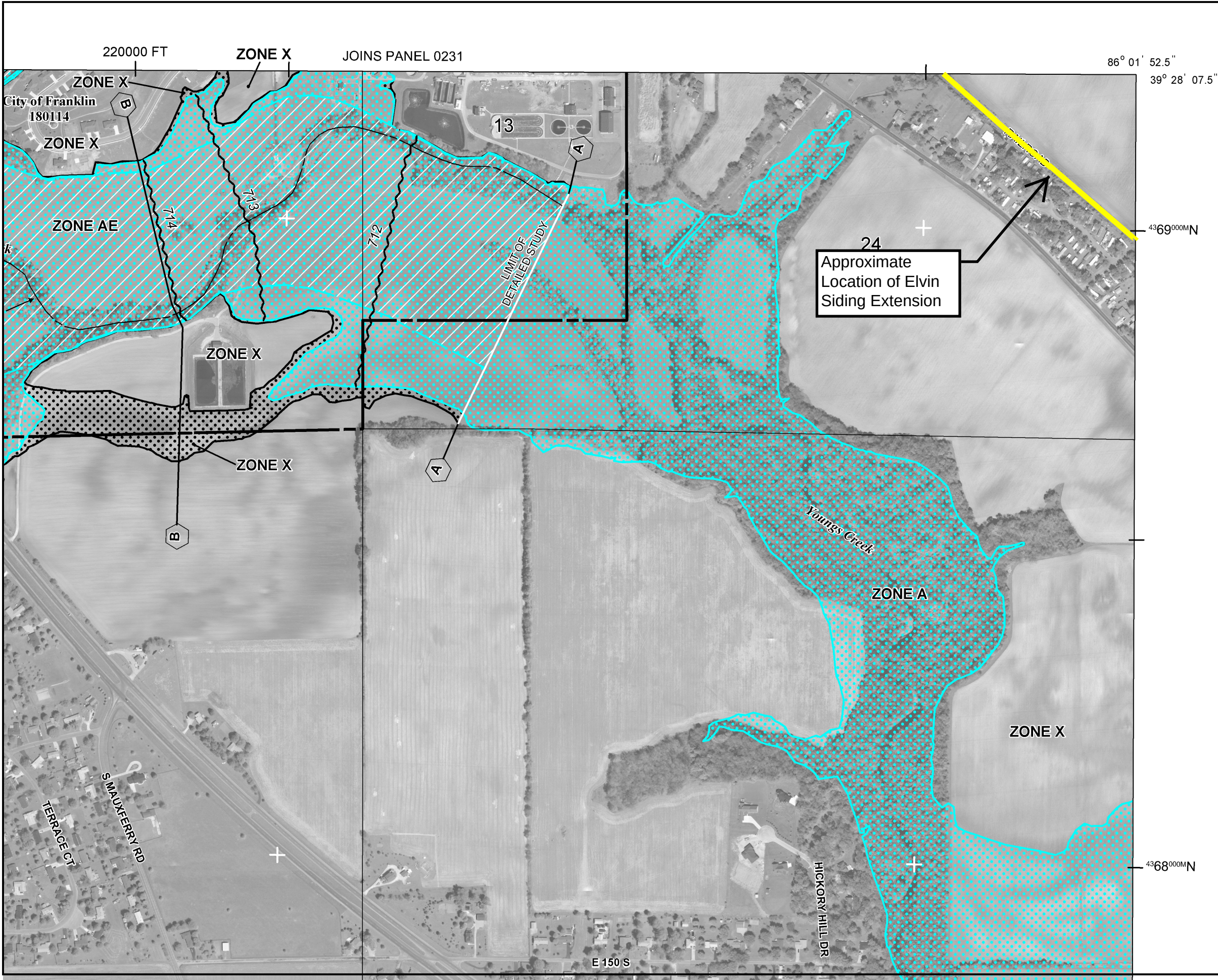
Notice to User: The Map Number shown below should be used when placing map orders, the Community Number shown above should be used on insurance applications for the subject community.



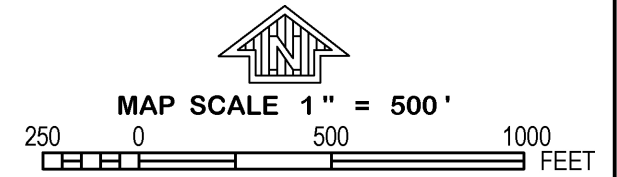
MAP NUMBER
18081C0231D
EFFECTIVE DATE
AUGUST 2, 2007

Federal Emergency Management Agency

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National Flood Insurance Program at 1-800-638-6620.



NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0233D

FIRM
FLOOD INSURANCE RATE MAP
JOHNSON COUNTY,
INDIANA
AND INCORPORATED AREAS

PANEL 233 OF 352
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

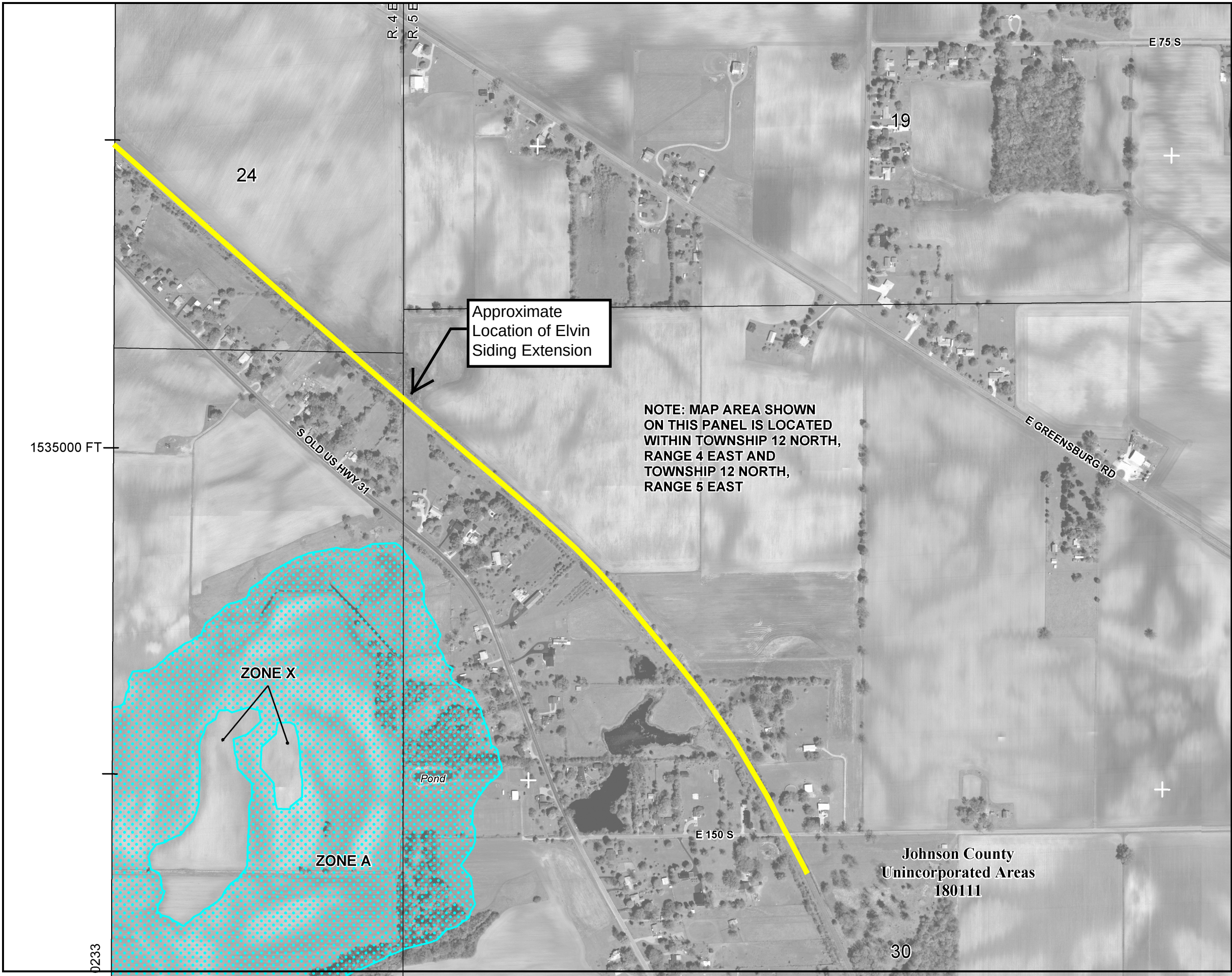
COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN, CITY OF	180114	0233	D
JOHNSON COUNTY	180111	0233	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**
18081C0233D
EFFECTIVE DATE
AUGUST 2, 2007

Federal Emergency Management Agency

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Approximate
Location of Elvin
Siding Extension

NOTE: MAP AREA SHOWN
ON THIS PANEL IS LOCATED
WITHIN TOWNSHIP 12 NORTH,
RANGE 4 EAST AND
TOWNSHIP 12 NORTH,
RANGE 5 EAST

National Flood Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'

250

0

500

1000

FEET

NFI

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0234D

FIRM
FLOOD INSURANCE RATE MAP
JOHNSON COUNTY,
INDIANA
AND INCORPORATED AREAS

PANEL 234 OF 352
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN, CITY OF	180114	0234	D
JOHNSON COUNTY	180111	0234	D

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MAP NUMBER
18081C0234D
EFFECTIVE DATE
AUGUST 2, 2007

Federal Emergency Management Agency

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5

6



APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP

CITY OF
COLUMBUS,
INDIANA
BARTHOLOMEW COUNTY

PANEL 10 OF 30
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
180007 0010 D

MAP REVISED:
FEBRUARY 19, 1997



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

A

B

C



APPROXIMATE SCALE

1000 0 1000 FEET

Approximate
Location of Brook
Siding Extension

Approximate
Location of
Flatrock River
Bridge

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
COLUMBUS,
INDIANA
BARTHOLOMEW COUNTY

PANEL 20 OF 30
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
180007 0020 D

MAP REVISED:
FEBRUARY 19, 1997



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

WETLAND DELINEATION REPORT

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Appendix B	EPA Rapid Bioassessment Data Forms
Appendix C	Site Photographs

**CSXT/L&I JOINT USE SUPPLEMENTAL EA
Elvin & Brook Siding Extensions & Flatrock River Bridge Replacement**

WETLAND DELINEATION REPORT

Bartholomew and Johnson Counties, Indiana

1.0 PROJECT BACKGROUND

CSX Transportation, Inc. (CSXT) and Louisville & Indiana Railroad Company, Inc. (L&I) (jointly, Applicants) filed an application with the Surface Transportation Board (Board or STB) seeking Board authority for CSXT to acquire from and jointly use with the L&I a perpetual, non-exclusive operating easement¹ over 106.5 miles of the L&I rail line (L&I Line). The L&I Line extends from a connection with CSXT in Indianapolis, Indiana, milepost (MP) 4.0, and a connection with CSXT in Louisville, Kentucky, MP 110.5. As part of the joint use application, CSXT has proposed to extend the existing Elvin and Brook sidings and to replace the Flatrock River Bridge (see Figure 1, Project Location).

In an effort to evaluate impacts on aquatic resources, a wetland delineation was performed at the sites of the proposed Elvin and Brook siding extensions and the Flatrock River Bridge replacement. This report documents the methodology and results of the wetland delineation.

2.0 WETLAND DELINEATION METHODOLOGY

On behalf of CSXT and L&I, qualified wetland scientists conducted aquatic resource delineations (including wetlands and streams) at the proposed siding extensions on April 1 and 2, 2014, in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Environmental Laboratory August 2010). For purposes of delineating aquatic resources, a study area consisting of existing L&I right-of-way (ROW) was established along the proposed siding extensions. The study area for the proposed Flatrock River Bridge replacement was an area that included 100 feet on either side of the L&I Line; the larger study area was used to accommodate potential access and staging areas associated with the bridge replacement. The proposed Elvin siding extension would be constructed west of the existing track, and the proposed Brook siding would be constructed east of the existing track. The aquatic resource delineation was completed within L&I ROW only on the side of the rail line where the proposed construction activities would occur.

Prior to field delineations, a desktop survey was conducted using National Wetlands Inventory (NWI) maps, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) hydric soils coverage, the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD), and USDA NRCS color aerial photographs to identify possible waters of the U.S. and areas historically prone to wetland development.

¹ A railroad operating easement is an agreement between railroad companies that grants one railroad the right to operate over a rail line while the granting railroad continues to own the underlying land.

