

# Scioto Ridge Transmission Line

## APPENDIX

# B

## WETLAND AND STREAM DELINEATION REPORT AND FORMS

# Wetland & Waterbody Delineation Report

Scioto Ridge Transmission Line

73760003.01



## Document Information

Prepared for	EverPower
Project Name	Scioto Ridge Transmission Line
Project Number	73760003
Project Manager	Ryan Rupprecht
Date	September 19, 2013

Prepared for:



EverPower Wind Holdings, Inc.  
1251 Waterfront Place, 3<sup>rd</sup> Floor,  
Pittsburgh, PA 15222

Prepared by:



Cardno ENTRIX  
10 Corporate Circle, Suite 300  
New Castle, De 19720

## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1-1</b>
<b>2</b>	<b>Survey Methodology .....</b>	<b>2-1</b>
2.1	Surface Water Resources .....	2-1
2.1.1	Desktop Assessment .....	2-1
2.2	Field Delineation Methodologies .....	2-1
<b>3</b>	<b>Wetland and Waterbody Delineation Results .....</b>	<b>3-1</b>
3.1	Habitat Analysis Results.....	3-1
3.2	Listed Species Impacts .....	3-1
3.3	Wetland Survey Results .....	3-2
3.3.1	Preferred Survey Area Wetland Survey Results.....	3-2
3.3.2	Alternate Survey Area Wetland Survey Results .....	3-2
3.4	Waterbody Delineation Survey Results.....	3-5
3.4.1	Preferred Survey Area Waterbody Survey Results .....	3-5
3.4.2	Alternate Survey Area Waterbody Results .....	3-8
<b>4</b>	<b>Conclusion.....</b>	<b>4-1</b>

## Appendices

Appendix A	Site Photos
Appendix B	Wetland and Waterbody Maps
Appendix C	Stream Forms

## Tables

Table 3-1	NWI Wetlands Identified within the Alternate Survey Area.....	3-4
Table 3-2	Waterbodies Delineated in Preferred Survey Area.....	3-7
Table 3-3	Streams Delineated in Alternate Survey Area .....	3-9

## Figures

Figure 1.1	Project Location .....	1-2
Figure 1.2	Preferred Right-of-Way Centerline.....	1-3

## Acronyms

AWS	Agricultural Water Supply
BMPs	Best Management Practices
DOW	ODNR Department of Wildlife
DSWR	ODNR Division of Soil and Water Resources
ESA	Endangered Species Act
EWB	Exceptional Warm Water Habitat
FEMA	Federal Emergency Management Agency
FSA	Farm Service Agency
GIS	Geographic Information Systems
GPS	Global Positioning System
HHEI	Headwater Habitat Evaluation Index
IWS	Industrial Water Supply
kV	kilovolt
LRW	Limited Resource Water
MBTA	Migratory Bird Treaty Act
MET	Meteorological Tower
MW	Megawatt
MWWH	Modified Warm-water Habitat
NLCD	National Land Cover Database
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
ODNR	Ohio Department of Natural Resources
OHWM	Ordinary high water mark
OPSB	Ohio Power Siting Board
ORAM	Ohio Rapid Assessment Method
OEPA	Ohio Environmental Protection Agency
ORAM	Ohio Rapid Assessment Methodology
OWI	Ohio Wetland Inventory
O&M	Operation and Maintenance
PCR	Primary Contact Recreation
PEM	Palustrine Emergent Wetlands
PFO	Palustrine Forested Wetlands
PHWH	Primary Headwater Habitats
PSS	Palustrine Scrub/Shrub Wetlands
QHEI	Qualitative Habitat Evaluation Index
RPW	Relatively Permanent Water
SCR	Secondary Contact Recreation
SRWF	Scioto Ridge Wind Farm
TBD	To Be Determined
TNW	Traditional Navigable Waters
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish & Wildlife Service
USGS	U.S. Geological Survey
WWH	Warm Water Habitat

# 1 Introduction

---

Hardin Wind, LLC (Hardin Wind), a wholly-owned subsidiary of EverPower Wind Holdings, Inc. has proposed construction of the Scioto Ridge Transmission Line in Hardin County, Ohio. The Proposed Scioto Ridge Transmission Line construction involves construction of a Point of Interconnect Substation and a 345kV transmission line (within a 120-foot right-of-way (ROW) extending approximately 5 miles) to connect to the Scioto Ridge Wind Farm (SRWF) Collector Substation. The transmission line will connect a proposed 300-MW wind powered generating facility (SRWF) to the American Electric Power's East Lima – Marysville 345 kV Line.

For this Wetland Report, Cardno ENTRIX (Cardno) conducted wetland and waterbody delineations within two Project Survey Areas totaling 472.01 acres. The Project Survey Areas are defined by two 400-foot corridors centered on (1) the proposed Preferred Right-of-Way (ROW) and infrastructure ("Preferred Survey Area"), and (2) the Alternate ROW and infrastructure ("Alternate Survey Area"). Project infrastructure will include either the Preferred Transmission Point of Interconnect Substation or Alternative Transmission Point of Interconnect Substation. Although two Survey Areas were evaluated (Preferred and Alternate), Hardin Wind anticipates only developing one of the corridors, the Preferred ROW and associated infrastructure. Figure 1.2 depicts the Scioto Ridge Transmission Line Preferred ROW Centerline within the Preferred Survey Area. The delineation surveys were conducted in accordance with the 1987 US Army Corp of Engineers (USACE) *Corps of Engineers Wetlands Delineation Manual* (Technical Report Y-87-1, USACE Waterways Experiment Station, Vicksburg, MS), and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (ERDC/EL TR-10-16, U.S. Army Engineer Research and Development Center, Vicksburg, MS)<sup>1</sup>.

