

Appendix D Ecological Resources Inventory Report



**Delano Station Expansion Project,
Ross County, Ohio**

**Ecological Resources Inventory
Report**

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Sign-off Sheet

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Introduction
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1.0 INTRODUCTION

AEP plans to expand the existing Delano 138 kV substation (Delano Station) on an approximate 8.5-acre property to accommodate a new solar farm project and install a new 138 kV pole outside of the substation to connect to the customer's transmission line. The Project area is located at the intersection of Delano Road and OH-159, north of the City of Chillicothe, Ross County, Ohio (Figure 1, Appendix A). The Project area was surveyed for wetlands, waterbodies, open water features, and potential threatened, endangered, and rare species habitat by Stantec Consulting Services Inc. (Stantec) biologists on April 14, 2022. The approximate locations of features located up to 50 feet outside of the Project area were also recorded during the field surveys, where landowner access was permitted. However, no data forms were collected on features that did not extend into the Project area. The approximate locations of these features are shown on the Figure 2 maps in Appendix A as "approximate" wetlands, streams (waterways), open waters, and upland drainage features.

Methods
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2.0 METHODS

2.1 WETLAND DELINEATION

Prior to completing the field surveys, a desktop review of the Project area was conducted using U.S. Geological Survey (USGS) topographic mapping, National Wetlands Inventory (NWI) maps, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey data, and aerial imagery mapping. Stantec completed a wetland delineation study in accordance with the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (USACE 2012). Wetland categories were classified using the Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001).

2.2 STREAM DELINEATION

Streams that demonstrated a continuously defined channel (bed and bank), ordinary high water mark (OHWM), and the disturbance of terrestrial vegetation were delineated within the Project area, per the protocols outlined in the USACE's *Guidance on Ordinary High Water Mark Identification* (Regulatory Guidance Letter, No. 05-05) (USACE 2005). Delineated streams were classified as ephemeral, intermittent, or perennial per definitions in the *Federal Register/Vol. 67, No. 10* (USACE 2002). Functional assessment of streams identified within the Project area was based on completion of the Ohio Environmental Protection Agency's (OEPA) *Headwater Habitat Evaluation Index* (HHEI; OEPA 2018) and/or *Qualitative Habitat Evaluation Index* (QHEI; OEPA 2006). The centerline of each waterway and/or the OHWM of each waterway was identified and surveyed using a handheld sub-meter accuracy global positioning system (GPS) unit and mapped with geographic information system (GIS) software. Additionally, the locations of ponds/open water features and upland drainage features (which lacked a continuously defined bed and bank/OHWM) identified within the Project area were also recorded with a sub-meter accuracy GPS unit during the field surveys.

2.3 RARE SPECIES

Prior to conducting the field surveys, Stantec contacted the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) for information regarding rare, threatened, or endangered species and their habitats of concern within the vicinity of the Project area (Appendix B – Agency Correspondence). To assess potential impacts to rare, threatened, or endangered species, Stantec scientists conducted a pedestrian reconnaissance of the proposed Project area, collected information on existing habitats within the Project area, and assessed the potential for these habitats to be used by federally listed or state-listed species that have the potential to occur within Ross County.

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3.0 RESULTS

3.1 TERRESTRIAL HABITAT

Stantec completed field surveys on April 14, 2022, for threatened and endangered species or their habitats. Figure 3 (Appendix A) shows the vegetation communities/habitats identified within the Project area and the locations of any identified rare, threatened, or endangered species habitat observed within the Project area during the time of the habitat assessment surveys. Representative photographs of the vegetation communities/habitats and land cover types identified within the Project area are included in Appendix C of this report (photo locations are shown on Figure 3, Appendix A). Information regarding the vegetation communities/habitats/land cover types identified within the Project area is provided in Table 1.