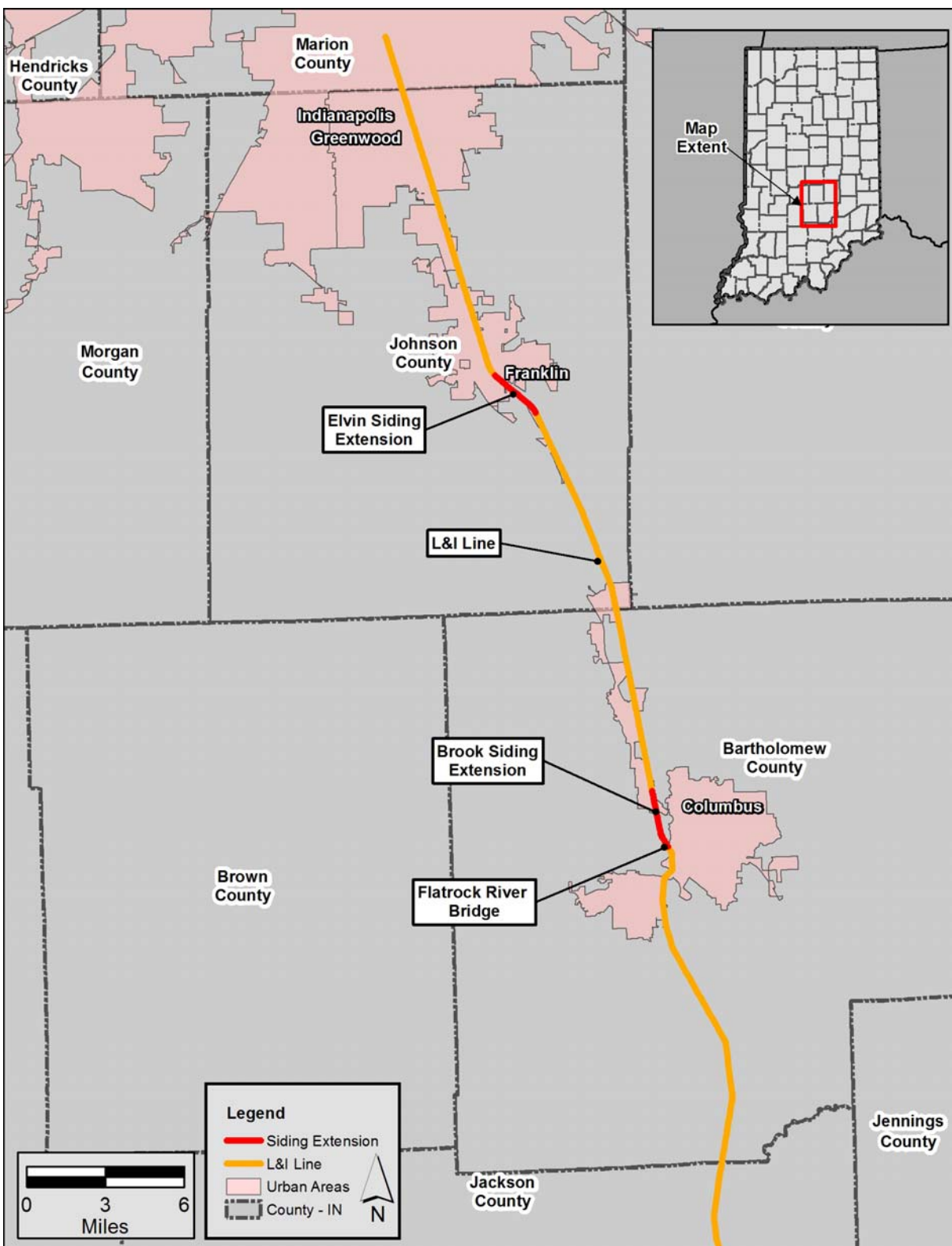


Figure 1. Project Location

Based on field observations, a “Wetland Determination Data Form – Midwest Region” was completed for each sample point. These forms are presented in Appendix A. The *2014 National Wetland Plant List (Midwest Region)* (Lichvar et al. 2014) was used to determine wetland indicator status of vegetation noted in the Wetland Determination Data Forms. Sample points and wetland boundaries were mapped in the field using global positioning system (GPS) technology and were classified according to *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. December 1979). Potential waterways were also identified and are summarized in this report; U.S. Environmental Protection Agency (USEPA) Rapid Bioassessment data forms are presented in Appendix B. Lastly, photographic documentation of observed aquatic resources is provided in Appendix C.

3.0 WETLAND DELINEATION RESULTS

During the April 2014 wetland delineation, a total of 10 sample locations were analyzed for wetland criteria in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Environmental Laboratory August 2010). See Appendix A for Wetland Determination Data Forms and Figure 2 for sample point and wetland locations.

The field delineation identified palustrine emergent (PEM) and palustrine forested (PFO) wetlands, as classified in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. December 1979), within the study area. Table 1 provides a summary of the delineated wetlands.

Table 1. Delineated Wetlands

Sample Point ^a	Fig 2 Sheet No.	Photo No.	Wetland Classification ^b (Cowardin)	Area ^c (acre)	Nearest Siding	Comments
S-1	2	4	PEMA/PEMC	0.02	Elvin	Isolated emergent wetland located at the base of the railroad embankment. The narrow depression was dominated by emergent hydrophytes, and standing water was observed at the time of the field visit.
S-3	2,3	6		0.25	Elvin	Emergent wetland located at the base of the railroad embankment. The narrow depression was inundated at the time of the field visit, and hydrology appeared to be supplied via drainage structures that convey agricultural runoff from the adjacent field.

Sample Point ^a	Fig 2 Sheet No.	Photo No.	Wetland Classification ^b (Cowardin)	Area ^c (acre)	Nearest Siding	Comments
S-4	5	8		0.02	Brook	Emergent wetland fringe of an unnamed perennial tributary of Flatrock River. The narrow wetland fringe was saturated and displayed a dominance of emergent hydrophytes.
S-9	6	14	PFOA	0.54	Brook	Forested wetland located southeast of the Flatrock River Bridge. The area appeared to be at a lower elevation compared to the upland sample points located on the southwest and northwest banks of Flatrock River.
Total Wetland Area				0.83		

Notes:

^a S = sample point recorded during the wetland delineation. Sample points S-2, S-5, S-6, S-7, S-8, and S-10 did not meet wetland criteria.

^b PEMA/PEMC = Palustrine Emergent Temporarily/Seasonally Flooded Wetland; PFOA = Palustrine Forested Temporarily Flooded Wetland.

^c Area represents the total area delineated within and adjacent to the study area.

4.0 DEFINED CHANNELS

The field survey identified one named waterway (Flatrock River) and four unnamed waterways that display defined channels within the study area. Flatrock River is located near Columbus, Indiana, and is south of the proposed Brook siding extension. Three unnamed channels were identified along the proposed Elvin siding extension, and one unnamed channel was identified along the proposed Brook siding extension. Waterways determined to have defined channels are presented in Table 2 and Figure 2, and are further detailed in Appendix B, USEPA Rapid Bioassessment Data Forms.

Table 2. Defined Channels

ID^a	Fig 2 Sheet No.	Photo No.	Flow Regime	Name	Nearest Siding	Description
WOUS-1	2	1,2	Perennial	Unnamed	Elvin	NHD-mapped tributary of Young's Creek. The waterway was conveyed under the railroad through a large concrete drainage structure. The upstream portion appeared to be channelized through an agricultural field.
WOUS-2	2	3	Ephemeral	Unnamed	Elvin	Unmapped ephemeral drainage that conveys flow toward WOUS-1. The drainage is a narrow depression located at the base of the railroad embankment.
WOUS-3	3	7	Ephemeral	Unnamed	Elvin	NHD-mapped ephemeral drainage that is conveyed through culverts into a human-made impoundment west of the L&I Line.
WOUS-4	5	8,9	Perennial	Unnamed	Brook	NHD-mapped tributary of Flatrock River. The linear drainage is located south of the Columbus rail yard.
WOUS-5	6	16,17	Perennial	Flatrock River	Brook	NHD mapped perennial waterway located west of Columbus, Indiana.

Note:

^a WOUS = Water of the U.S.