Section 2 of this Wetland Report identifies the methodology used in the identification of surface waters within the Project Survey Areas. The methodologies section also identifies the requirements the Ohio Environmental Protection Agency (OEPA) sets for assessing and identifying surface waters within the Project Survey Areas. Section 3 of the report outlines the findings. The section is broken into discussion of the Preferred Survey Area and the Alternate Survey Area. Section 4 discusses the conclusions based on the information evaluated and possible future actions required.

---

<sup>1</sup> <http://el.erdcl.usace.army.mil/elpubs/pdf/trel08-27.pdf>



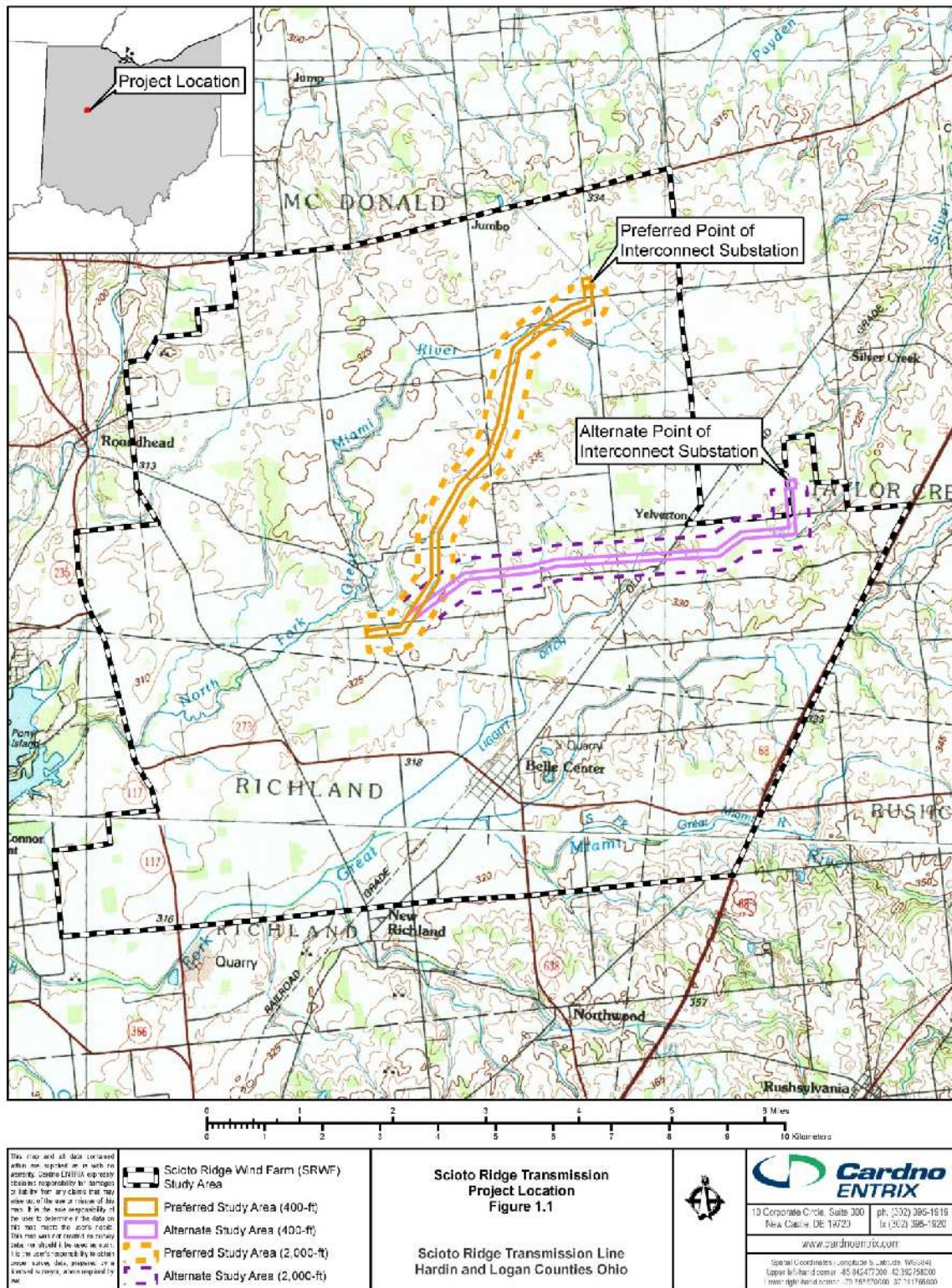


Figure 1.1 Project Location



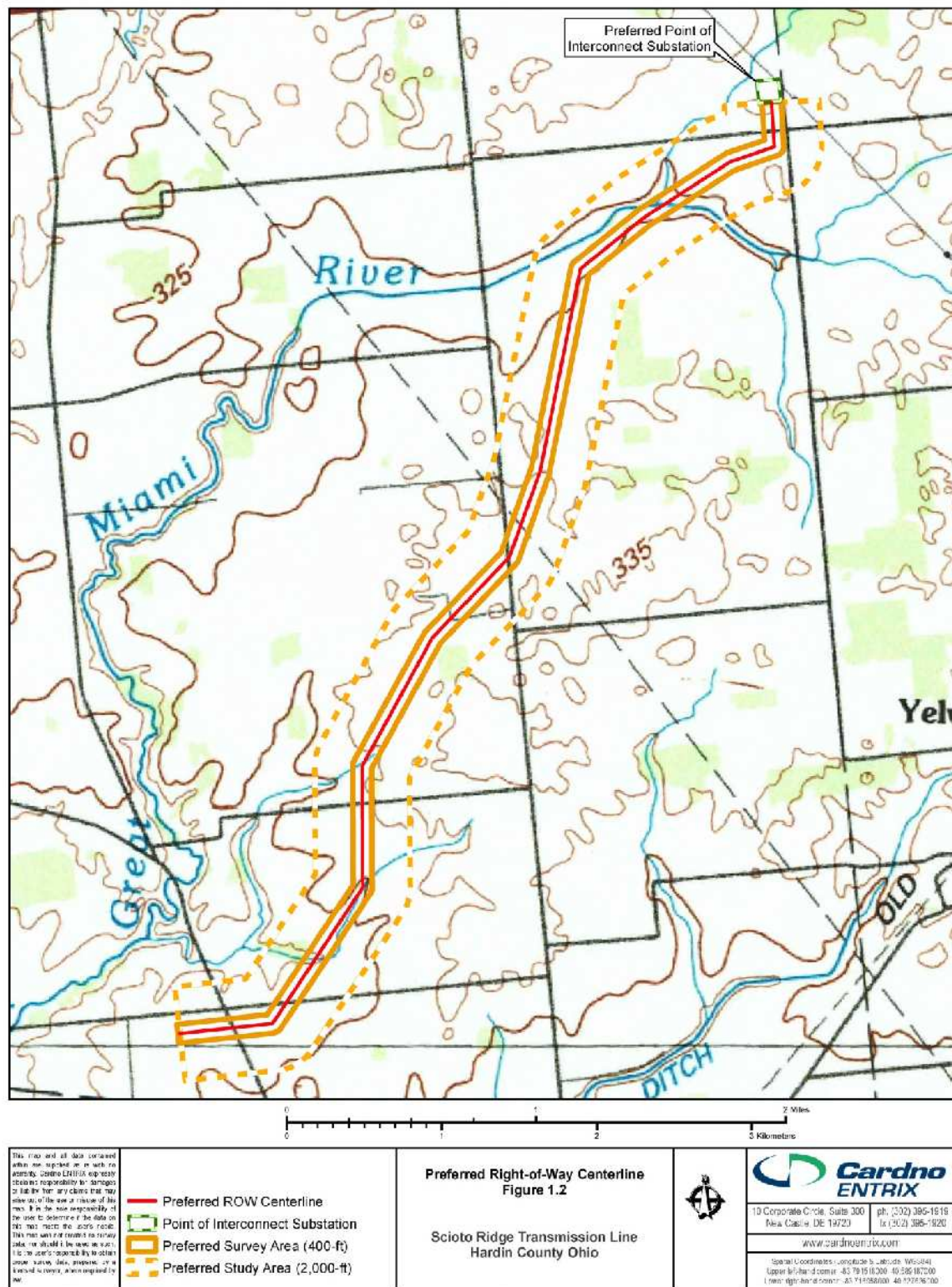


Figure 1.2 Preferred Right-of-Way Centerline

---

## 2 Survey Methodology

---

Section 2 identifies the methodology used during the wetland and waterbody delineations in the Project Survey Areas.

### 2.1 Surface Water Resources

#### 2.1.1 Desktop Assessment

Cardno performed a desktop habitat survey of the Project Study Areas using Geographic Information Systems (GIS) to screen for and classify potential environmental resources. Sources of this reference material included, but was not limited to, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey for the Project Counties, current and historic aerial photographs and farmed wetland maps from the USDA Farm Service Agency (FSA), National Wetland Inventory (NWI) maps, Ohio Wetland Inventory (OWI) maps, and U.S. Geological Survey (USGS) topographic maps.

##### 2.1.2.1 *Soils and Geology*

The Project Survey Areas are located within the Central Lowland Physiographic Province of Ohio, which covers the central and western portions of the state south of Lake Erie. The Central Lowland is characterized by glacial till plains with gently