Table 1. Vegetation Communities and Land Cover Types Found within the Delano Station Expansion Project Area, Ross County, Ohio

Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
New Field	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders and/or native highly tolerant taxa). Common plant species included red clover (<i>Trifolium pratense</i>), meadow garlic (<i>Allium canadense</i>), henbit deadnettle (<i>Lamium amplexicaule</i>), stickywilly (<i>Galium aparine</i>), narrowleaf plantain (<i>Plantago lanceolata</i>), common dandelion (<i>Taraxacum officinale</i>), Johnsongrass (<i>Sorghum halepense</i>), common blue violet (<i>Viola sororia</i>), and tall fescue (<i>Schedonorus arundinacea</i>).	No	0.58
Old Field	Moderate to Extreme Disturbance/Ruderal Community dominated by native and non-native herbaceous and woody species. Common plant species included common milkweed (<i>Asclepias syriaca</i>), Indianhemp (<i>Apocynum cannabinum</i>), meadow garlic, poison hemlock	No	0.96

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Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
	(<i>Conium maculatum</i>), Johnsongrass, narrowleaf plantain, Canada goldenrod (<i>Solidago canadensis</i>), and field pennycress (<i>Thlaspi arvense</i>).		
Mixed Early Successional/Second Growth Forest	Moderate Disturbance/Natural Community (dominated by native woody and herbaceous species and/or opportunistic invaders). Common plant species included poison hemlock, Amur honeysuckle (<i>Lonicera maackii</i>), eastern redbud (<i>Cercis canadensis</i>), Callery pear (<i>Pyrus calleryana</i>), black cherry (<i>Prunus serotina</i>), mayapple (<i>Podophyllum peltatum</i>), common hackberry (<i>Celtis occidentalis</i>), and green ash (<i>Fraxinus pennsylvanica</i>).	No	0.29
Industrial Land	Extreme Disturbance/Ruderal Community (little to no vegetation is present in these areas).	No	6.61
TOTAL			8.43

3.2 WETLANDS

No wetlands were delineated within the Project area during the field surveys completed on April 14, 2022. One NWI-mapped feature was located within the Project area. Information regarding the NWI-mapped feature is included in Table 2. Two wetland determination sample points were evaluated within the Project area in the locations most likely to meet the criteria to be considered a wetland. Representative photographs of the wetland determination sample points within the Project area are included in Appendix C of this report (photo locations are shown on Figure 2, Appendix A). The completed wetland determination data forms are included in Appendix D.

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Table 2. Summary of NWI Disposition within the Delano Station Expansion Project Area, Ross County, Ohio

NWI Code	NWI Description	Figure 2 Page Number	Related Field Inventoried Resource(s)	Comments
R4SBC	Riverine, intermittent, streambed, seasonally flooded	1	Intermittent stream	An intermittent stream located just west of the Project area was present within the location of the mapped NWI feature.

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3.3 STREAMS

No streams were delineated within the Project area during the field surveys completed on April 14, 2022. One intermittent stream was identified by Stantec just west of the Project area, as seen on Figure 2 in Appendix A. Representative photographs of the stream can be found in Appendix C.

3.4 OPEN WATERS

No open waters were identified within the Project area during the field surveys that took place on April 14, 2022.

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3.5 RARE, THREATENED, OR ENDANGERED SPECIES HABITAT

Table 3. Summary of Potential Federally Listed and Ohio State-Listed Species within the Delano Station Expansion Project Area, Ross County, Ohio

Common Name/Scientific Name	State Listed Status ^{1,2}	Federally Listed Status ^{1,3}	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Fishes						
Shortnose Gar/ <i>Lepisosteus platostomus</i>	E	N/A	Habitat includes large weedy lakes and reservoirs, backwaters, and quiet pools of medium to large rivers, stagnant ponds, sloughs, canals, brackish waters of coastal inlets, occasionally coastal marine waters; often near vegetation or close to submerged or overhanging objects by day. Young tend to occupy shallows and larger individuals are found in deeper water. Spawning occurs over weed beds of shallow waters in rivers, usually in grass and weeds in shoal water in lakes, or near stone piles of railroad bridges, in nests of smallmouth bass, or over gravel bars (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the shortnose gar. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Northern Madtom/ <i>Noturus stigmosus</i>	E	N/A	Typical habitat includes large creeks and small rivers with clear to turbid water and moderate current; this madtom avoids extremely silty situations; it occurs in areas with little cover other than tree limbs and debris. This species occurs in streams with shifting sand and mud bottom and in streams with swift rocky riffles (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the northern madtom. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Goldeye/ <i>Hiodon alosoides</i>	E	N/A	Goldeye habitat includes quiet turbid water of medium to large lowland rivers, small lakes, ponds, and marshes connected to them, and muddy shallows of larger lakes. This fish prefers moderate to fast current in Illinois and Ohio. Spawning occurs in shallow firm-bottomed sites in river pools or backwaters or over gravel shoals in tributary streams (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the goldeye. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.