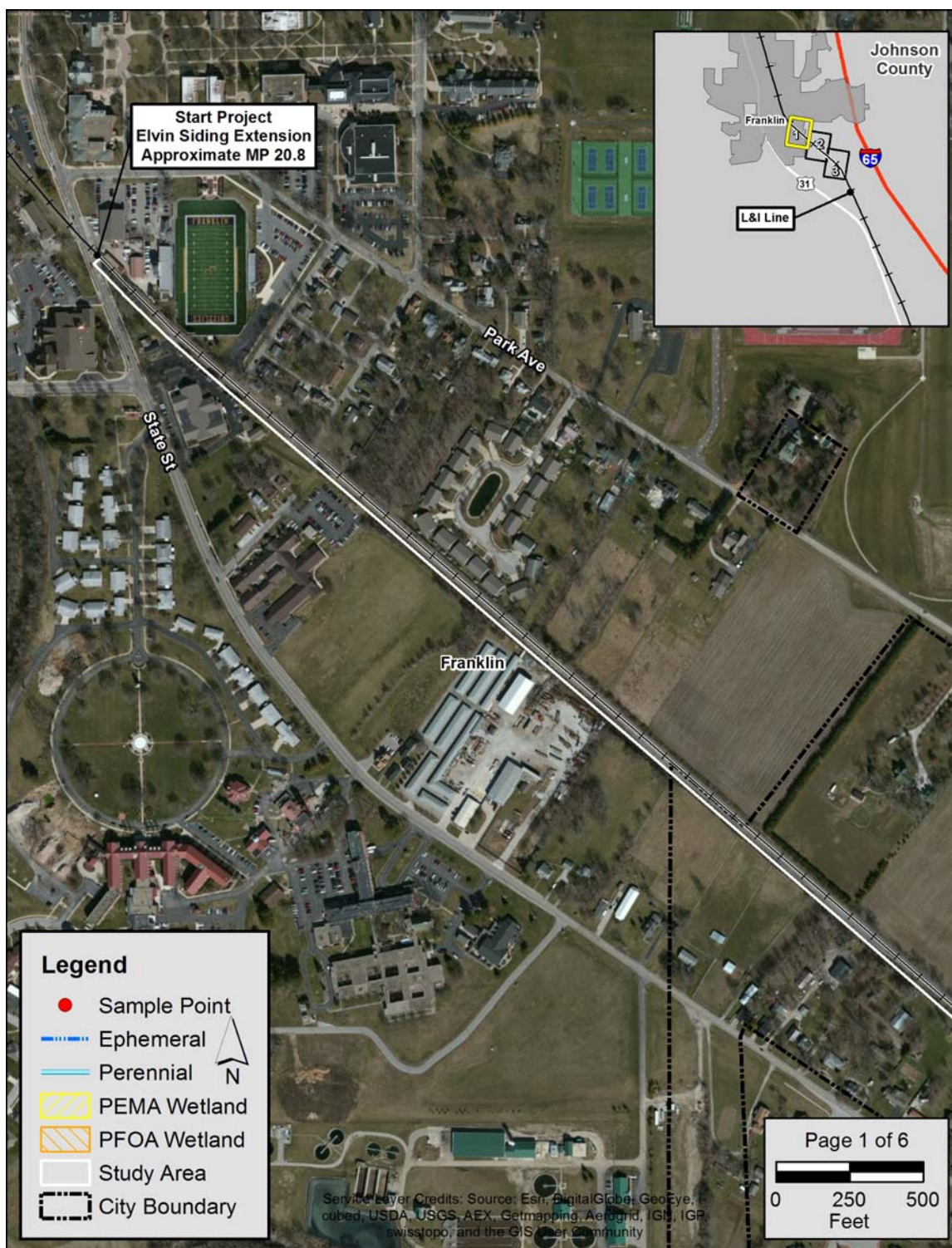


Figure 2. Aquatic Resources – Sheet 1

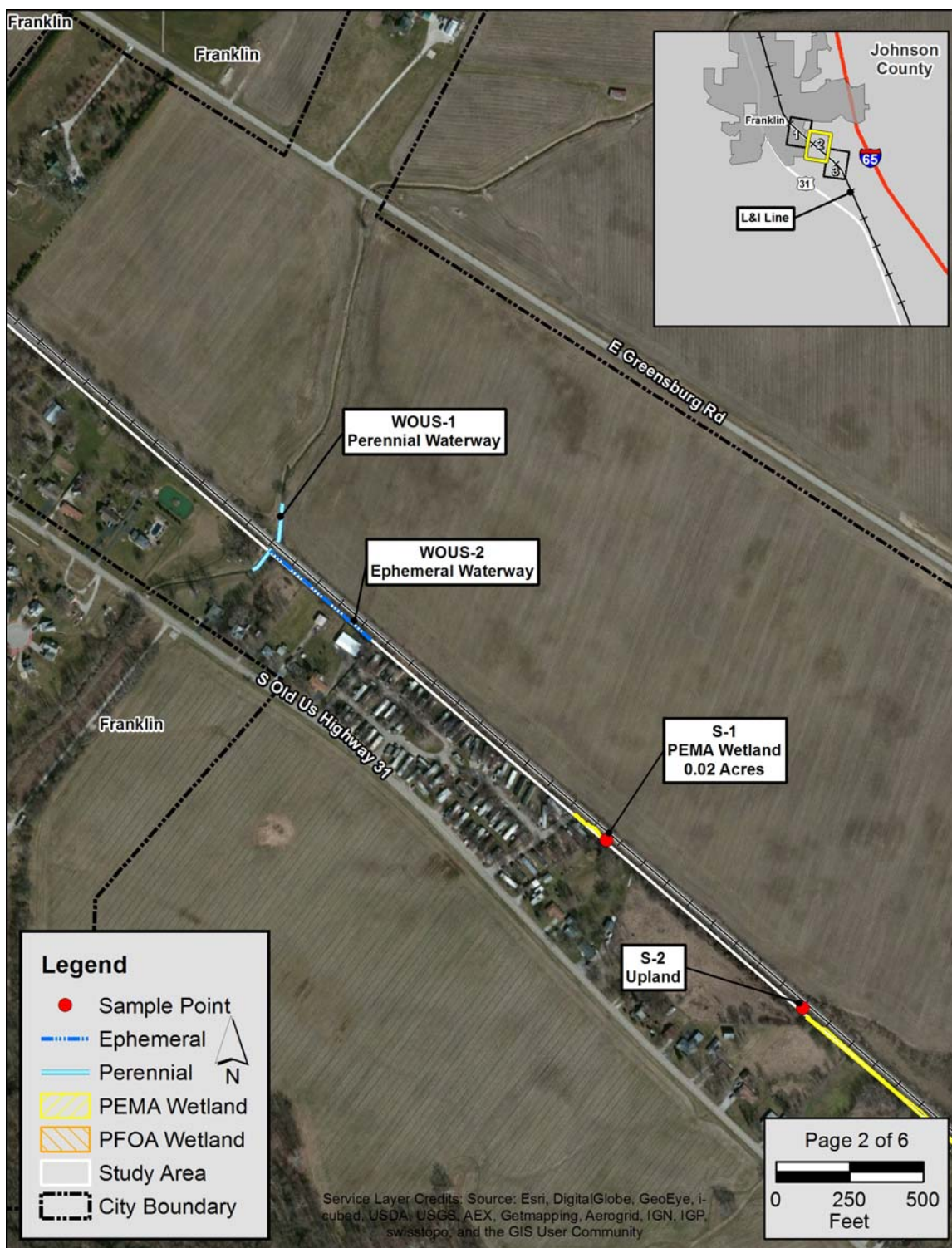


Figure 2. Aquatic Resources – Sheet 2

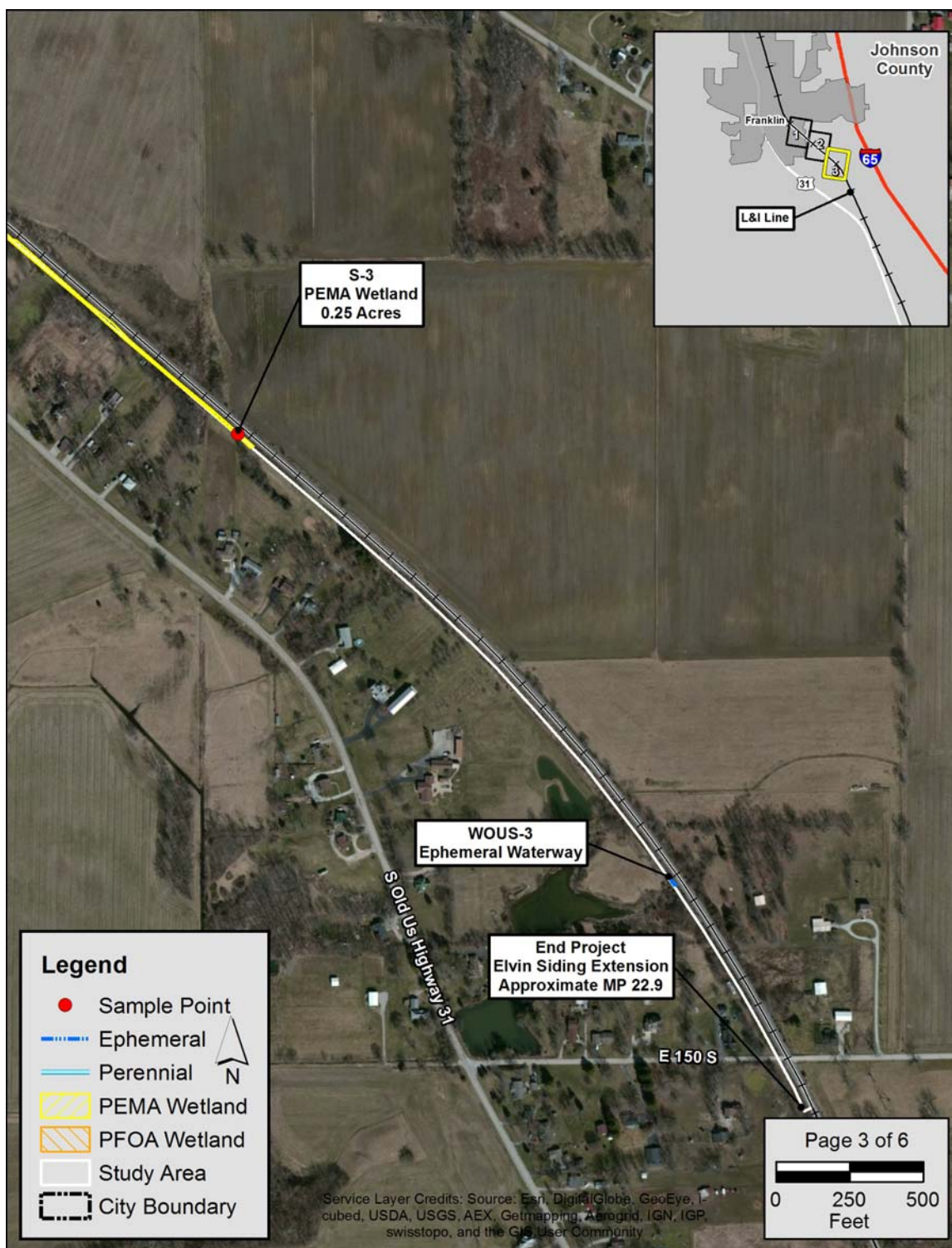


Figure 2. Aquatic Resources – Sheet 3



Figure 2. Aquatic Resources – Sheet 4

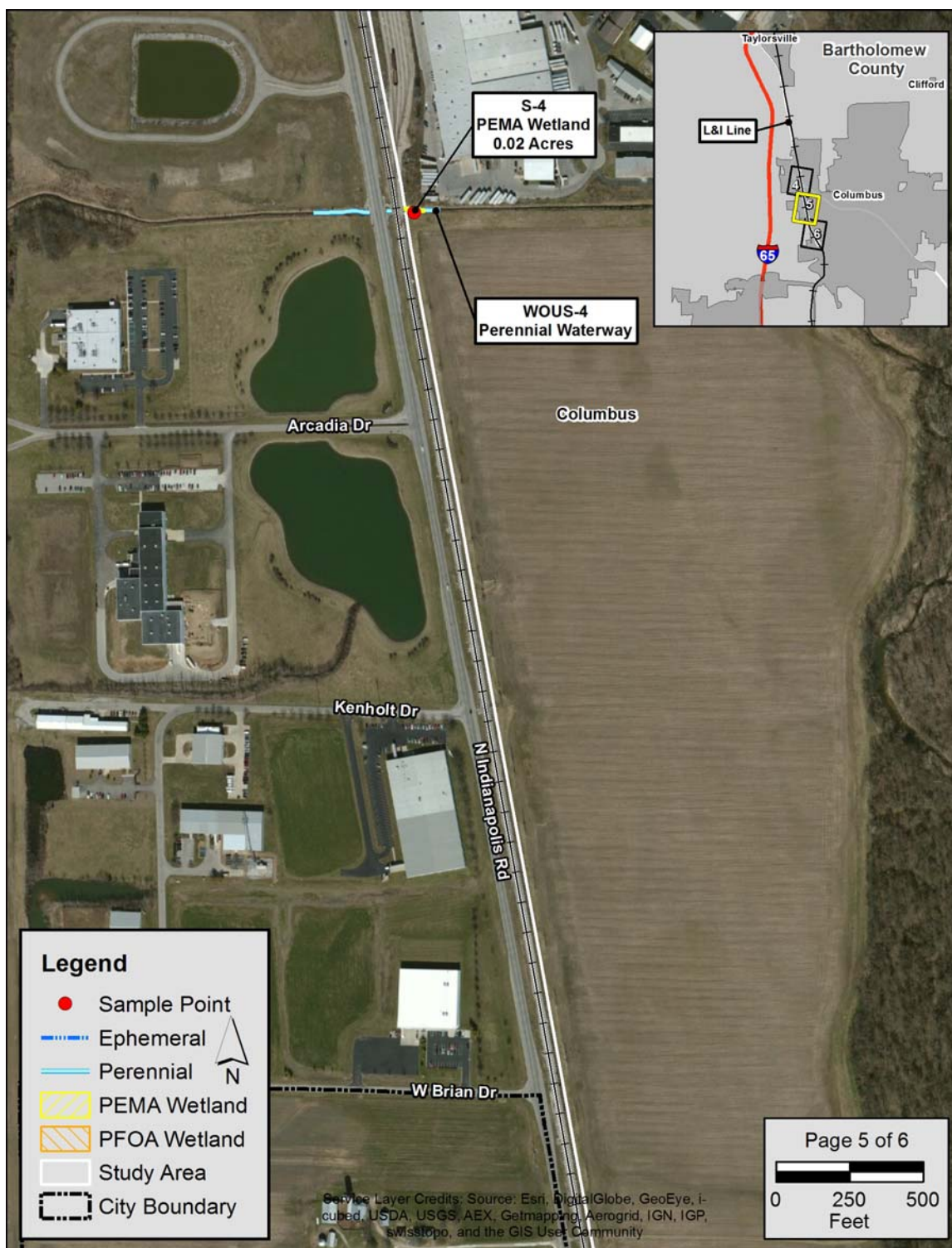


Figure 2. Aquatic Resources – Sheet 5

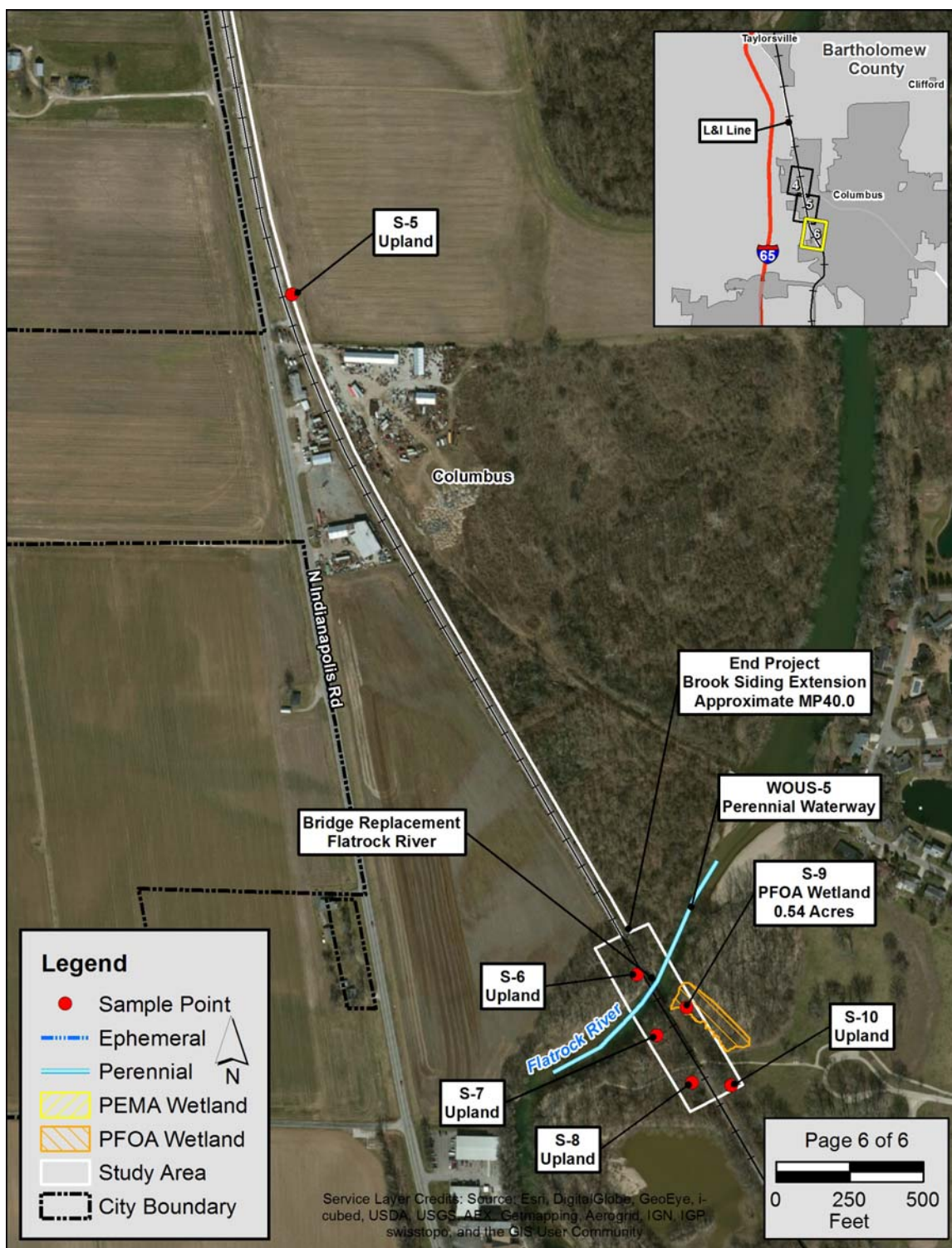


Figure 2. Aquatic Resources – Sheet 6

5.0 REFERENCES

- Cowardin, et al. December 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. FWS/OBS-79/31. U.S. Department of the Interior, Washington D.C.
- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi.
- Environmental Laboratory. August 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)*. U.S. Army Corps of Engineers Research and Development Center, Vicksburg, Mississippi.
- Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2014. *The National Wetland Plant List: 2014 Update of Wetland Ratings*. *Phytoneuron* 2014-41: 1-42
- USDA NRCS. October 29, 2009. Soil Survey Geographic (SSURGO) database for Bartholomew and Johnson Counties, Indiana. Fort Worth, Texas.
<http://SoilDataMart.nrcs.usda.gov/>.