rolling hills. Most hills are a series of moraines, which are glacier-created mounds of rock and soil that are up to 100 feet high and 6 miles wide (ODNR). Elevations in the Central Lowlands range from 700 to 1,150 feet above mean sea level with moderate topographic relief (Ohio Division of Geological Survey, 1998, Physiographic Regions of Ohio<sup>2</sup>).

After review of the available data sets, the Project Survey Areas were determined to not contain any fully hydric soils which are those that are sufficiently saturated in the upper portion of the soil to develop anaerobic conditions during the growing season. Soil information was obtained from the Web Soil Survey, an application of the Natural Resource Conservation Service (USDA-NRCS 2013).

### 2.2 Field Delineation Methodologies

Wetland and waterbody delineations were conducted in the Project Survey Areas to determine the presence and extent of wetlands and waterbodies. The wetland and waterbody delineation occurred during July of 2013 in accordance with applicable Federal and State regulation and guidance. Wetland delineations were completed in accordance with the 1987 US Army Corp of Engineers (USACE) *Corps of Engineers Wetlands Delineation Manual* (Technical Report Y-87-1, USACE Waterways Experiment Station, Vicksburg, MS), and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (ERDC/EL TR-10-16, U.S. Army Engineer Research and Development Center, Vicksburg, MS)). The wetland delineation utilized the three criteria approach which requires identification of wetland hydrology, soils, and vegetation. In addition, the Project Survey Areas were investigated for the presence of other potentially regulated waters such as streams and/or federally regulated open waters. All waterbody features were documented for their general dimensional, substrate, morphology, and flow regimen characteristics.