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Common Name/Scientific Name	State Listed Status ^{1,2}	Federally Listed Status ^{1,3}	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Northern Brook Lamprey/ <i>Ichthyomyzon fossor</i>	E	N/A	Adult lampreys are found in clear brooks with fast flowing water and sand or gravel bottoms. Juveniles are found in slow moving water buried in soft substrate in medium to large streams (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the northern brook lamprey. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Shovelnose Sturgeon/ <i>Scaphirhynchus platyrhynchus</i>	E	N/A	The shovelnose sturgeon prefers deep channels and embayments of large turbid rivers; often over sand mixed with gravel or mud in areas with strong current (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the shovelnose sturgeon. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Spotted Darter/ <i>Etheostoma maculatum</i>	E	N/A	This species is found in medium sized rivers and streams. They are typically found in areas of swift current at the top or bottom end of a riffle where there are many very large boulders or flab slabs or rock. They spend most of their time hiding under the upstream edge of these large rocks (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the spotted darter. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
American Eel/ <i>Anguilla rostrata</i>	T	N/A	The American eel may be found at times in any stream in Ohio and in Lake Erie. They appear most often in moderate or large rivers with continuous flow and moderately clear water. While in fresh water, eels are secretive and hide in deep pools around cover, sometimes burying themselves during the day and coming out to feed at night, preferably on fish or crayfish (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the American eel. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Tippecanoe Darter/ <i>Etheostoma tippecanoe</i>	T	N/A	This species prefers medium to large streams in the Ohio River drainage system and are found in riffles of moderate current with substrates of gravel or cobble sized rocks (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the Tippecanoe darter. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Blue Sucker/ <i>Cyprinostomus elongatus</i>	T	N/A	Blue sucker habitat includes the largest rivers and lower parts of major tributaries. Usually, this sucker occurs in channels and flowing pools with moderate current (1.0-2.6 meters/sec). It also occurs in some impoundments. Adults probably winter in	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the blue sucker. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.

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Common Name/Scientific Name	State Listed Status ^{1,2}	Federally Listed Status ^{1,3}	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
			deep pools. Young occupy shallower and less swift water than do adults (NatureServe 2022).			
Paddlefish/ <i>Polyodon spathula</i>	T	N/A	Paddlefish are found in the Ohio River and up to the first dam on its larger tributaries. They prefer the sluggish pools and backwater areas of these rivers and streams. Historically they were much more common and could be found as far up the Ohio River as Pennsylvania. It is also probable that there was a small population in Lake Erie at one time. Today paddlefish are most often seen in the Ohio River from Portsmouth downstream to the Indiana state line (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the paddlefish. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	The ODNR recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. However, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Channel Darter/ <i>Percina copelandi</i>	T	N/A	Channel darters are found in large, coarse sand or fine gravel bars in large rivers or along the shore of Lake Erie. Up until the invasion of the round goby, large schools of channel darters could be observed on the bars around the Lake Erie islands. It is likely the Lake Erie population no longer exists. They are still found in the Ohio River and the lower portion of the Scioto, Muskingum, and Hocking Rivers. There may also be a small remnant population in the lower Maumee and Sandusky Rivers in the Lake Erie drainage (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the channel darter. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
River Darter/ <i>Percina shumardi</i>	T	N/A	The river darter is found in very large rivers typically in areas of swift current. They are found over a gravel or rocky bottom in depths of 3 feet or more. In Ohio this species has historically been found in some of the larger western Lake Erie tributaries. They have also been found in the Ohio River and the lower portions of larger tributaries such as the Scioto, Hocking, and Muskingum Rivers. There are no recent reports of them from the Lake Erie drainage but there are recent records for the Ohio River, possibly even some expansion of their range in that drainage (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR – The Project is within the range of the river darter. Due to the location, and that there is no in-water work proposed in a perennial stream, this Project Is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.