APPENDIX A

WETLAND DETERMINATION DATA FORMS – MIDWEST REGION

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: CSXT/L&I Siding Extensions City/County: Johnson County Sampling Date: 4/2/2014
 Applicant/Owner: CSXT State: IN Sampling Point: S-01
 Investigators: Ben Fisher Travis Talbitzer Section, Township, Range S 24 T 12N R 4E
 Landform (hillslope, terrace, etc.): Toe of Slope Local Relief (concave, convex, none): Concave
 Slope(%): 0 Lat: 39.466072 Long: -86.030853 Datum: NAD 1983
 Soil Map Unit Name: Brookston silty clay loam NWI Classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If No, explain in Remarks)
 Are Vegetation , Soil , Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	

Remarks:
 The area characterized by this dataform is an emergent wetland located at the base of the railroad embankment. The area displays indicators of hydrophytic vegetation, hydric soil, and wetland hydrology.

VEGETATION— Use scientific names of plants.	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across all Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
Tree Stratum Shrub Stratum (Plot size: <u>15 Ft</u>) <u>Acer saccharinum</u>	20	Y	FACW		Prevalence Index Worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>20</u></td> <td>x 1 = <u>20</u></td> </tr> <tr> <td>FACW species <u>50</u></td> <td>x 2 = <u>100</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>180</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.00</u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:	OBL species <u>20</u>	x 1 = <u>20</u>	FACW species <u>50</u>	x 2 = <u>100</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>90</u> (A)	<u>180</u> (B)	Prevalence Index = B/A = <u>2.00</u>
Total % Cover of:	Multiply by:																			
OBL species <u>20</u>	x 1 = <u>20</u>																			
FACW species <u>50</u>	x 2 = <u>100</u>																			
FAC species <u>20</u>	x 3 = <u>60</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>90</u> (A)	<u>180</u> (B)																			
Prevalence Index = B/A = <u>2.00</u>																				
Herb Stratum (Plot size: <u>6 Ft</u>) <u>Carex sp.</u> <u>Poa pratensis</u> <u>Typha latifolia</u>	30 20 20 70 =Total Cover	Y Y Y	FACW FAC OBL																	
Vine Stratum				Hydrophytic Vegetation Indicators: <u> </u> Rapid Test for Hydrophytic Vegetation <u>X</u> Dominance Test > 50% <u>X</u> Prevalence Index ≤ 3.0 <u> </u> Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																				

Remarks: (Include photo numbers here or on a separate sheet.)
 The area is dominated by hydrophytic vegetation.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

☐ Histosol (A1)

☐ Histic Epipedon (A2)

☐ Black Histic (A3)

☐ Hydrogen Sulfide (A4)

☐ Stratified Layers (A5)

☐ 2 cm Muck (A10)

☐ Depleted Below Dark Surface (A11)

☐ Thick Dark Surface (A12)

☐ Sandy Mucky Mineral (S1)

☐ 5 cm Mucky Peat or Peat (S3)

☐ Sandy Gleyed Matrix (S4)

☐ Sandy Redox (S5)

☐ Stripped Matrix (S6)

☐ Loamy Mucky Mineral (F1)

☐ Loamy Gleyed Matrix (F2)

☐ Depleted Matrix (F3)

☐ Redox Dark Surface (F6)

☐ Depleted Dark Surface (F7)

☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: ³

☐ Coast Prairie Redox (A16)

☐ Iron-Manganese Masses (F12)

☐ Dark Surface (S7)

☐ Very Shallow Dark Surface (TF12)

☒ Other (Explain in Remarks)

☐ **Restrictive Layer (if observed):**

Type: Depth (inches):

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit was observed. Soils are assumed hydric based on the dominance of hydrophytic vegetation and primary indicators of wetland hydrology.

Wetland Hydrology Indicators:

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

☒ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surf. (B8)

☐ Water-Stained Leaves (B9)

☐ Aquatic Fauna (B13)

☐ True Aquatic Plants (B14)

☐ Hydrogen Sulfide Odor (C1)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Recent Iron Reduction in Plowed Soils (C6)

☐ Thin Muck Surface (C7)

☐ Gauge or Well Data (D9)

☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

☐ Surface Soil Cracks (B6)

☐ Drainage Patterns (B10)

☐ Dry-Season Water Table (C2)

☐ Crayfish Burrows (C8)

☐ Saturation Visible on Aerial Imag.(C9)

☐ Stunted or Stressed Plants (D1)

☒ Geomorphic Position (D2)

☒ FAC-Neutral Test (D5)

Field Observations:

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

2-4

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

Surface

Saturation Present? Yes ☒ No ☐ Depth (inches):

Surface

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

The area is located at the base of the railroad embankment in an isolated depression. The area was inundated with 2-4 inches of water. Wetland hydrology criteria is met.

US Army Corps of Engineers

Midwest Region – Version 2

Project/Site:	CSXT/L&I Siding Extensions		City/County:	Johnson County		Sampling Date:	4/2/2014	
Applicant/Owner:	CSXT		State:	IN		Sampling Point:	S-02	
Investigators:	Ben Fisher Travis Talbitzer		Section, Township, Range	S 24 T 12N R 4E				
Landform (hillslope, terrace, etc.):	Toe of Slope		Local Relief (concave, convex, none):	Convex				
Slope(%):	0	Lat:	39.464511	Long:	-86.028481	Datum:	NAD 1983	
Soil Map Unit Name:	Crosby silt loam, fine-loamy subsoil				NWI Classification:	None		
Are climatic / hydrologic conditions on the site typical for this time of year?			Yes	☒	No	(If No, explain in Remarks)		
Are Vegetation ☐ , Soil ☐ , Hydrology ☐ , significantly disturbed?			Are "Normal Circumstances" present?			Yes	☒	No ☐
Are Vegetation ☐ , Soil ☐ , Hydrology ☐ , naturally problematic?			(If needed, explain any answers in Remarks.)					

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u> X </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u> X </u>
Hydric Soil Present?	Yes <u> </u>	No <u> X </u>	
Wetland Hydrology Present?	Yes <u> </u>	No <u> X </u>	

Midwest Region – Version 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 to 14	10YR	2 / 1	100				SILT LOAM	
14 to 22	10YR	4 / 2	100				SILT LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

☐ Histosol (A1)☐ Sandy Gleyed Matrix (S4)☐ Coast Prairie Redox (A16)

☐ Histic Epipedon (A2)☐ Sandy Redox (S5)☐ Iron-Manganese Masses (F12)

☐ Black Histic (A3)☐ Stripped Matrix (S6)☐ Dark Surface (S7)

☐ Hydrogen Sulfide (A4)☐ Loamy Mucky Mineral (F1)☐ Very Shallow Dark Surface (TF12)

☐ Stratified Layers (A5)☐ Loamy Gleyed Matrix (F2)☐ Other (Explain in Remarks)

☐ 2 cm Muck (A10)☐ Depleted Matrix (F3)

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

☐ Depleted Below Dark Surface (A11)☐ Redox Dark Surface (F6)

☐ Thick Dark Surface (A12)☐ Depleted Dark Surface (F7)

☐ Sandy Mucky Mineral (S1)☐ Redox Depressions (F8)

☐ 5 cm Mucky Peat or Peat (S3)

☐ **Restrictive Layer (if observed):**

Type: Depth (inches):

Hydric Soil Present?

Yes No

X

Remarks:

The observed soil profile failed to display indicators of hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

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

☐ Surface Water (A1)☐ Water-Stained Leaves (B9)☐ Surface Soil Cracks (B6)

☐ High Water Table (A2)☐ Aquatic Fauna (B13)☐ Drainage Patterns (B10)

☐ Saturation (A3)☐ True Aquatic Plants (B14)☐ Dry-Season Water Table (C2)

☐ Water Marks (B1)☐ Hydrogen Sulfide Odor (C1)☐ Crayfish Burrows (C8)

☐ Sediment Deposits (B2)☐ Oxidized Rhizospheres along Living Roots (C3)☐ Saturation Visible on Aerial Imag.(C9)

☐ Drift Deposits (B3)☐ Presence of Reduced Iron (C4)☐ Stunted or Stressed Plants (D1)

☐ Algal Mat or Crust (B4)☐ Recent Iron Reduction in Plowed Soils (C6)☐ Geomorphic Position (D2)

☐ Iron Deposits (B5)☐ Thin Muck Surface (C7)☐ FAC-Neutral Test (D5)

☐ Inundation Visible on Aerial Imagery (B7)☐ Gauge or Well Data (D9)

☐ Sparsely Vegetated Concave Surf. (B8)☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present? Yes No

X

 Depth (inches):

Water Table Present? Yes No

X

 Depth (inches):

Saturation Present? Yes No

X

 Depth (inches):

Wetland Hydrology Present?

Yes No

X

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

Remarks:

The area is located upslope from the wetland described by S-03 and is dominated by upland vegetation. There are no indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: CSXT/L&I Siding Extensions City/County: Johnson County Sampling Date: 4/2/2014
 Applicant/Owner: CSXT State: IN Sampling Point: S-03
 Investigators: Ben Fisher Travis Talbitzer Section, Township, Range S 30 T 12N R 5E
 Landform (hillslope, terrace, etc.): Toe of Slope Local Relief (concave, convex, none): Concave
 Slope(%): 0 Lat: 39.462522 Long: -86.02553 Datum: NAD 1983
 Soil Map Unit Name: Brookston silty clay loam NWI Classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If No, explain in Remarks)
 Are Vegetation , Soil , Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	

Remarks:
 The area characterized by this dataform is an emergent wetland located at the base of the railroad embankment in an isolated depression. The area displays indicators of hydrophytic vegetation, hydric soil, and wetland hydrology.

VEGETATION— Use scientific names of plants.	<u>Absolute % Cover</u>	<u>Dominant Species</u>	<u>Indicator Status</u>	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
<u>Tree Stratum</u> <u>Shrub Stratum</u> (Plot size: <u>15 Ft</u>) Acer saccharinum <u>25</u> Y FACW <u>25</u> =Total Cover					Prevalence Index Worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>10</u></td> <td>x 1 = <u>10</u></td> </tr> <tr> <td>FACW species <u>45</u></td> <td>x 2 = <u>90</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>50</u></td> <td>x 4 = <u>200</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>105</u> (A)</td> <td><u>300</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A= <u>2.86</u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:	OBL species <u>10</u>	x 1 = <u>10</u>	FACW species <u>45</u>	x 2 = <u>90</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>50</u>	x 4 = <u>200</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>105</u> (A)	<u>300</u> (B)	Prevalence Index = B/A= <u>2.86</u>
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Prevalence Index = B/A= <u>2.86</u>																				
<u>Herb Stratum</u> (Plot size: <u>6 Ft</u>) Setaria faberi <u>40</u> Y FACU carex sp. <u>20</u> Y FACW Cicuta maculata <u>10</u> N OBL Festuca arundinacea <u>10</u> N FACU <u>80</u> =Total Cover																				
<u>Vine Stratum</u>																				

Hydrophytic Vegetation Indicators:
 Rapid Test for Hydrophytic Vegetation
X Dominance Test > 50%
X Prevalence Index ≤ 3.0
 Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation (Explain)
 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)
 The area is dominated by hydrophytes and meets hydrophytic vegetation criteria.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)		Color (moist)	%	Type ¹	Loc ²		
0 to 16	10YR	4 / 1	90	7.5YR 4/6	10	C	M	SILT LOAM

¹Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

☐ Histosol (A1)

☐ Histic Epipedon (A2)

☐ Black Histic (A3)

☐ Hydrogen Sulfide (A4)

☐ Stratified Layers (A5)

☐ 2 cm Muck (A10)

☐ Depleted Below Dark Surface (A11)

☐ Thick Dark Surface (A12)

☐ Sandy Mucky Mineral (S1)

☐ 5 cm Mucky Peat or Peat (S3)

☐ Sandy Gleyed Matrix (S4)

☐ Sandy Redox (S5)

☐ Stripped Matrix (S6)

☐ Loamy Mucky Mineral (F1)

☐ Loamy Gleyed Matrix (F2)

☐ Depleted Matrix (F3)

☐ Redox Dark Surface (F6)

☐ Depleted Dark Surface (F7)

☒ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: ³

☐ Coast Prairie Redox (A16)

☐ Iron-Manganese Masses (F12)

☐ Dark Surface (S7)

☐ Very Shallow Dark Surface (TF12)

☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present?

Yes ☒ No ☐

Remarks:

Redox concentrations were observed in the top 16 inches of the soil profile. The area meets hydric soil criteria.

HYDROLOGY

Wetland Hydrology Indicators:

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

☒ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surf. (B8)

☐ Water-Stained Leaves (B9)

☐ Aquatic Fauna (B13)

☐ True Aquatic Plants (B14)

☐ Hydrogen Sulfide Odor (C1)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Recent Iron Reduction in Plowed Soils (C6)

☐ Thin Muck Surface (C7)

☐ Gauge or Well Data (D9)

☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

☐ Surface Soil Cracks (B6)

☐ Drainage Patterns (B10)

☐ Dry-Season Water Table (C2)

☐ Crayfish Burrows (C8)

☐ Saturation Visible on Aerial Imag.(C9)

☐ Stunted or Stressed Plants (D1)

☒ Geomorphic Position (D2)

☒ FAC-Neutral Test (D5)

Field Observations:

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

1-2

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

surface

Saturation Present? Yes ☒ No ☐ Depth (inches):

surface

Wetland Hydrology Present?