In addition to using the Federal methodology, the Ohio Rapid Assessment Method for Wetlands (ORAM v. 5.0, OEPA, 2001) methodology was also required to be used. The ORAM wetland functional assessment was developed to determine the ecological “quality” and level of function of a particular

---

<sup>2</sup> <http://www.dnr.state.oh.us/Portals/10/pdf/physio.pdf>

wetland in order to meet requirements under Section 404 of the Clean Water Act. Wetlands are scored on the basis of hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into sub-categories under ORAM v5.0 resulting in a score that describes the wetland using a range from 0 (low quality and high disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into "Category 1", 30 to 59.90 are "Category 2" and 60 to 100 are "Category 3". Transitional zones exist between "Categories 1 and 2" from 30 to 34.9 and between "Categories 2 and 3" from 60 to 64.9. However, wetland scores that fall into the transitional range should be assigned to the higher Category unless scientific data has been collected that suggests the wetland should be placed in the lower category. However, the only potential wetlands identified were located on properties within the Alternate Survey Area and lacked access, so the ORAM could not be completed. No wetland areas were identified in the Preferred Survey Area.

Potentially regulated water boundaries were mapped with sub-meter accuracy Global Positioning System (GPS) equipment intended to meet USACE requirements in conjunction with a project-specific naming protocol for ease of data management. Data points were recorded to represent the upland and wetland boundary interface as well as stream high water marks. For all waterbodies, the ordinary high water mark (OHWM) was recorded as the jurisdictional boundary. As wetland and waterbody features were identified and located, they were assigned a FEATURE\_ID with the format of FOH-XXX-YY, where:

- F = Feature Type (W for wetland, S for stream)
- OH = State (Ohio)
- XXX = Three-digit number as the unique identifier
- YY = Flag number per unique feature identified

According to recent guidance from the United States Environmental Protection Agency (USEPA) and the USACE, wetlands that are adjacent to or have a significant nexus to traditional navigable waters (TNW) are regulated under Sections 401 and 404 of the Clean Water Act. A significant nexus must meet a number of criteria that indicate the wetland provides biological, physical, or chemical benefits to the TNW. Those wetlands with no apparent surface nexus to relatively permanent water (RPW) or TNW would have been identified as likely being "isolated."

Potentially jurisdictional streams were identified as those waters that had an OHWM, a defined channel, and an open water feature, such as surface water or at least a non-vegetated area through the channel that indicated periodic flowing water. Defined channels that were dominated by hydrophytes, without an open water feature, and otherwise met the definition of wetlands according the Federal methodology were to be considered linear wetlands. Those streams in the Project Survey Areas that run generally perpendicular or diagonal to the alignment of the roadway and that have definable beds and banks were delineated. Features that parallel the roadway, do not have an identifiable OHWM, are dominated by upland vegetation, and do not represent a relocation of a natural channel were considered swales and not delineated.

Perennial streams with a drainage area of greater than one square mile (259 ha) and with predominant pools having maximum pool depths over 40 cm, were first evaluated using the OEPA's Qualitative Habitat Evaluation Index (QHEI). The QHEI assessment examines a number of stream characteristics and yields a score ranging from 0 to 100. Based on the QHEI score, an Aquatic Use Designation was assigned in accordance with OEPA, 1989. Scores less than 32 typically indicate a limited resource water (LRW). Scores of 32 to 60 may be indicative of a modified warmwater habitat (WWH), meaning a WWH that has been disturbed but could potentially recover. A score of 60 typically indicates a stream has the physical characteristics needed to support diverse macroinvertebrate and fish populations and attain the WWH designation. Scores that are greater than 75 are indicative of a possible exceptional warmwater habitat

(EWH). Scores obtained in the field were compared to the use designations assigned by statute in the Water Quality standards for those streams.

Streams with drainage areas less than one square mile were evaluated using the OEPA Headwater Habitat Evaluation Index (HHEI) as outlined in the *Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams Review Version 2.3* (OEPA, 2009). The HHEI is used to determine the status of smaller streams as one of three classes of primary headwater habitats (PHWH). The method scores streams on a range of 0 to 100 based on physical characteristics. Scores less than 30 indicate a Class I PHWH (ephemeral streams), scores 30 to 70 indicate a Class II PHWH (intermittent, interstitial or perennial, warm water streams), scores greater than 50 can be either Class II or Class III depending on their conditions, and Scores 70 or greater indicate a Class III PHWH (perennial, cool water streams). Class III streams are further subdivided into Class IIIA streams, which support higher native fauna diversity adapted to perennial stream flow, and Class IIIB streams, which support native fauna composition superior to Class IIIA. HHEI forms were completed for all stream crossings encountered, in addition to any applicable QHEI documentation.

In addition to performing the required assessment techniques for the wetlands and streams during the delineation efforts, the likelihood of any Federal- or State-listed species being found in the areas delineated was determined. Field teams conducted visual investigations of the nearby habitat out to ¼ mile on either side of the Project Survey Areas during feature delineations, noting any potential sensitive habitat. Additional visual surveys were conducted during stream delineations to identify evidence of mussel populations.

## 3 Wetland and Waterbody Delineation Results

The results are organized according to proposed corridors. Field surveys within the Alternate Survey Area were limited due to a lack of owner permission to access multiple properties.