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Common Name/Scientific Name	State Listed Status ^{1,2}	Federally Listed Status ^{1,3}	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Mussels						
Northern Riffleshell/ <i>Epioblasma torulosa rangiana</i>	E	E	This species is found in a wide variety of streams from small to large. Habitat for this species includes riffles and firmly packed substrates of fine to coarse gravel. This mussel needs highly oxygenated water (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the northern riffleshell mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Rabbitsfoot/ <i>Quadrula cylindrica</i>	E	T	Typical habitat for this species is small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Rabbitsfoot are also found in medium to large rivers in sand and gravel (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the rabbitsfoot mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Sharp-ridged Pocketbook/ <i>Lampsilis ovata</i>	E	N/A	The sharp-ridged pocketbook is very generalized in habitat preference, adapting well to both impoundment situations as well as free-flowing, shallow rivers. It is usually found in moderate to strong current, however it can survive in standing water. The most suitable substrate consists of a mixture of gravel and coarse sand mixed with some silt or mud (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the sharp-ridged pocketbook mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Snuffbox/ <i>Epioblasma triquetra</i>	E	E	The snuffbox occurs in medium-sized streams to large rivers, generally on mud, rocky, gravel, or sand substrates in flowing water. They are often deeply buried in substrate and overlooked by collectors (NatureServe 2022). It is found in a wide range of particle sized substrates; however, swift shallow riffles with sand and gravel are where it is typically found (Parmalee and Bogan 1998; Watters et al. 2009).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the snuffbox mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Long Solid/ <i>Fusconaia subrotunda</i>	E	N/A	This species is found in medium to large rivers with a strong current and often in sand and gravel (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the long solid mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.

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Common Name/Scientific Name	State Listed Status ^{1,2}	Federally Listed Status ^{1,3}	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Clubshell/ <i>Pleurobema clava</i>	E	E	The clubshell occurs in medium to small rivers and streams, containing clean, coarse sand and cobble substrates (USFWS 1994). The clubshell is usually found within the current, where it may live several inches underneath the surface. It is most common in the downstream ends of riffles and islands (Watters et al. 2009). The clubshell is mostly considered an Ohio River system species, including the Tennessee, Cumberland, Kanawha, and Wabash river drainages. However, it is also found within the Maumee River system of Lake Erie. Although historically the clubshell was originally described as occurring within Lake Erie, only one record of its occurrence there has been found (Watters et al. 2009).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the clubshell mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Rayed Bean/ <i>Villosa fabalis</i>	E	E	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants and increased substrate stability (NatureServe 2022; Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the rayed bean mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Black Sandshell/ <i>Ligumia recta</i>	T	N/A	The black sandshell is typically found in medium-sized to large rivers in locations with strong current and substrates of coarse sand and gravel with cobbles in water depths from several inches to six feet or more (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the black sandshell mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Threehorn Wartyback/ <i>Obliquaria reflexa</i>	T	N/A	This species is typical of the large rivers where there is moderately strong current, and a stable substrate composed of	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the threehorn wartyback mussel. Due to the location, and that there is no in-water work	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore,

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			gravel, sand, and mud (NatureServe 2022).		proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	impacts to this species are not anticipated and avoidance dates are not applicable.
Fawnsfoot/ <i>Truncilla donaciformis</i>	T	N/A	This species occurs in both large and medium-sized rivers at normal depths varying from less than three feet up to 15 to 18 feet in big rivers such as the Tennessee. A substrate of either sand or mud is suitable and although it is typically found in moderate current, it can adapt to a lake or embayment environment lacking current (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the fawnsfoot mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Fanshell/ <i>Cyprogenia stegaria</i>		E	Characteristic fanshell habitat is medium to large streams. It has been found in river habitats with gravel substrates and a strong current, in both deep and shallow water (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the fanshell mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Little Spectaclecase/ <i>Villosa lienosa</i>	E	N/A	The little spectaclecase can be found in sandy substrates in slight to moderate current. It typically inhabits small creeks to medium-sized rivers, usually along the banks in slower currents (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the little spectaclecase mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Sheepnose/ <i>Plethobasus cyphus</i>		E	Although the sheepnose does inhabit medium-sized rivers, this mussel generally has been considered a large-river species. It may be associated with riffles and gravel/cobble substrates but usually has been reported from deep water (>2 m) with slight to swift currents and mud, sand, or gravel bottoms (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – The Project area is within the range of the sheepnose mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Mammals						
Indiana Bat/ <i>Myotis sodalis</i>	E	E	The Indiana bat is likely distributed over the entire State of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a	No suitable roosting habitat or potential hibernacula were observed within the Project area.	ODNR – If suitable habitat occurs within the project area, ODNR recommends trees be conserved. If suitable habitat occurs within the Project area and trees must be cut, ODNR recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, ODNR recommends a net survey be conducted between June 1 and August 15, prior to any cutting. In addition, ODNR recommends a desktop habitat assessment,	No suitable summer roosting habitat or potential hibernacula were observed within the Project area during the field surveys completed on April 14, 2022. Additionally, a desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). AEP intends to conduct any necessary tree clearing between October 1 and March 31. If any tree clearing is required outside of that timeframe, AEP will conduct the required