Yes ☒ No ☐

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

Remarks:

The area is located in an isolated depression with standing water. The area meets wetland hydrology criteria.

US Army Corps of Engineers

Midwest Region – Version 2

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: CSXT/L&I Siding Extensions City/County: Bartholomew County Sampling Date: 4/2/2014
 Applicant/Owner: CSXT State: IN Sampling Point: S-04
 Investigators: Ben Fisher Travis Talbitzer Section, Township, Range S 11 T 9N R 5E
 Landform (hillslope, terrace, etc.): Toe of Slope Local Relief (concave, convex, none): Concave
 Slope(%): 0 Lat: 39.234504 Long: -85.93579 Datum: NAD 1983
 Soil Map Unit Name: Urban land-Westland complex NWI Classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If No, explain in Remarks)
 Are Vegetation , Soil , Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	

Remarks:
 The area characterized by this dataform is an emergent wetland fringe of an unnamed tributary of Flatrock River. The boundaries of the wetland were confined to the area at the base of the slope, directly adjacent to the waterway. The upland area is clearly defined by the change in vegetation and sharp rise in elevation.

VEGETATION— Use scientific names of plants.	<u>Absolute % Cover</u>	<u>Dominant Species</u>	<u>Indicator Status</u>	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across all Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																								
<u>Tree Stratum</u> <u>Shrub Stratum</u> <u>Herb Stratum</u> (Plot size: <u>6 Ft</u>) <u>Phalaris arundinacea</u> <u>100</u> <u>Y</u> <u>FACW</u> <u>100</u> =Total Cover <u>Vine Stratum</u>					Prevalence Index Worksheet: <table border="1"> <thead> <tr> <th></th> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td><u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species</td> <td><u>100</u></td> <td>x 2 = <u>200</u></td> </tr> <tr> <td>FAC species</td> <td><u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species</td> <td><u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species</td> <td><u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>100</u> (A)</td> <td><u>200</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A=</td> <td><u>2.00</u></td> </tr> </tbody> </table>		Total % Cover of:	Multiply by:	OBL species	<u>0</u>	x 1 = <u>0</u>	FACW species	<u>100</u>	x 2 = <u>200</u>	FAC species	<u>0</u>	x 3 = <u>0</u>	FACU species	<u>0</u>	x 4 = <u>0</u>	UPL species	<u>0</u>	x 5 = <u>0</u>	Column Totals:	<u>100</u> (A)	<u>200</u> (B)	Prevalence Index = B/A=	
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Hydrophytic Vegetation Indicators: <u>X</u> Rapid Test for Hydrophytic Vegetation <u>X</u> Dominance Test > 50% <u>X</u> Prevalence Index ≤ 3.0 <u> </u> Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																												
Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																												

Remarks: (Include photo numbers here or on a separate sheet.)
 The area is dominated by an emergent hydrophyte.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

☐ Histosol (A1)☐ Sandy Gleyed Matrix (S4)☐ Coast Prairie Redox (A16)

☐ Histic Epipedon (A2)☐ Sandy Redox (S5)☐ Iron-Manganese Masses (F12)

☐ Black Histic (A3)☐ Stripped Matrix (S6)☐ Dark Surface (S7)

☐ Hydrogen Sulfide (A4)☐ Loamy Mucky Mineral (F1)☐ Very Shallow Dark Surface (TF12)

☐ Stratified Layers (A5)☐ Loamy Gleyed Matrix (F2)☒ Other (Explain in Remarks)

☐ 2 cm Muck (A10)☐ Depleted Matrix (F3)

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

☐ Depleted Below Dark Surface (A11)☐ Redox Dark Surface (F6)

☐ Thick Dark Surface (A12)☐ Depleted Dark Surface (F7)

☐ Sandy Mucky Mineral (S1)☐ Redox Depressions (F8)

☐ 5 cm Mucky Peat or Peat (S3)

☐ **Restrictive Layer (if observed):**

Type: Depth (inches):

Hydric Soil Present?

Yes ☒ No ☐

Remarks:

No soil sample was observed. Soils are assumed hydric based on the presence of primary indicators of wetland hydrology and dominance of an emergent hydrophyte.

HYDROLOGY

Wetland Hydrology Indicators:

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

☒ Surface Water (A1)☐ Water-Stained Leaves (B9)☐ Surface Soil Cracks (B6)

☒ High Water Table (A2)☐ Aquatic Fauna (B13)☐ Drainage Patterns (B10)

☒ Saturation (A3)☐ True Aquatic Plants (B14)☐ Dry-Season Water Table (C2)

☒ Water Marks (B1)☐ Hydrogen Sulfide Odor (C1)☐ Crayfish Burrows (C8)

☐ Sediment Deposits (B2)☐ Oxidized Rhizospheres along Living Roots (C3)☐ Saturation Visible on Aerial Imag.(C9)

☐ Drift Deposits (B3)☐ Presence of Reduced Iron (C4)☐ Stunted or Stressed Plants (D1)

☒ Algal Mat or Crust (B4)☐ Recent Iron Reduction in Plowed Soils (C6)☒ Geomorphic Position (D2)

☐ Iron Deposits (B5)☐ Thin Muck Surface (C7)☒ FAC-Neutral Test (D5)

☐ Inundation Visible on Aerial Imagery (B7)☐ Gauge or Well Data (D9)

☐ Sparsely Vegetated Concave Surf. (B8)☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?

Yes ☒ No ☐

Depth (inches):

2-6

Water Table Present?

Yes ☒ No ☐

Depth (inches):

surface

Saturation Present?

Yes ☒ No ☐

Depth (inches):

surface

Wetland Hydrology Present?

Yes ☒ No ☐

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

Remarks:

The area is located adjacent to an unnamed tributary of Flatrock River, the wetland area was inundated with overflow from the waterway. The area meets wetland hydrology criteria.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: CSXT/L&I Siding Extensions City/County: Bartholomew County Sampling Date: 4/2/2014
 Applicant/Owner: CSXT State: IN Sampling Point: S-05
 Investigators: Ben Fisher Travis Talbitzer Section, Township, Range S 14 T 9N R 5E
 Landform (hillslope, terrace, etc.): Toe of Slope Local Relief (concave, convex, none): Concave
 Slope(%): 0 Lat: 39.22302 Long: -85.933067 Datum: NAD 1983
 Soil Map Unit Name: Nineveh gravelly sandy loam NWI Classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If No, explain in Remarks)
 Are Vegetation , Soil , Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u> No <u>X</u>	

Remarks:
 The area characterized by this dataform is an upland area located in a maintained ditch adjacent to the railroad. The area failed to display indicators of hydrophytic vegetation, hydric soils, and wetland hydrology.

VEGETATION— Use scientific names of plants.	<u>Absolute % Cover</u>	<u>Dominant Species</u>	<u>Indicator Status</u>	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across all Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)																
<u>Tree Stratum</u> <u>Shrub Stratum</u> <u>Herb Stratum</u> (Plot size: <u>6 Ft</u>) <u>Festuca arundinacea</u> <u>Poa pratensis</u> 60 40 100 =Total Cover Y Y FACU FAC																				
<u>Vine Stratum</u>				Prevalence Index Worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>40</u></td> <td>x 3 = <u>120</u></td> </tr> <tr> <td>FACU species <u>60</u></td> <td>x 4 = <u>240</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>360</u> (B)</td> </tr> <tr> <td colspan="2"><i>Prevalence Index = B/A=</i> <u>3.60</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>40</u>	x 3 = <u>120</u>	FACU species <u>60</u>	x 4 = <u>240</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>360</u> (B)	<i>Prevalence Index = B/A=</i> <u>3.60</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>40</u>	x 3 = <u>120</u>																			
FACU species <u>60</u>	x 4 = <u>240</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>100</u> (A)	<u>360</u> (B)																			
<i>Prevalence Index = B/A=</i> <u>3.60</u>																				
Hydrophytic Vegetation Indicators: <u> </u> Rapid Test for Hydrophytic Vegetation <u> </u> Dominance Test > 50% <u> </u> Prevalence Index ≤ 3.0 <u> </u> Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																				
Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>																				

Remarks: (Include photo numbers here or on a separate sheet.)
 The area is a maintained railroad ditch that fails to meet hydrophytic vegetation criteria.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)		Color (moist)	%	Type ¹	Loc ²		
0 to 8	10YR	3 / 1	100				CLAY LOAM	
8 to 20	10YR	4 / 2	100				CLAY LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: ³

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

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

☐ Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
The observed soil profile failed to display indicators of hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

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

Field Observations:

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

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

Saturation Present? Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

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

Remarks:
The area is located in a railroad ditch and is dominated by upland vegetation. The area fails to meet wetland hydrology criteria.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: CSXT/L&I Siding Extensions City/County: Bartholomew County Sampling Date: 4/2/2014
 Applicant/Owner: CSXT State: IN Sampling Point: S-06
 Investigators: Ben Fisher Travis Talbitzer Section, Township, Range S 13 T 9N R 5E
 Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): None
 Slope(%): 0 Lat: 39.216689 Long: -85.928908 Datum: NAD 1983
 Soil Map Unit Name: Stonelick fine sandy loam NWI Classification: PFO1A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If No, explain in Remarks)
 Are Vegetation , Soil , Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland?	Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u> No <u>X</u>		
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>		

Remarks:
 The area characterized by this dataform is an upland forested area located on the northwest bank of Flatrock River. The area showed signs of a recent flooding event. Due to the lack of hydric soil indicators and a dominance of hydrophytes, the area was determined to be upland.

VEGETATION- Use scientific names of plants.

	<u>Absolute % Cover</u>	<u>Dominant Species</u>	<u>Indicator Status</u>	Dominance Test Worksheet:	
<u>Tree Stratum</u> (Plot size: <u>30 Ft</u>)				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)	
<u>Gleditsia triacanthos</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	Total Number of Dominant Species Across all Strata: <u>4</u> (B)	
<u>Populus deltoides</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)	
<u>Acer saccharinum</u>	<u>10</u>	<u>N</u>	<u>FACW</u>		
<u>Maclura pomifera</u>	<u>10</u>	<u>N</u>	<u>FACU</u>		
<u>Platanus occidentalis</u>	<u>10</u>	<u>N</u>	<u>FACW</u>		
	<u>70</u> =Total Cover				
<u>Shrub Stratum</u>				Prevalence Index Worksheet:	
<u>Herb Stratum</u>				Total % Cover of:	Multiply by:
<u>Vine Stratum</u> (Plot size: <u>30 Ft</u>)				OBL species <u>0</u>	x 1 = <u>0</u>
<u>Euonymus fortunei</u>	<u>10</u>	<u>Y</u>	<u>UPL</u>	FACW species <u>20</u>	x 2 = <u>40</u>
<u>Smilax rotundifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	FAC species <u>30</u>	x 3 = <u>90</u>
	<u>20</u> =Total Cover			FACU species <u>30</u>	x 4 = <u>120</u>
				UPL species <u>10</u>	x 5 = <u>50</u>
				Column Totals: <u>90</u> (A)	<u>300</u> (B)
				Prevalence Index = B/A= <u>3.33</u>	
				Hydrophytic Vegetation Indicators:	
				<u> </u> Rapid Test for Hydrophytic Vegetation	
				<u> </u> Dominance Test > 50%	
				<u> </u> Prevalence Index ≤ 3.0	
				<u> </u> Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)	
				<u> </u> Problematic Hydrophytic Vegetation (Explain)	
				Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	

Remarks: (Include photo numbers here or on a separate sheet.)
 The area failed to display a dominance of hydrophytic vegetation. The area appeared to have experienced a recent flood event. The area was absent of a herbaceous layer.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)		Color (moist)	%	Type ¹	Loc ²		
0 to 10	10YR	4 / 2	100				LOAMY SAND	
10 to 20	10YR	4 / 4	100				LOAMY SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: ³

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

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

☐ Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
The observed soil profile failed to display indicators of hydric soil. The soil was a sandy loam and is mapped as Stonelick fine sandy loam, which is a well drained soil on flood plains.

HYDROLOGY

Wetland Hydrology Indicators:

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

Field Observations:

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

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

Saturation Present? Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:
The area appeared to have experienced a recent flood event. Drift lines were observed. The area meets wetland hydrology criteria.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: CSXT/L&I Siding Extensions City/County: Bartholomew County Sampling Date: 4/2/2014
 Applicant/Owner: CSXT State: IN Sampling Point: S-07
 Investigators: Ben Fisher Travis Talbitzer Section, Township, Range S 13 T 9N R 5E
 Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): Convex
 Slope(%): 0 Lat: 39.216119 Long: -85.928672 Datum: NAD 1983
 Soil Map Unit Name: Eel loam NWI Classification: PFO1A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If No, explain in Remarks)
 Are Vegetation , Soil , Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
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Remarks:
 The area characterized by this dataform is an upland forested area located on the southwest bank of Flatrock River. The area failed to display indicators of hydric soil.

VEGETATION— Use scientific names of plants.