### 3.1 Habitat Analysis Results

Prior to the field surveys, the ecological communities within the Project Survey Areas were mapped using National Land Cover Database (NLCD) (2006) datasets in GIS. During field efforts, the desktop findings within ¼ mile of the proposed Project infrastructure were field verified. Cultivated crops accounted for the largest type of land use within the Survey Areas with approximately 226 acres (93%) in the Preferred Survey Area and 236 acres (89%) in the Alternate Survey Area. The exact type of crops grown in the active crop area is seasonal and varies between years. During field evaluations the majority of planted crops were corn, with additional fields of soybeans. The second largest type of land use was Pasture/Hay which accounted for 8 acres (3%) in the Preferred Survey Area and 18 acres (7%) in the Alternate Survey Area. The primary uses for the Pasture/Hay fields are crops planted for livestock grazing or seed production. According to the NLCD, deciduous forest accounts for more than 1 acre (1%) in the Preferred Survey Area and 7 acres (3%) in the Alternate Survey Area. Developed/Open Space represented 8 acres (3%) in the Preferred Survey Area and 5 acres (2%) in the Alternate Survey Area. This land use is primarily residential development with maintained lawns consisting of Kentucky bluegrass. Grassland/Herbaceous land accounts for approximately 0.06 (<1%) acres in the Alternate Survey Area and 0.04 (<1%) acres in the Preferred Survey Area. The vegetation is limited primarily to herbaceous grasses with limited management such as mowing.

The Preferred Right of Way (ROW) is a smaller 120 foot wide corridor within the Preferred Survey Area. The general trends of land use continue from the Preferred Survey Area into the Preferred ROW. Cultivated crops account for 67 acres (94%) with Developed/Open Space and Pasture/Hay each accounting for an additional 2 acres (approximately 3% each). The remaining acreage within the ROW is considered forested which accounts for 0.24 acres (Less than 1%) The most commonly observed tree species were oaks (Red or White) genus *Quercus* and green ash (*Fraxinus pennsylvanica*). The herb stratum in the limited wooded areas was heavily represented by dandelion (*Taraxacum officinale*), Kentucky bluegrass (*Poa pratensis*), and fescue grasses (*Fescue* sp.).

The Cardno field team observed during the July field surveys that approximately 99% of the Project Survey Areas consists of manipulated landscapes, with a high composition being farmed fields and agricultural ditches. Discussion of the land use within the larger 2,000-foot Project Study Areas can be found in the EA, Section 2.1.

### 3.2 Listed Species Impacts

Due to the high level of agricultural land use, the majority of the available habitat is not suitable for the Federal- or State-listed species that may potentially live in the area. The Preferred Survey Area lacks wetlands and significant stands of trees. Trees found in the Project Survey Areas were primarily singular or occurring in limited distributions in crop wind rows. The majority of waterbodies delineated in the Project Survey Areas were part of the agricultural drainage systems and exhibit maintained banks that are unlikely to provide suitable habitat for rare plants and animals.

The aquatic habitats in the Project Survey Areas were primarily active agricultural ditches or streams with little buffer against surrounding agricultural land use. The majority of stream features may provide actual habitat, but the impacts due to a lack of shade and high sedimentation reduce the quality of the waters for both plant and animal species. Further reducing the viability of streams within the Project Survey Areas



was the constant mowing of the banks, which will prevent any significant colonization by Federal- or State-listed species.

Likewise, the terrestrial resources identified during the delineation were unlikely to support any of the listed species due to poor quality. The lack of stands of trees reduced the viability of the habitat by limiting availability of nesting sites. Furthermore the woodlots lacked any significant standing dead trees or shagbark hickories which may have been more suitable for bat species. Trees were identified primarily as oaks and maples of intermediate age. During the field efforts, no large fauna (listed or otherwise) were recorded.

Overall, the high degree of manipulation and fragmentation of the landscape has resulted in the loss of adequate habitat for many of the listed species that may occur in the Project Survey Areas. The habitat that does remain is often limited in quality, since it is so highly impacted by the adjacent land use. The Project Survey Areas consists of plant and animal communities that are common to disturbed agricultural land and buffer areas, with no significant communities supporting unique or rare plants. The primary habitats observed during field delineations were agricultural land with wooded areas limited to wind rows between crops. The threatened and endangered species that may occur in the area are primarily found in unique areas such as bogs, fens, or sedge meadows; none of which are found within the Project Survey Areas. At no time during this field effort, were any listed species (aquatic, terrestrial, avian, or plant) observed in the Project Survey Areas.

### **3.3 Wetland Survey Results**

During the delineation efforts conducted in the Project Survey Areas, field teams did not identify any wetlands in the Preferred Survey Area. Although several potential wetlands had been previously mapped by the available ODNr and NWI datasets, the field evaluation did not observe sufficient wetland criteria. Two potential wetland sites were identified in the Alternate Survey Area, but a lack of access prevented field teams from performing a full delineation of the Alternate Survey Area and the two wetland sites.

#### **3.3.1 Preferred Survey Area Wetland Survey Results**

No wetlands were identified during the delineation effort along the Preferred Survey Area.

#### **3.3.2 Alternate Survey Area Wetland Survey Results**

Limited wetland surveys were conducted in the Alternate Survey Area due to lack of permission to access all properties. Two potential wetlands were identified within the Alternate Survey Area, but were not evaluated by the field teams due to a lack of permission to access the properties. Descriptions of the wetlands were provided by referencing the NWI codes associated with the potential features.

##### **3.3.2.1 *Description of Wetlands in Alternate Survey Area***

Two separate potential wetlands were identified during desktop review of the site; however lack of access prevented field teams from verifying the information. Descriptions of the wetlands were based on the NWI classification of the wetlands identified and supplemented with information from previous surveys in the area. The field teams were unable to verify the information and delineate the actual extent of the potential wetlands remotely identified.