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Common Name/Scientific Name	State Listed Status ^{1,2}	Federally Listed Status ^{1,3}	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
			permanent water source and foraging areas; Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007; USFWS 2020a). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).		followed by field a field assessment if needed, to determine if there are potential hibernacula present within the Project area. USFWS – The USFWS response letter (Appendix B) indicated that, due to the project type, size, and location, if caves and mines (potential bat hibernacula) will not be disturbed and seasonal tree cutting (clearing of trees ≥3 inches' diameter at breast height between October 1 and March 31) to avoid impacts to Indiana bats is implemented, they do not anticipate adverse effects to this species. If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office.	agency coordination and complete presence/probable absence bat mist net surveys for this species to ensure no impacts to this species will occur as part of the Project.
Northern Long-eared Bat/ <i>Myotis septentrionalis</i>	E	T	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010; USFWS 2020b). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).	No suitable roosting habitat or potential hibernacula were observed within the Project area.	ODNR – If suitable habitat occurs within the project area, ODNR recommends trees be conserved. If suitable habitat occurs within the Project area and trees must be cut, ODNR recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, ODNR recommends a net survey be conducted between June 1 and August 15, prior to any cutting. In addition, ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, to determine if there are potential hibernacula present within the Project area. USFWS – If no caves or abandoned mines may be disturbed and tree removal is unavoidable, seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) is recommended. Following this seasonal tree clearing recommendation should ensure that no adverse effects to the northern long-eared bat will occur. Incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule.	No suitable summer roosting habitat or potential hibernacula were observed within the Project area during the field surveys completed on April 14, 2022. Additionally, a desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). AEP intends to conduct any necessary tree clearing between October 1 and March 31. If any tree clearing is required outside of that timeframe, AEP will conduct the required agency coordination and complete presence/probable absence bat mist net surveys for this species to ensure no impacts to this species will occur as part of the Project.

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Common Name/Scientific Name	State Listed Status ^{1,2}	Federally Listed Status ^{1,3}	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Little Brown Bat/ <i>Myotis lucifugus</i>	E	N/A	The little brown bat is found throughout Ohio. This species seems to prefer to forage over water but also forages among trees in rather open areas (Harvey et al. 1999). During summer, it typically inhabits buildings, attics, church belfries, barns and outbuildings, and occasionally more natural habitats such as sloughing bark of a dead tree. During summer, two types of roosts are utilized: day roosts and night roosts. Day roosts are the maternity colony roost, while little brown bats often roost in other areas where they rest and congregate to digest their food in between foraging bouts. In Ohio, this species typically utilizes caves and mines as hibernacula, although at least one hibernaculum was found to be located in an attic of an old building (Brack et al. 2010).	No suitable roosting habitat or potential hibernacula were observed within the Project area.	ODNR – If suitable habitat occurs within the project area, ODNR recommends trees be conserved. If suitable habitat occurs within the Project area and trees must be cut, ODNR recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, ODNR recommends a net survey be conducted between June 1 and August 15, prior to any cutting. In addition, ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, to determine if there are potential hibernacula present within the Project area. USFWS – No comments received.	No suitable summer roosting habitat or potential hibernacula were observed within the Project area during the field surveys completed on April 14, 2022. Additionally, a desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). AEP intends to conduct any necessary tree clearing between October 1 and March 31. If any tree clearing is required outside of that timeframe, AEP will conduct the required agency coordination and complete presence/probable absence bat mist net surveys for this species to ensure no impacts to this species will occur as part of the Project.
Tri-colored Bat/ <i>Perimyotis subflavus</i>	E	N/A	The tricolored bat is found throughout Ohio. This species has been found to forage above and within a variety of habitats, including woodlands, agricultural fields, grassy areas, and over streamside vegetation (Sparks et al. 2011). Maternity colonies have often been found within clusters of dead leaves, hanging in trees. Maternity colonies have also been found in or on buildings. Little is known of male tri-colored bats in summer, but it is thought that they are probably solitary and spend their days in similar situations, as well as crevices, caves and mines (Brack et al. 2010). In Ohio, this species typically utilizes caves and mines as hibernacula, utilizing a variety of situations, including very cold areas near cave entrances to deeper passages that seem to be too warm for other species of bats (Brack et al. 2010).	No suitable roosting habitat or potential hibernacula were observed within the Project area.	ODNR – If suitable habitat occurs within the project area, ODNR recommends trees be conserved. If suitable habitat occurs within the Project area and trees must be cut, ODNR recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, ODNR recommends a net survey be conducted between June 1 and August 15, prior to any cutting. In addition, ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, to determine if there are potential hibernacula present within the Project area. USFWS – No comments received.	No suitable summer roosting habitat or potential hibernacula were observed within the Project area during the field surveys completed on April 14, 2022. Additionally, a desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). AEP intends to conduct any necessary tree clearing between October 1 and March 31. If any tree clearing is required outside of that timeframe, AEP will conduct the required agency coordination and complete presence/probable absence bat mist net surveys for this species to ensure no impacts to this species will occur as part of the Project.
Birds						