VEGETATION— Use scientific names of plants.			
	<u>Absolute % Cover</u>	<u>Dominant Species</u>	<u>Indicator Status</u>
<u>Tree Stratum</u> (Plot size: <u>30 Ft</u>)			
Platanus occidentalis	40	Y	FACW
Celtis occidentalis	20	Y	FAC
Gleditsia triacanthos	5	N	FACU
	65	=Total Cover	
<u>Shrub Stratum</u>			
<u>Herb Stratum</u>			
<u>Vine Stratum</u> (Plot size: <u>30 Ft</u>)			
Euonymus fortunei	10	Y	UPL
Smilax rotundifolia	5	Y	FAC
	15	=Total Cover	
Dominance Test Worksheet:			
Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)			
Total Number of Dominant Species Across all Strata: <u>4</u> (B)			
Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)			
Prevalence Index Worksheet:			
<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL species	<u>0</u>	x 1 =	<u>0</u>
FACW species	<u>40</u>	x 2 =	<u>80</u>
FAC species	<u>25</u>	x 3 =	<u>75</u>
FACU species	<u>5</u>	x 4 =	<u>20</u>
UPL species	<u>10</u>	x 5 =	<u>50</u>
Column Totals:	<u>80</u> (A)		<u>225</u> (B)
<i>Prevalence Index = B/A=</i>		<u>2.81</u>	

Remarks: (Include photo numbers here or on a separate sheet.)
 The area meets hydrophytic vegetation criteria.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)		Color (moist)	%	Type ¹	Loc ²		
0 to 12	10YR	4 / 2	100				SANDY LOAM	
12 to 22	10YR	4 / 3	100				SANDY LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: ³

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

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

☐ Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
The observed soil profile failed to display indicators of hydric soil. The area is mapped as an Eel soil series, which is a moderately well drained soil found on flood plains.

HYDROLOGY

Wetland Hydrology Indicators:

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

Field Observations:

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

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

Saturation Present? Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:
The area appeared to have experienced a recent flood event and drift deposits were observed. The area meets wetland hydrology criteria.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: CSXT/L&I Siding Extensions City/County: Bartholomew County Sampling Date: 4/2/2014
 Applicant/Owner: CSXT State: IN Sampling Point: S-08
 Investigators: Ben Fisher Travis Talbitzer Section, Township, Range S 13 T 9N R 5E
 Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): Convex
 Slope(%): 0 Lat: 39.215682 Long: -85.928246 Datum: NAD 1983
 Soil Map Unit Name: Eel loam NWI Classification: PFO1A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If No, explain in Remarks)
 Are Vegetation , Soil , Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland?	Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u> No <u>X</u>		
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>		

Remarks:
 The area characterized by this dataform is an upland forested area located south of S-07. The area failed to display indicators of hydric soil and was not dominated by hydrophytic vegetation.

VEGETATION- Use scientific names of plants.

VEGETATION— Use scientific names of plants.			
	<u>Absolute % Cover</u>	<u>Dominant Species</u>	<u>Indicator Status</u>
<u>Tree Stratum</u> (Plot size: <u>30 Ft</u>)			
Celtis occidentalis	20	Y	FAC
Maclura pomifera	20	Y	FACU
Acer saccharinum	5	N	FACW
Platanus occidentalis	5	N	FACW
	50	=Total Cover	
<u>Shrub Stratum</u>			
<u>Herb Stratum</u>			
<u>Vine Stratum</u> (Plot size: <u>30 Ft</u>)			
Euonymus fortunei	20	Y	UPL
Smilax rotundifolia	10	Y	FAC
	30	=Total Cover	

Dominance Test Worksheet:			
Number of Dominant Species That Are OBL, FACW, or FAC:		<u>2</u>	(A)
Total Number of Dominant Species Across all Strata:		<u>4</u>	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:		<u>50.0%</u>	(A/B)
Prevalence Index Worksheet:			
Total % Cover of:		Multiply by:	
OBL species	<u>0</u>	x 1 =	<u>0</u>
FACW species	<u>10</u>	x 2 =	<u>20</u>
FAC species	<u>30</u>	x 3 =	<u>90</u>
FACU species	<u>20</u>	x 4 =	<u>80</u>
UPL species	<u>20</u>	x 5 =	<u>100</u>
Column Totals:	<u>80</u> (A)	<u>290</u> (B)	
Prevalence Index = B/A=		<u>3.63</u>	
Hydrophytic Vegetation Indicators:			
<u> </u> Rapid Test for Hydrophytic Vegetation			
<u> </u> Dominance Test > 50%			
<u> </u> Prevalence Index ≤ 3.0			
<u> </u> Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)			
<u> </u> Problematic Hydrophytic Vegetation (Explain)			
Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
Hydrophytic Vegetation Present?			
Yes	<u> </u>	No	<u>X</u>

Remarks: (Include photo numbers here or on a separate sheet.)
 The area failed to display a dominance of hydrophytic vegetation.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)		Color (moist)	%	Type ¹	Loc ²		
0 to 14	10YR	4 / 2	100				SILT LOAM	
14 to 20	10YR	4 / 2	100				SILT LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: ³

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

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

☐ Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
The observed soil profile did not display indicators of hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

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

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
Water Table Present? Yes _____ No X Depth (inches): _____
Saturation Present? Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:
The area appeared to have experienced a recent flood event. Drift deposits were observed. The area meets wetland hydrology criteria.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: CSXT/L&I Siding Extensions City/County: Bartholomew County Sampling Date: 4/2/2014
 Applicant/Owner: CSXT State: IN Sampling Point: S-09
 Investigators: Ben Fisher Travis Talbitzer Section, Township, Range S 13 T 9N R 5E
 Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave
 Slope(%): 0 Lat: 39.216381 Long: -85.928314 Datum: NAD 1983
 Soil Map Unit Name: Eel loam NWI Classification: PFO1A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If No, explain in Remarks)
 Are Vegetation , Soil , Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
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Remarks:
 The area characterized by this dataform is a forested wetland located southeast of the Flatrock River bridge. The area is located at a lower elevation compared to the areas characterized by S-07, S-08, and S-10. The area displayed indicators of hydrophytic vegetation, hydric soil, and wetland hydrology.

VEGETATION— Use scientific names of plants. <u>Tree Stratum</u> (Plot size: <u>30 Ft</u>) <table style="width: 100%;"> <tr> <td style="width: 40%;">Acer saccharinum</td> <td style="width: 15%; text-align: center;">30</td> <td style="width: 15%; text-align: center;">Y</td> <td style="width: 30%; text-align: center;">FACW</td> </tr> <tr> <td>Platanus occidentalis</td> <td style="text-align: center;">20</td> <td style="text-align: center;">Y</td> <td style="text-align: center;">FACW</td> </tr> <tr> <td>Populus deltoides</td> <td style="text-align: center;">20</td> <td style="text-align: center;">Y</td> <td style="text-align: center;">FAC</td> </tr> <tr> <td></td> <td style="text-align: center;">70</td> <td colspan="2" style="text-align: center;">=Total Cover</td> </tr> </table> <u>Shrub Stratum</u> <u>Herb Stratum</u> <u>Vine Stratum</u>	Acer saccharinum	30	Y	FACW	Platanus occidentalis	20	Y	FACW	Populus deltoides	20	Y	FAC		70	=Total Cover		Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B) Prevalence Index Worksheet: <table style="width: 100%;"> <tr> <td style="width: 40%;">Total % Cover of:</td> <td style="width: 10%;"></td> <td style="width: 10%;">Multiply by:</td> <td style="width: 40%;"></td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;">0</td> <td>x 1 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">50</td> <td>x 2 =</td> <td style="text-align: center;">100</td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">20</td> <td>x 3 =</td> <td style="text-align: center;">60</td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">0</td> <td>x 4 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">0</td> <td>x 5 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">70 (A)</td> <td></td> <td style="text-align: center;">160 (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A=</td> <td></td> <td style="text-align: center;">2.29</td> </tr> </table> Hydrophytic Vegetation Indicators: <u> </u> Rapid Test for Hydrophytic Vegetation <u>X</u> Dominance Test > 50% <u>X</u> Prevalence Index ≤ 3.0 <u> </u> Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Total % Cover of:		Multiply by:		OBL species	0	x 1 =	0	FACW species	50	x 2 =	100	FAC species	20	x 3 =	60	FACU species	0	x 4 =	0	UPL species	0	x 5 =	0	Column Totals:	70 (A)		160 (B)	Prevalence Index = B/A=			2.29
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UPL species	0	x 5 =	0																																														
Column Totals:	70 (A)		160 (B)																																														
Prevalence Index = B/A=			2.29																																														

Remarks: (Include photo numbers here or on a separate sheet.)
 The area displayed a dominance of hydrophytes. There was no herbaceous layer present.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 to 16	10YR 4 / 1	95	7.5YR 4/6	5	C	M	SILT LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

☐ Histosol (A1)

☐ Histic Epipedon (A2)

☐ Black Histic (A3)

☐ Hydrogen Sulfide (A4)

☐ Stratified Layers (A5)

☐ 2 cm Muck (A10)

☐ Depleted Below Dark Surface (A11)

☐ Thick Dark Surface (A12)

☐ Sandy Mucky Mineral (S1)

☐ 5 cm Mucky Peat or Peat (S3)

☐ Sandy Gleyed Matrix (S4)

☐ Sandy Redox (S5)

☐ Stripped Matrix (S6)

☐ Loamy Mucky Mineral (F1)

☐ Loamy Gleyed Matrix (F2)

☐ Depleted Matrix (F3)

☐ Redox Dark Surface (F6)

☐ Depleted Dark Surface (F7)

☒ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: ³

☐ Coast Prairie Redox (A16)

☐ Iron-Manganese Masses (F12)

☐ Dark Surface (S7)

☐ Very Shallow Dark Surface (TF12)

☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present?

Yes ☒ No ☐

Remarks:

The observed soil profile displayed redox features in the top 16 inches, meeting criteria of Redox Depressions.

HYDROLOGY

Wetland Hydrology Indicators:

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

☐ Surface Water (A1)

☐ High Water Table (A2)

☐ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☒ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surf. (B8)

☐ Water-Stained Leaves (B9)

☐ Aquatic Fauna (B13)

☐ True Aquatic Plants (B14)

☐ Hydrogen Sulfide Odor (C1)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Recent Iron Reduction in Plowed Soils (C6)

☐ Thin Muck Surface (C7)

☐ Gauge or Well Data (D9)

☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

☐ Surface Soil Cracks (B6)

☐ Drainage Patterns (B10)

☐ Dry-Season Water Table (C2)

☐ Crayfish Burrows (C8)

☐ Saturation Visible on Aerial Imag.(C9)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? Yes ☐ No ☒ Depth (inches):

Wetland Hydrology Present?

Yes ☒ No ☐

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

Remarks:

The area appeared to have experienced a recent flooding event. Drift deposits were observed.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: CSXT/L&I Siding Extensions City/County: Bartholomew County Sampling Date: 4/2/2014
 Applicant/Owner: CSXT State: IN Sampling Point: S-10
 Investigators: Ben Fisher Travis Talbitzer Section, Township, Range S 13 T 9N R 5E
 Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): Convex
 Slope(%): 0 Lat: 39.215655 Long: -85.927778 Datum: NAD 1983
 Soil Map Unit Name: Eel loam NWI Classification: PFO1A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If No, explain in Remarks)
 Are Vegetation , Soil , Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	

Remarks:
 The area characterized by this dataform is an upland area located adjacent to the wetland described by S-09. The area failed to display indicators of hydric soil.

VEGETATION- Use scientific names of plants.

	<u>Absolute % Cover</u>	<u>Dominant Species</u>	<u>Indicator Status</u>																																	
<u>Tree Stratum</u> (Plot size: <u>30 Ft</u>)				Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)																																
<u>Populus deltoides</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>																																	
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<u>Ulmus americana</u>	<u>10</u>	<u>N</u>	<u>FACW</u>																																	
<u>60</u> =Total Cover																																				
<u>Shrub Stratum</u>				Prevalence Index Worksheet: <table border="0"> <tr> <td colspan="2">Total % Cover of:</td> <td colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td><u>0</u></td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species</td> <td><u>30</u></td> <td>x 2 =</td> <td><u>60</u></td> </tr> <tr> <td>FAC species</td> <td><u>40</u></td> <td>x 3 =</td> <td><u>120</u></td> </tr> <tr> <td>FACU species</td> <td><u>0</u></td> <td>x 4 =</td> <td><u>0</u></td> </tr> <tr> <td>UPL species</td> <td><u>20</u></td> <td>x 5 =</td> <td><u>100</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>90</u> (A)</td> <td></td> <td><u>280</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A=</td> <td colspan="2"><u>3.11</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	<u>0</u>	x 1 =	<u>0</u>	FACW species	<u>30</u>	x 2 =	<u>60</u>	FAC species	<u>40</u>	x 3 =	<u>120</u>	FACU species	<u>0</u>	x 4 =	<u>0</u>	UPL species	<u>20</u>	x 5 =	<u>100</u>	Column Totals:	<u>90</u> (A)		<u>280</u> (B)	Prevalence Index = B/A=		<u>3.11</u>	
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<u>Herb Stratum</u>																																				
<u>Vine Stratum</u> (Plot size: <u>30 Ft</u>)																																				
<u>Euonymus fortunei</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>																																	
<u>Smilax rotundifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>																																	
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Hydrophytic Vegetation Indicators: <u> </u> Rapid Test for Hydrophytic Vegetation <u>X</u> Dominance Test > 50% <u> </u> Prevalence Index ≤ 3.0 <u> </u> Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																				
Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																																				

Remarks: (Include photo numbers here or on a separate sheet.)
 The area meets hydrophytic vegetation criteria. There was little to no herbaceous vegetation.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)		Color (moist)	%	Type ¹	Loc ²		
0 to 16	10YR	4 / 2	100				SILT LOAM	
16 to 22	10YR	4 / 3	100				SILT LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

☐ Histosol (A1)☐ Sandy Gleyed Matrix (S4)☐ Coast Prairie Redox (A16)

☐ Histic Epipedon (A2)☐ Sandy Redox (S5)☐ Iron-Manganese Masses (F12)

☐ Black Histic (A3)☐ Stripped Matrix (S6)☐ Dark Surface (S7)

☐ Hydrogen Sulfide (A4)☐ Loamy Mucky Mineral (F1)☐ Very Shallow Dark Surface (TF12)

☐ Stratified Layers (A5)☐ Loamy Gleyed Matrix (F2)☐ Other (Explain in Remarks)

☐ 2 cm Muck (A10)☐ Depleted Matrix (F3)

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

☐ Depleted Below Dark Surface (A11)☐ Redox Dark Surface (F6)

☐ Thick Dark Surface (A12)☐ Depleted Dark Surface (F7)

☐ Sandy Mucky Mineral (S1)☐ Redox Depressions (F8)

☐ 5 cm Mucky Peat or Peat (S3)

☐ **Restrictive Layer (if observed):**

Type: Depth (inches):

Hydric Soil Present?