**WOH-T01** was identified to be a 0.88 acre forested wetland located on the southern edge of woodlot, just east of County Road 115. NWI classifies the potential wetland as PFO1A, which indicates a palustrine forested wetland with deciduous broad leaved trees and shrubs.

**WOH-T02** is a 1.19 acre forested wetland located on the northern edge of a woodlot. NWI classifies the potential wetland as PFO1A, which indicates a palustrine forested wetland with deciduous broad leaved trees and shrubs.

Refer to Table 3-1 for a summary of the identified wetlands for the Alternate Survey Area.

**Table 3-1 NWI Wetlands Identified within the Alternate Survey Area**

Wetland ID	Latitude	Longitude	County	Area (acres) within Survey Area	Wetland Type	Watershed / Drainage Basin	Notes	ORAM Score	Jurisdictional or Isolated?
WOH-T01	40.544305	-83.710386	Hardin	0.88	PFO	South Fork Great Miami River	Unable to verify due to access constraints	NA	NA
WOH-T02	40.546104	-83.701053	Hardin	1.19	PFO	Silver Creek-Scioto River	Unable to verify due to access constraints	NA	NA
<b>Total</b>				<b>2.07</b>					

### 3.4 Waterbody Delineation Survey Results

The Project Survey Areas can be categorized into three main drainage areas; South Fork of Great Miami River in the southern portion of the Survey Area, the North Fork of the Great Miami River flows southwest through Hardin County into Logan County through the central portion of the Survey Area, and the headwaters of the Scioto River. The North Fork and South Fork Great Miami River and Scioto River are not considered navigable waterways within the Survey Area. Each of these waterbodies identified in the Survey Area are designated as WWH in the Water Quality Standards<sup>3</sup>.

Extensive modification of the landscape within the Survey Area has resulted in the majority of the features being agricultural ditches. These water bodies are characteristic of the ditches found between row crop fields and have a similar trapezoidal cross section. The bankfull widths at the lowest points were between 3 and 6 feet wide which then widened out to a top of channel width between 20 and 25 feet. The sloped sides of the ditches were almost entirely covered in grass which was maintained by seasonal mowing. Some of the ditches were noted as having field tile, which served as sources of water to the ditches in addition to the overland flow. The ditches lacked any real development of a riffle system, with the substrates primarily including sand and silt. With narrow and maintained buffers, the ditches also lacked any developed canopy coverage or shade. The nature of the heavily modified ditches also meant there was little to no sinuosity. Water depth in the ditches ranged from 6 to 12 inches in most cases. The only exception to this trend was SOH-T06 which was a forested stream between agriculture fields and had moderate shading.

#### 3.4.1 Preferred Survey Area Waterbody Survey Results

The Preferred Survey Area accounts for 4 stream crossings totaling 1,693 linear feet. Of the stream crossings in the corridor, the HHEI scored: three as 'Class II', and one as 'Modified Class II'. Of the four features in the corridor, only one stream (SOH-T01) has had a QEHI filled out in addition to the required HHEI form. No mussels were observed at any of the crossings or their immediate vicinity during field evaluations. Table 3-2 has additional information about each waterbody described below. Although approximately 1,693 linear feet of waterbody crossings were found within the Preferred Survey Area, only 454 linear feet of waterbodies are expected to be crossed within the 120 foot wide Preferred ROW. Furthermore, it is not expected that Hardin Wind will construct any temporary vehicle crossings since they will use existing access routes provided by farm roads.

##### 3.4.1.1 Preferred Survey Area Waterbody Descriptions

**SOH-T01** is an agricultural ditch draining multiple adjacent corn fields. The steep banks of SOH-T-01 were heavily vegetated with tall grasses that appeared to be mowed regularly. There was little significant tree growth along the banks of the ditch and no riffle development in the delineated reach of the ditch. Field teams identified a field tile drainage that was actively flowing and acting as a source of the feature at the northern end. The ditch bottom was identified as primarily silt with limited sand and gravel components. No mussels were observed in SOH-T01. Although it scored as 52 on the HHEI, the lack of shade providing trees and riffles led to the stream scoring a 24 on the QEHI.

**SOH-T02** is an isolated and sporadic drainage feature occurring at the low point of a maintained grassy swale between two corn fields. SOH-T02 consists of multiple pools in depressions with standing water and transitions to a more typical and continuous water feature outside of the western edge of the Preferred Survey Area. A field access road acts as a boundary to the west. The stream bottom was identified as primarily silt with additional gravel and sand components. The HHEI scored the stream as a 45. No QEHI was performed due to a lack of pools 40 cm in depth. No mussels were observed.

---

<sup>3</sup> [http://www.epa.ohio.gov/dsw/rules/3745\\_1.aspx](http://www.epa.ohio.gov/dsw/rules/3745_1.aspx)

**SOH-T03** is an agricultural ditch between two corn fields. The steep banks are heavily vegetated with grasses and scour rush (*Equisetum hyemale*) and appeared to be maintained at regular intervals. The banks lacked any tree cover and the ditch had no riffle development. The substrate was identified as primarily silt and sand. The HHEI scored the ditch as a 37. No QEHI was performed due to a lack of pools 40 cm in depth. No mussels were observed in the ditch.

**SOH-T-04** was another agricultural ditch that feeds into SOH-T03. It has steep, heavily vegetated banks which appear to be maintained. The bottom substrate was identified as mostly silt with significant gravel components. The HHEI scored the ditch as a 36. No QEHI was performed due to a lack of pools 40 cm in depth. No mussels were observed in the ditch.