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Common Name/Scientific Name	State Listed Status ^{1,2}	Federally Listed Status ^{1,3}	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Northern Harrier/ <i>Circus hudsonius</i>	E	N/A	Harriers hunt low over grasslands, with wings held in a distinctive dihedral (V-shape). This is a common migrant and winter species in Ohio. Nesters are much rarer, although they occasionally breed in large marshes and grasslands (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR – This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, this Project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Therefore, no impacts are anticipated and avoidance dates are not applicable.
Upland Sandpiper/ <i>Bartramia longicauda</i>	E	N/A	Upland sandpipers breed in grasslands, pastures, and unkept agricultural land with a mosaic of old fields and crop lands, and sometimes the grassy expanses of airports (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR – Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 to July 31. If this type of habitat will not be impacted, this Project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Therefore, no impacts are anticipated and avoidance dates are not applicable.
Amphibians						
Eastern Hellbender/ <i>Cryptobranchus alleganiensis</i>	E	SOC	In Ohio, this species is primarily found in the unglaciated portions of the state and prefers large, swift flowing streams where they hide under larger rocks (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR– Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size to provide suitable habitat, this Project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Midland Mud Salamander/ <i>Pseudotriton montanus</i>	T	N/A	Habitat includes muddy and silt-laden areas, where it is most often found under logs or stones along shallow, sluggish streams, spring runs, floodplains, or seepage areas, usually but not always in wooded areas (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – Due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Reptiles						
Timber Rattlesnake/ <i>Crotalus horridus</i>	E	SOC	Remnant colonies persist in widely scattered areas in southern unglaciated Ohio. They prefer dry, wooded hill country where they prey on a variety of small warm-blooded animals (ODNR 2018).	No suitable habitat was observed within the Project area.	ODNR – Due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.

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Common Name/Scientific Name	State Listed Status ^{1,2}	Federally Listed Status ^{1,3}	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Spotted Turtle/ <i>Clemmys guttata</i>	T	N/A	Spotted turtles inhabit mostly unpolluted, shallow bodies of water with a soft bottom and aquatic vegetation, such as small marshes, marshy pastures, bogs, fens, woodland streams, swamps, small ponds, vernal pools, and lake margins: in some areas, they occur in brackish tidal streams (NatureServe 2022).	No suitable habitat was observed within the Project area.	ODNR – Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species. USFWS – No comments received.	No suitable habitat was observed within the Project area. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
¹ E=Endangered; T=Threatened; SOC=Species of Concern; N/A=Not Applicable ² According to ODNR, State Listed Wildlife and Plant Species by County (ODNR 2022a). ³ According to USFWS (2018).						

4.0 CONCLUSIONS AND RECOMMENDATIONS

Stantec conducted a wetland and waterbodies delineation and a preliminary habitat assessment for threatened and endangered species within the Project area on April 14, 2022. No streams, wetlands, or open water features were identified within the Project area. The information provided by Stantec regarding wetland and stream boundaries is based on an analysis of the wetland and upland conditions present within the Project area at the time of the field work. The delineations were performed by experienced and qualified professionals using regulatory agency-accepted practices and sound professional judgment. Two wetland determination data forms were completed and are provided in Appendix D and representative photographs are provided in Appendix C.