Yes No

X

Remarks:

The observed soil profile failed to display indicators of hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

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

☐ Surface Water (A1)☐ Water-Stained Leaves (B9)☐ Surface Soil Cracks (B6)

☐ High Water Table (A2)☐ Aquatic Fauna (B13)☐ Drainage Patterns (B10)

☐ Saturation (A3)☐ True Aquatic Plants (B14)☐ Dry-Season Water Table (C2)

☐ Water Marks (B1)☐ Hydrogen Sulfide Odor (C1)☐ Crayfish Burrows (C8)

☐ Sediment Deposits (B2)☐ Oxidized Rhizospheres along Living Roots (C3)☐ Saturation Visible on Aerial Imag.(C9)

☒ Drift Deposits (B3)☐ Presence of Reduced Iron (C4)☐ Stunted or Stressed Plants (D1)

☐ Algal Mat or Crust (B4)☐ Recent Iron Reduction in Plowed Soils (C6)☐ Geomorphic Position (D2)

☐ Iron Deposits (B5)☐ Thin Muck Surface (C7)☐ FAC-Neutral Test (D5)

☐ Inundation Visible on Aerial Imagery (B7)☐ Gauge or Well Data (D9)

☐ Sparsely Vegetated Concave Surf. (B8)☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present? Yes No

X

 Depth (inches):

Water Table Present? Yes No

X

 Depth (inches):

Saturation Present? Yes No

X

 Depth (inches):

Wetland Hydrology Present?

Yes

X

 No

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

Remarks:

The area appeared to have experienced a recent flood event and drift lines were observed. The area meets wetland hydrology criteria.

US Army Corps of Engineers

Midwest Region – Version 2

USEPA RAPID BIOASSESSMENT DATA FORMS

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME <u>Unnamed (WOUS-1)</u>	LOCATION <u>Southeast of Franklin, IN, L&I Elvin Siding</u>	
STATION # <u>N/A</u> RIVERMILE <u>N/A</u>	STREAM CLASS <u>Perennial</u>	
LAT <u>39.46888</u> LONG <u>-86.034806</u>	RIVER BASIN <u>Young's Creek</u>	
STORET # <u>N/A</u>	AGENCY <u>N/A</u>	
INVESTIGATORS <u>B. Fisher & T. Talbitzer</u>		
FORM COMPLETED BY <u>Fisher</u>	DATE <u>4/2/14</u> TIME <u>4:00</u> AM ☒ PM	REASON FOR SURVEY <u>Wetland Delineation</u>

WEATHER CONDITIONS	Now ☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) ☒ 50 %cloud cover ☐ clear/sunny Past 24 hours ☐ ☒ 70 % ☐ Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No Air Temperature <u>12</u> °C Other _____
SITE LOCATION/MAP	Draw a map of the site and indicate the areas sampled (or attach a photograph) See Figure 2 (sheet 2) and Photos 1 & 2 of the Wetland Delineation Report.
STREAM CHARACTERIZATION	Stream Subsystem ☒ Perennial ☐ Intermittent ☐ Tidal Stream Origin ☐ Glacial ☒ Spring-fed ☐ Non-glacial montane ☒ Mixture of origins ☐ Swamp and bog ☐ Other _____ Stream Type ☐ Coldwater ☐ Warmwater Catchment Area <u>N/A</u> 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 species present ☐ Trees ☐ Shrubs ☐ Grasses ☒ Herbaceous dominant species present <u>Festuca arundinacea</u>	
INSTREAM FEATURES	Estimated Reach Length <u>76</u> m Estimated Stream Width <u>2.5</u> m Sampling Reach Area <u>190</u> m² Area in km² (m²x1000) _____ km² Estimated Stream Depth <u>0.5</u> m Surface Velocity <u>Slow</u> m/sec (at thalweg) Canopy Cover ☒ Partly open ☐ Partly shaded ☐ Shaded High Water Mark <u>0.5</u> m Proportion of Reach Represented by Stream Morphology Types ☐ Riffle _____ % ☒ Run <u>100</u> % ☐ Pool _____ % Channelized ☒ Yes ☐ No Dam Present ☐ Yes ☒ No	
LARGE WOODY DEBRIS	LWD <u>0</u> m ² Density of LWD <u>0</u> m ² /km ² (LWD/ reach area)	
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☒ Attached Algae dominant species present <u>N/A</u> Portion of the reach with aquatic vegetation <u>100</u> %	
WATER QUALITY	Temperature <u>N/A</u> °C Specific Conductance <u>N/A</u> Dissolved Oxygen <u>N/A</u> pH <u>N/A</u> Turbidity <u>N/A</u> WQ Instrument Used <u>N/A</u> 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? <u>N/A</u> ☐ 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			Detritus	sticks, wood, coarse plant materials (CPOM)	10
Boulder	> 256 mm (10")	10			
Cobble	64-256 mm (2.5"-10")	20	Muck-Mud	black, very fine organic (FPOM)	90
Gravel	2-64 mm (0.1"-2.5")	60			
Sand	0.06-2mm (gritty)	10	Marl	grey, shell fragments	
Silt	0.004-0.06 mm				
Clay	< 0.004 mm (slick)				

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

STREAM NAME <u>Unnamed (WOUS-1)</u>		LOCATION <u>Southeast of Franklin, IN, L&I Elvin Siding</u>	
STATION # <u>N/A</u> RIVERMILE <u>N/A</u>		STREAM CLASS <u>Perennial</u>	
LAT <u>39.46888</u> LONG <u>-86.034806</u>		RIVER BASIN <u>Young's Creek</u>	
STORET # <u>N/A</u>		AGENCY <u>N/A</u>	
INVESTIGATORS <u>B. Fisher & T. Talbitzer</u>			
FORM COMPLETED BY <u>Fisher</u>		DATE <u>4/2/2014</u> TIME <u>4:00</u> AM ☒ PM	REASON FOR SURVEY <u>Wetland Delineation</u>

Parameters to be evaluated in sampling reach	Habitat Parameter	Condition Category			
		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.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	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.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	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.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	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 Parameter	Condition Category			
	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	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.
SCORE <u>4</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>4</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	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 <u>5</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>5</u> (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 <u>2</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>2</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 80

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME <u>Unnamed (WOUS-2)</u>	LOCATION <u>Southeast of Franklin, IN, L&I Elvin Siding</u>
STATION # <u>N/A</u> RIVERMILE <u>N/A</u>	STREAM CLASS <u>Ephemeral</u>
LAT <u>39.468344</u> LONG <u>-86.034303</u>	RIVER BASIN <u>Young's Creek</u>
STORET # <u>N/A</u>	AGENCY <u>N/A</u>
INVESTIGATORS <u>B. Fisher & T. Talbitzer</u>	
FORM COMPLETED BY <u>Fisher</u>	DATE <u>4/2/14</u> TIME <u>3:30</u> AM ☒ PM REASON FOR SURVEY <u>Wetland Delineation</u>

WEATHER CONDITIONS	Now ☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) ☒ 50% %cloud cover ☐ clear/sunny Past 24 hours ☐ ☐ ☒ 70% %cloud cover ☐ Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No Air Temperature <u>12</u> °C Other _____
SITE LOCATION/MAP	Draw a map of the site and indicate the areas sampled (or attach a photograph) See Figure 2 (sheet 2) and Photo 3 of the Wetland Delineation Report. The feature appears to be an erosional feature located at the base of the railroad embankment. The narrow depression was conveying water to the channel characterized by WOUS-1.
STREAM CHARACTERIZATION	Stream Subsystem ☐ Perennial ☐ Intermittent ☐ Tidal Stream Origin ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☐ Mixture of origins ☐ Swamp and bog ☒ Other <u>Precipitation and runoff</u> Stream Type ☐ Coldwater ☐ Warmwater Catchment Area <u>N/A</u> 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 species present ☐ Trees ☒ Shrubs ☐ Grasses ☐ Herbaceous dominant species present <u>Rosa multiflora</u>		
INSTREAM FEATURES	Estimated Reach Length <u>139</u> m Estimated Stream Width <u>1</u> m Sampling Reach Area <u>139</u> m² Area in km² (m²x1000) _____ km² Estimated Stream Depth <u>0.25</u> m Surface Velocity (at thalweg) <u>Slow</u> m/sec Canopy Cover ☐ Partly open ☐ Partly shaded ☒ Shaded High Water Mark <u>0.25</u> m Proportion of Reach Represented by Stream Morphology Types ☐ Riffle _____ % ☒ Run <u>100</u> % ☐ Pool _____ % Channelized ☒ Yes ☐ No Dam Present ☐ Yes ☒ No		
LARGE WOODY DEBRIS	LWD <u>0</u> m ² Density of LWD <u>0</u> m ² /km ² (LWD/ reach area)		
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☒ Attached Algae dominant species present <u>N/A</u> Portion of the reach with aquatic vegetation <u>75</u> %		
WATER QUALITY	Temperature <u>N/A</u> °C Specific Conductance <u>N/A</u> Dissolved Oxygen <u>N/A</u> pH <u>N/A</u> Turbidity <u>N/A</u> WQ Instrument Used <u>N/A</u> 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			Detritus	sticks, wood, coarse plant materials (CPOM)	40
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")		Muck-Mud	black, very fine organic (FPOM)	60
Gravel	2-64 mm (0.1"-2.5")	80			
Sand	0.06-2mm (gritty)	10	Marl	grey, shell fragments	
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)				

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

STREAM NAME <u>Unnamed (WOUS-2)</u>		LOCATION <u>Southeast of Franklin, IN, L&I Elvin Siding</u>	
STATION # <u>N/A</u> RIVERMILE <u>N/A</u>		STREAM CLASS <u>Ephemeral</u>	
LAT <u>39.468344</u> LONG <u>-86.034303</u>		RIVER BASIN <u>Young's Creek</u>	
STORET # <u>N/A</u>		AGENCY <u>N/A</u>	
INVESTIGATORS <u>B. Fisher & T. Talbitzer</u>			
FORM COMPLETED BY <u>Fisher</u>		DATE <u>4/2/2014</u> TIME <u>3:30</u> AM ☒ PM	REASON FOR SURVEY <u>Wetland Delineation</u>

Parameters to be evaluated in sampling reach	Habitat Parameter	Condition Category			
		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.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	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.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	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.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	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 Parameter	Condition Category			
	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	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.
SCORE <u>2</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>2</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	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 <u>5</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>5</u> (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 <u>1</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>1</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 54

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME <u>Unnamed (WOUS-3)</u>	LOCATION <u>Southeast of Franklin, IN, L&I Elvin Siding</u>
STATION # <u>N/A</u> RIVERMILE <u>N/A</u>	STREAM CLASS <u>Ephemeral</u>
LAT <u>39.458373</u> LONG <u>-86.020296</u>	RIVER BASIN <u>Young's Creek</u>
STORET # <u>N/A</u>	AGENCY <u>N/A</u>
INVESTIGATORS <u>B. Fisher & T. Talbitzer</u>	
FORM COMPLETED BY <u>Fisher</u>	DATE <u>4/2/14</u> TIME <u>2:00</u> AM ☒ PM REASON FOR SURVEY <u>Wetland Delineation</u>