**Table 3-2 Waterbodies Delineated in Preferred Survey Area**

Stream ID	County	Linear Feet within Survey Area	Linear Feet within Preferred ROW	Stream Classification													
				HHEI Score	QHEI Score	PHWH Class I, II, III Designation	Drainage	Potential Mussel Habitat	Observed Mussel Population	WWH	EWH	MWH	AWS	IWS	BW	PCR	SCR
SOH-T01	Hardin	276.73	145.76	52	24	Modified Class II	North Fork Great Miami River	Low	No	X			X	X		X	
SOH-T02	Hardin	305.29	117.29	45	NA	Class II	North Fork Great Miami River	Low	No	X			X	X		X	
SOH-T03	Hardin	802.64	191.10	37	NA	Class II	North Fork Great Miami River	Low	No	X			X	X		X	
SOH-T04	Hardin	308.53	NA	36	NA	Class II	North Fork Great Miami River	Low	No	X			X	X		X	
<b>Total Linear Feet</b>		<b>1,693.19</b>	<b>454.15</b>														

**Notes:****QHEI - Qualitative Habitat Evaluation Index (0 to 100)**

&lt;32: limited resource water (LRW)

32 to 60: Modified warmwater habitat (MWH) (i.e., WWH has been disturbed but could potentially recover)

60 to 75: Warmwater habitat (WWH)

&gt;75: Possible exceptional warmwater habitat (EWH)

**HHEI - Headwater Habitat Evaluation Index (0 to 80)****Primary Headwater Habitat (PHWH) Classification:**

&lt;30: Class I PHWH (Typically Ephemeral Streams)

30 to 50: Class II PHWH (intermittent, warm water streams)

&gt; 50: Class II or III PHWH (depending on conditions)

&gt;75: Class III PHWH (perennial, cool water streams)

**Aquatic Use Designation:**

WWH: Warm Water Habitat

EWH: Exceptional Warm Water Habitat

AWS: Agricultural Water Supply

IWS: Industrial Water Supply

PCR: Primary Contact Recreation

SCR: Secondary Contact Recreation

NA: Not Available

### **3.4.2      Alternate Survey Area Waterbody Results**

During the July 2013 surveys Hardin Wind did not have owner permission to conduct surveys on all the properties within the Alternate Survey Area. Cardno conducted field delineation on all accessible properties and observed other properties from public access points. Public GIS data was used to evaluate inaccessible areas. The Alternate Survey Area has 3 delineated waterbodies totaling 1,565 linear feet of streams. The HHEI scored: two as 'Class II', and one as 'Modified Class II'. The stream features delineated were unlikely to have suitable mussel habitat. Table 3-3 has additional information on the streams described below.

#### **3.4.2.1      Alternate Survey Area Waterbody Descriptions**

**SOH-T01** occurs in both the Alternate and Preferred Corridor. Within the Alternate Survey Area, the conditions in the ditch are similar to those in the Preferred Survey Area. The steep banks of SOH-T-01 were heavily vegetated with tall grasses that appeared to be mowed regularly. There was little significant tree growth along the banks and no riffle development in the delineated reach of the ditch. Field teams identified a field tile drainage that was actively flowing into the identifiable source of the feature at the northern end. The stream bottom was identified as primarily silt with limited sand and gravel components. No mussels were observed in SOH-T01. Although it scored as 52 on the HHEI, the lack of shade providing trees and riffles led to the ditch scoring a 24 on the QEHI.

**SOH-T05** is an agricultural ditch draining adjacent corn fields. The steep banks are heavily vegetated with grasses and appear to be mowed annually. Although vegetated, the banks lack any tree coverage. The ditch bottom was identified as primarily silt with minor components of sand and gravel. The HHEI scored the ditch as a 41. No QEHI was performed due to a lack of pools 40 cm in depth. No mussels were observed in the ditch

**SOH-T06** is a forested stream that is located in a narrow woodlot between active corn and soybean fields. Portions of SOH-T06 were overgrown with reed canary grass (*Phalaris arundinacea*). Additional vegetation on the banks included young willows (*Salix sp.*) and poison ivy (*Toxicodendron radicans*). The substrate of the stream was identified as primarily silt and sand, with additional components of gravel and limited muck. Despite heavily vegetated banks with moderate shading, the HHEI scored the stream as a 48. No QEHI was performed due to a lack of pools 40 cm in depth. No mussels were observed in the stream.

**Table 3-3 Streams Delineated in Alternate Survey Area**

Stream ID	County	Linear Feet within Survey Area	Linear Feet within Alternate ROW*	Stream Classification													
				HHEI Score	QHEI Score	PHWH Class I,II,III Designation	Drainage	Potential Mussel Habitat	Observed Mussel Population	WWH	EWH	MWH	AWS	IWS	BW	PCR	SCR
SOH-T01	Hardin	284.49	NA	52	24	Modified Class II	North Fork Great Miami River	Low	No	X			X	X		X	
SOH-T05	Hardin	459.25	NA	41	NA	Class II	South Fork Great Miami River	Low	No	X			X	X		X	
SOH-T06	Hardin	821.25	NA	48	NA	Class II	Silver Creek-Scioto River	Medium	No	X			X	X		X	
<b>Total Feet in Crossing</b>		<b>1,565.00</b>															

**Notes:**

**\*No Alternate ROW**

**QHEI - Qualitative Habitat Evaluation Index (0 to 100)**

<32: limited resource water (LRW)
32 to 60: Modified warmwater habitat (MWH) (i.e., WWH has been disturbed but could potentially recover)
60 to 75: Warmwater habitat (WWH)
>75: Possible exceptional warmwater habitat (EWH)