WEATHER CONDITIONS	Now ☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) ☒ 50% %cloud cover ☐ clear/sunny Past 24 hours ☐ ☐ ☒ 70% %cloud cover ☐ Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No Air Temperature <u>12</u> °C Other _____
SITE LOCATION/MAP	Draw a map of the site and indicate the areas sampled (or attach a photograph) See Figure 2 (sheet 3) and Photo 7 of the Wetland Delineation Report.
STREAM CHARACTERIZATION	Stream Subsystem ☐ Perennial ☐ Intermittent ☐ Tidal Stream Origin ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☐ Mixture of origins ☐ Swamp and bog ☒ Other <u>Precipitation and runoff</u> Stream Type ☐ Coldwater ☒ Warmwater Catchment Area <u>N/A</u> 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 species present ☐ Trees ☐ Shrubs ☐ Grasses ☒ Herbaceous dominant species present <u>Festuca arundinacea</u>		
INSTREAM FEATURES	Estimated Reach Length <u>11</u> m Estimated Stream Width <u>0.5</u> m Sampling Reach Area <u>5.5</u> m² Area in km² (m²x1000) _____ km² Estimated Stream Depth <u>0.25</u> m Surface Velocity <u>Slow</u> m/sec (at thalweg) Canopy Cover ☐ Partly open ☐ Partly shaded ☒ Shaded High Water Mark <u>0.25</u> m Proportion of Reach Represented by Stream Morphology Types ☐ Riffle _____ % ☒ Run <u>100</u> % ☐ Pool _____ % Channelized ☒ Yes ☐ No Dam Present ☐ Yes ☒ No		
LARGE WOODY DEBRIS	LWD <u>0</u> m ² Density of LWD <u>0</u> m ² /km ² (LWD/ reach area)		
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☒ Attached Algae dominant species present <u>N/A</u> Portion of the reach with aquatic vegetation <u>60</u> %		
WATER QUALITY	Temperature <u>N/A</u> °C Specific Conductance <u>N/A</u> Dissolved Oxygen <u>N/A</u> pH <u>N/A</u> Turbidity <u>N/A</u> WQ Instrument Used <u>N/A</u> 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 _____ 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			Detritus	sticks, wood, coarse plant materials (CPOM)	20
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")		Muck-Mud	black, very fine organic (FPOM)	80
Gravel	2-64 mm (0.1"-2.5")	40			
Sand	0.06-2mm (gritty)	50	Marl	grey, shell fragments	
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)				

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

STREAM NAME <u>Unnamed (WOUS-3)</u>		LOCATION <u>Southeast of Franklin, IN, L&I Elvin Siding</u>	
STATION # <u>N/A</u> RIVERMILE <u>N/A</u>		STREAM CLASS <u>Ephemeral</u>	
LAT <u>39.458373</u> LONG <u>-86.020296</u>		RIVER BASIN <u>Young's Creek</u>	
STORET # <u>N/A</u>		AGENCY <u>N/A</u>	
INVESTIGATORS <u>B. Fisher & T. Talbitzer</u>			
FORM COMPLETED BY <u>Fisher</u>		DATE <u>4/2/2014</u> TIME <u>2:00</u> AM ☒ PM	REASON FOR SURVEY <u>Wetland Delineation</u>

Parameters to be evaluated in sampling reach	Habitat Parameter	Condition Category			
		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.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	<u>5</u> 4 3 2 1 0
	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.
	SCORE	20 19 18 17 16	15 14 13 12 11	<u>10</u> 9 8 7 6	5 4 3 2 1 0
	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.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 <u>2</u> 1 0
	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	<u>5</u> 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 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1 0

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

Habitat Parameter	Condition Category			
	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	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.
SCORE <u>2</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>2</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	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 <u>6</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>6</u> (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 <u>1</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>1</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 66

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME <u>Unnamed (WOUS-4)</u>	LOCATION <u>Northwest of Columbus, IN, L&I Brook Siding</u>	
STATION # <u>N/A</u> RIVERMILE <u>N/A</u>	STREAM CLASS <u>Perennial</u>	
LAT <u>39.234508</u> LONG <u>-86.936411</u>	RIVER BASIN <u>Flatrock River</u>	
STORET # <u>N/A</u>	AGENCY <u>N/A</u>	
INVESTIGATORS <u>B. Fisher & T. Talbitzer</u>		
FORM COMPLETED BY <u>Fisher</u>	DATE <u>4/2/14</u> TIME <u>10:00</u> AM PM	REASON FOR SURVEY <u>Wetland Delineation</u>

WEATHER CONDITIONS	Now ☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) ☒ 50% %cloud cover ☐ clear/sunny Past 24 hours ☐ ☐ ☒ 70% % ☐ Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No Air Temperature <u>10</u> °C Other _____	
SITE LOCATION/MAP	Draw a map of the site and indicate the areas sampled (or attach a photograph) See Figure 2 (sheet 5) and Photos 8 & 9 of the Wetland Delineation Report.	
STREAM CHARACTERIZATION	Stream Subsystem ☐ Perennial ☐ Intermittent ☐ Tidal Stream Origin ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☒ Mixture of origins ☐ Swamp and bog ☐ Other _____ Stream Type ☐ Coldwater ☐ Warmwater Catchment Area <u>N/A</u> 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 species present ☐ Trees ☐ Shrubs ☐ Grasses ☒ Herbaceous dominant species present <u>Phalaris arundinacea</u>		
INSTREAM FEATURES	Estimated Reach Length <u>98</u> m Estimated Stream Width <u>1.5</u> m Sampling Reach Area <u>147</u> m² Area in km² (m²x1000) _____ km² Estimated Stream Depth <u>0.5</u> m Surface Velocity <u>Slow</u> m/sec (at thalweg) Canopy Cover ☒ Partly open ☐ Partly shaded ☐ Shaded High Water Mark <u>0.5</u> m Proportion of Reach Represented by Stream Morphology Types ☐ Riffle _____ % ☒ Run <u>100</u> % ☐ Pool _____ % Channelized ☒ Yes ☐ No Dam Present ☐ Yes ☒ No		
LARGE WOODY DEBRIS	LWD <u>0</u> m ² Density of LWD <u>0</u> m ² /km ² (LWD/ reach area)		
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present ☒ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae dominant species present <u>Phalaris arundinacea</u> Portion of the reach with aquatic vegetation <u>75</u> %		
WATER QUALITY	Temperature <u>N/A</u> °C Specific Conductance <u>N/A</u> Dissolved Oxygen <u>N/A</u> pH <u>N/A</u> Turbidity <u>N/A</u> WQ Instrument Used <u>N/A</u> 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			Detritus	sticks, wood, coarse plant materials (CPOM)	30
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")		Muck-Mud	black, very fine organic (FPOM)	70
Gravel	2-64 mm (0.1"-2.5")	30			
Sand	0.06-2mm (gritty)	60	Marl	grey, shell fragments	
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)				

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

STREAM NAME <u>Unnamed (WOUS-4)</u>		LOCATION <u>Northwest of Columbus, IN, L&I Brook Siding</u>	
STATION # <u>N/A</u> RIVERMILE <u>N/A</u>		STREAM CLASS <u>Perennial</u>	
LAT <u>39.234508</u> LONG <u>-86.936411</u>		RIVER BASIN <u>Flatrock River</u>	
STORET # <u>N/A</u>		AGENCY <u>N/A</u>	
INVESTIGATORS <u>B. Fisher & T. Talbitzer</u>			
FORM COMPLETED BY <u>Fisher</u>		DATE <u>4/2/2014</u> TIME <u>10:00</u> <u>AM</u> PM	REASON FOR SURVEY <u>Wetland Delineation</u>

Parameters to be evaluated in sampling reach	Habitat Parameter	Condition Category			
		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.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 <u>8</u> 7 6	5 4 3 2 1 0
	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.
	SCORE	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1 0
	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.
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 <u>6</u>	5 4 3 2 1 0
	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 <u>8</u> 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 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1 0

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

Habitat Parameter	Condition Category			
	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	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.
SCORE <u>5</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>5</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	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 <u>5</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>5</u> (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 <u>3</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>3</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 85

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Flatrock River (WOUS-5)	LOCATION Northwest of Columbus, IN, L&I Brook Siding	
STATION # <u>N/A</u> RIVERMILE <u>N/A</u>	STREAM CLASS Perennial	
LAT <u>39.216603</u> LONG <u>-86.928689</u>	RIVER BASIN Flatrock River	
STORET # <u>N/A</u>	AGENCY N/A	
INVESTIGATORS B. Fisher & T. Talbitzer		
FORM COMPLETED BY Fisher	DATE <u>4/2/14</u> TIME <u>9:00</u> AM PM	REASON FOR SURVEY Wetland Delineation

WEATHER CONDITIONS	Now ☐ storm (heavy rain) ☐ rain (steady rain) ☒ showers (intermittent) 100% ☒ %cloud cover ☐ clear/sunny Past 24 hours ☐ ☒ ☒ 70 % Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No Air Temperature 8 °C Other Evidence of recent flood
SITE LOCATION/MAP	Draw a map of the site and indicate the areas sampled (or attach a photograph) See Figure 2 (sheet 6) and Photos 16 & 17 of the Wetland Delineation Report.
STREAM CHARACTERIZATION	Stream Subsystem ☐ Perennial ☐ Intermittent ☐ Tidal Stream Origin ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☒ Mixture of origins ☐ Swamp and bog ☐ Other _____ Stream Type ☐ Coldwater ☐ Warmwater Catchment Area N/A 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 species present ☒ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous dominant species present <u>Acer saccharinum</u>		
INSTREAM FEATURES	Estimated Reach Length <u>250</u> m Estimated Stream Width <u>24</u> m Sampling Reach Area <u>6,000</u> m² Area in km² (m²x1000) <u>0.006</u> km² Estimated Stream Depth <u>N/A</u> m Surface Velocity <u>Moderate</u> m/sec (at thalweg) Canopy Cover ☐ Partly open ☒ Partly shaded ☐ Shaded High Water Mark <u>N/A</u> m Proportion of Reach Represented by Stream Morphology Types ☐ Riffle _____ % ☒ Run <u>100</u> % ☐ Pool _____ % Channelized ☒ Yes ☐ No Dam Present ☒ Yes ☐ No		
LARGE WOODY DEBRIS	LWD <u>20</u> m ² Density of LWD <u>3,333</u> m ² /km ² (LWD/ reach area)		
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae dominant species present <u>Unknown, due to high water identification was not possible.</u> Portion of the reach with aquatic vegetation <u>N/A</u> %		
WATER QUALITY	Temperature <u>N/A</u> °C Specific Conductance <u>N/A</u> Dissolved Oxygen <u>N/A</u> pH <u>N/A</u> Turbidity <u>N/A</u> WQ Instrument Used <u>N/A</u> 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? <u>N/A</u> ☐ 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			Detritus	sticks, wood, coarse plant materials (CPOM)	
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")		Muck-Mud	black, very fine organic (FPOM)	
Gravel	2-64 mm (0.1"-2.5")				
Sand	0.06-2mm (gritty)		Marl	grey, shell fragments	
Silt	0.004-0.06 mm				
Clay	< 0.004 mm (slick)				

*Unknown to due high water at time of field visit.

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

STREAM NAME Flatrock River (WOUS-5)		LOCATION Northwest of Columbus, IN, L&I Brook Siding	
STATION # <u>N/A</u> RIVERMILE <u>N/A</u>		STREAM CLASS Perennial	
LAT <u>39.216603</u> LONG <u>-86.928689</u>		RIVER BASIN Flatrock River	
STORET # <u>N/A</u>		AGENCY <u>N/A</u>	
INVESTIGATORS B. Fisher & T. Talbitzer			
FORM COMPLETED BY Fisher		DATE <u>4/2/2014</u> TIME <u>9:00</u> <u>AM</u> PM	REASON FOR SURVEY Wetland Delineation

Parameters to be evaluated in sampling reach	Habitat Parameter	Condition Category			
		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.
	SCORE	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1 0
	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.
	SCORE	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1 0
	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.
	SCORE	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1 0
	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 <u>11</u>	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 <u>16</u>	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	Condition Category			
	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	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.
SCORE <u>4</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>4</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	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 <u>6</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>6</u> (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 <u>9</u> (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>9</u> (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 125

APPENDIX C

SITE PHOTOGRAPHS



Photo 1. WOUS-1. Unnamed tributary of Young's Creek that is conveyed under L&I Line through a large concrete structure. Orientation northeast (upstream).



Photo 2. WOUS-1. Unnamed tributary of Young's Creek. Orientation southwest (downstream).



Photo 3. WOUS-2. Narrow depression located on the edge of L&I ROW; ephemeral drainage drains toward WOUS-1. Orientation northwest.



Photo 4. S-1. Emergent wetland located near the edge of L&I ROW. Orientation northwest.



Photo 5. S-2. Upland area adjacent to the wetlands described by S-1 and S-3. Orientation northwest.



Photo 6. S-3. Emergent wetland located at the base of the railroad embankment. Orientation northwest.



Photo 7. WOUS-3. Ephemeral channel conveyed under L&I Line, drains to the west into a human-made impoundment. Orientation northwest.



Photo 8. S-4. Emergent wetland located adjacent to the channel described by WOUS-4. Orientation east.



Photo 9. WOUS-4. Channel conveyed under L&I Line. Orientation northwest.



Photo 10. S-5. Upland ditch located within L&I ROW. Orientation north.



Photo 11. S-6. Upland forested area located on the northwest bank of Flatrock River. Orientation north.



Photo 12. S-7. Upland forested area located on the southwest bank of Flatrock River. Orientation north.



Photo 13. S-8. Upland forested area located south of S-7, west of the L&I Line. Orientation south.



Photo 14. S-9. Forested wetland located southeast of the Flatrock River Bridge. Orientation northwest.



Photo 15. S-10. Upland area located adjacent to the wetland described by S-9; the area is located upslope from S-9. Orientation south.



Photo 16. WOUS-5. Flatrock River. Orientation west (downstream).



Photo 17. WOUS-5. Flatrock River. Orientation east (upstream).