**HHEI - Headwater Habitat Evaluation Index (0 to 80)**

**Primary Headwater Habitat (PHWH) Classification:**

<30: Class I PHWH (Typically Ephemeral Streams)
30 to 50: Class II PHWH (intermittent, warm water streams)
> 50: Class II or III PHWH (depending on conditions)
>75: Class III PHWH (perennial, cool water streams)

**Aquatic Use Designation:**

WWH: Warm Water Habitat  
EWH: Exceptional Warm Water Habitat  
AWS: Agricultural Water Supply  
IWS: Industrial Water Supply  
PCR: Primary Contact Recreation  
SCR: Secondary Contact Recreation  
NA: Not Available

## 4 Conclusion

---

The Project Survey Area is primarily actively farmed crop land with few trees occurring along wind rows between crops. No wetlands were identified in the Preferred Survey Area. Two potential wetlands were identified remotely in the Alternate Survey Area. Lack of owner permission to access prevented field evaluations of these potential wetlands. The Preferred Survey Area was fully delineated and did not contain any wetlands.

Many of the waterbodies encountered were simple agricultural ditches and streams, with trapezoidal cross sections and maintained grassy banks. High silt and flash flood potential prevented these waterbodies from being classified as high quality, despite the HHEI scores indicating all of them as 'Class II' or better. Though they may have sufficient habitat, the water quality may not support the development of rich faunal communities. No water quality samples were taken, though field observations indicate several significant stressors present in many of the streams, including the ongoing agricultural use of the adjacent land and related farming activities. The majority of streams located between agricultural fields lack any significant sources of shade. The lack of cover will lead to higher temperatures in the summer, which is further compounded by the relative lack of depth in many of the streams. Stream flow conditions may also change throughout the season, increasing the likelihood of low flow or limited depth during drought periods. Ongoing manipulation of the ditches, through field tile installation, may further degrade some of the waterbodies as well. Depths for these agricultural ditches ranged between six and twelve inches, with no riffles or significant pooling. Even the more naturalized features found in the Project Survey Areas had little development of riffle systems. Of the six waterbodies delineated, none were reported as having high potential for mussels. The only waterbody that was identified as non-ditch (SOH-T06) occurred in the Alternate Survey Area. During the entire course of the study, no mussels were observed.

Impacts to waterbodies and wetlands from construction and operation of the transmission line should be non-existent as a result of design considerations and in the field micro-siting. The only potential wetlands identified during field efforts occurred in the Alternate Survey Area which is not under further review for construction at this time. Hardin Wind intends to use existing access routes, such as farm roads and swales, to access work sites. Furthermore, Hardin Wind will not be installing any vehicle crossings over streams, instead opting to enter from the opposite side of any streams that need to be crossed. Since the transmission lines will be overhead, there is likely to be little impact to any of the identified stream features. Hardin Wind will also cooperate with the State to meet any sediment erosion and loss control plans required. For this reason, the impact to streams will likely be low.

Wetlands Report  
Scioto Ridge Transmission Line

APPENDIX

A

SITE PHOTOS



**Scioto Ridge Wind Farm Transmission Line, Ohio  
Wetland and Waterbody Field Delineation Surveys  
Photolog  
July 2013**

**Photo: SOH-T01 DS from  
Flag 1 to SOH-045**

**Date: 7/23/2013**

**Description: Photo of  
stream T01 which runs  
between two agricultural  
fields and has maintained  
grassy banks**



**Photo: SOH-T01 Cross  
Channel from Flag 6  
showing field tile**

**Date: 7/23/2013**

**Description: Photo of  
stream T01 which was fed  
primarily by this field tile,  
draining nearby corn fields.**





**Scioto Ridge Wind Farm Transmission Line, Ohio  
Wetland and Waterbody Field Delineation Surveys  
Photolog  
July 2013**

**Photo: SOH-T04 US from  
Flag 4**

**Date: 7/23/2013**

**Description: Typical stream  
found in the corridors;  
Agricultural canal located  
between two active crop  
areas with grassy banks.**



**Photo: Habitat Point near  
Stop 3 Additional 2**

**Date: 7/23/2013**

**Description: Photo of a  
woodlot with no evidence of  
wetlands that had been  
previously mapped as  
potential wetland. No  
wetlands were found during  
field verification. Many of  
the potential sites exhibited  
similar compositions of  
upland species and lacked  
hydrology.**





**Scioto Ridge Wind Farm Transmission Line, Ohio  
Wetland and Waterbody Field Delineation Surveys  
Photolog  
July 2013**

**Photo: SOH-T05 DS from  
Flag 2**

**Date: 7/24/2013**

**Description: Heavily  
vegetated ditch with limited  
open water portion. Depth of  
water approximately 6  
inches.**



**Photo: SOH-T06 DS from  
Flag 5**

**Date: 7/24/2013**

**Description: The only  
forested stream identified  
during the field efforts was  
SOH-T06. Heavy canopy  
cover was provided by trees  
growing along bank.  
Channel was somewhat  
overgrown. SOH-T06  
occurred in the Alternate  
Study Area.**



Wetlands Report  
Scioto Ridge Transmission Line

APPENDIX

B

WETLAND MAPS

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**9/30/2013 5:56:44 PM**

**in**

**Case No(s). 13-1767-EL-BSB, 13-1768-EL-BTX**

Summary: Application Exhibit B, Ecological Assessment, Part 3/6 electronically filed by Mr. Michael J. Settineri on behalf of Hardin Wind LLC