An ODNR Ohio Natural Heritage Program data request and environmental review request letter was sent to the ODNR Office of Real Estate on April 11, 2022. The ODNR Office of Real Estate response dated May 4, 2022 (Appendix B) states that there are no records of threatened or endangered species within a one-mile radius of the Project area.

The ODNR stated that the entire state of Ohio is within the range of the Indiana bat, northern long-eared bat, little brown bat, and the tricolored bat. If trees are present within the Project area, and trees must be cut, the ODNR Division of Wildlife (DOW) recommends cutting only occur from October 1 – March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities as well as trees with diameter at breast height (dbh) ≥ 20 inches if possible. If trees are present within the Project area and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting.

The ODNR also recommends that a desktop habitat assessment be conducted, followed by a field assessment if needed, to determine if there are potential bat hibernacula present within 0.25 miles of the Project area. Stantec completed a habitat desktop assessment in accordance with the 2020 Range-wide Indiana Bat Survey Guidelines (USFWS 2020a) utilizing available ODNR websites, including data on known abandoned or active mines (ODNR 2022b) and locations of known or suspected karst geology (ODNR 2022c). The desktop assessment did not identify any caves, abandoned underground mines, active underground mines, or other potential bat hibernacula within the Project area or a 3-mile buffer of it (Figure 4, Appendix A). Additionally, no potential bat hibernacula or potential summer roost trees were identified within the Project area. AEP intends to conduct any necessary tree clearing between October 1 and March 31. If any tree clearing is required outside of that timeframe, AEP will conduct the required agency coordination and complete presence/probable absence bat mist net surveys for federally listed and state-listed bat species to ensure no impacts to these species will occur as part of the Project.

The ODNR states that the Project is within the range of 13 state-listed and federally listed threatened and endangered mussel species. Due to the location and that there is no in-water

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work proposed in a perennial stream, ODNR states that this Project is not likely to impact these species.

The ODNR also states that the Project is within the range of 12 state-listed endangered and threatened fish species. Due to the location and that there is no in-water work proposed in a perennial stream, the ODNR states that this Project is not likely to impact these species.

The Project is also within range of the following state-listed endangered and threatened bird species: the northern harrier and upland sandpiper. No suitable nesting habitat is present within the Project area for either of these state-listed bird species. Therefore, this Project is not likely to impact these species and nesting season avoidance dates are not applicable.

Additionally, the Project is within the range of the eastern hellbender, timber rattlesnake, spotted turtle, and the midland mud salamander. ODNR states that due to the location, the type of habitat within the Project area, that there is no in-water work proposed in a perennial stream of sufficient size to provide suitable habitat, and the type of work proposed, this Project is not likely to impact these species.

A technical assistance request letter was also submitted to the USFWS on April 11, 2022. The USFWS response letter dated April 14, 2022, recommends that impacts to wetlands and other water resources be avoided or minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation (Appendix B).

According to the USFWS response, all projects in the State of Ohio lie within range of the federally endangered Indiana bat and the federally threatened northern long-eared bat. In Ohio, presence of these species is assumed wherever suitable habitat occurs unless a presence/probable absence survey has been performed to document probable absence. The USFWS response letter states that, should the Project site contain trees ≥ 3 inches dbh, the USFWS recommends trees be saved whenever possible. If any caves or abandoned mines may be disturbed, further coordination is requested. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, the USFWS recommends that removal of trees ≥ 3 inches dbh only occur between October 1 and March 31 in order to avoid adverse effects to these species. If implementation of seasonal tree clearing is not possible, the USFWS recommends summer presence/probable absence surveys be conducted between June 1 and August 15. As stated, no potential bat hibernacula or summer roosting habitat for these species was identified within the Project area and AEP intends to conduct any necessary tree clearing between October 1 and March 31. If any tree clearing is required outside of that timeframe, AEP will conduct the required agency coordination and complete presence/probable absence bat mist net surveys for the Indiana bat and northern long-eared bat to ensure no impacts to these species will occur as part of the Project.

Additionally, the USFWS states that they do not anticipate adverse effects to any other federally endangered, threatened, proposed or candidate species due to the Project type, size, and location.

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Appendix A FIGURES

A.1 FIGURE 1 – PROJECT LOCATION MAP

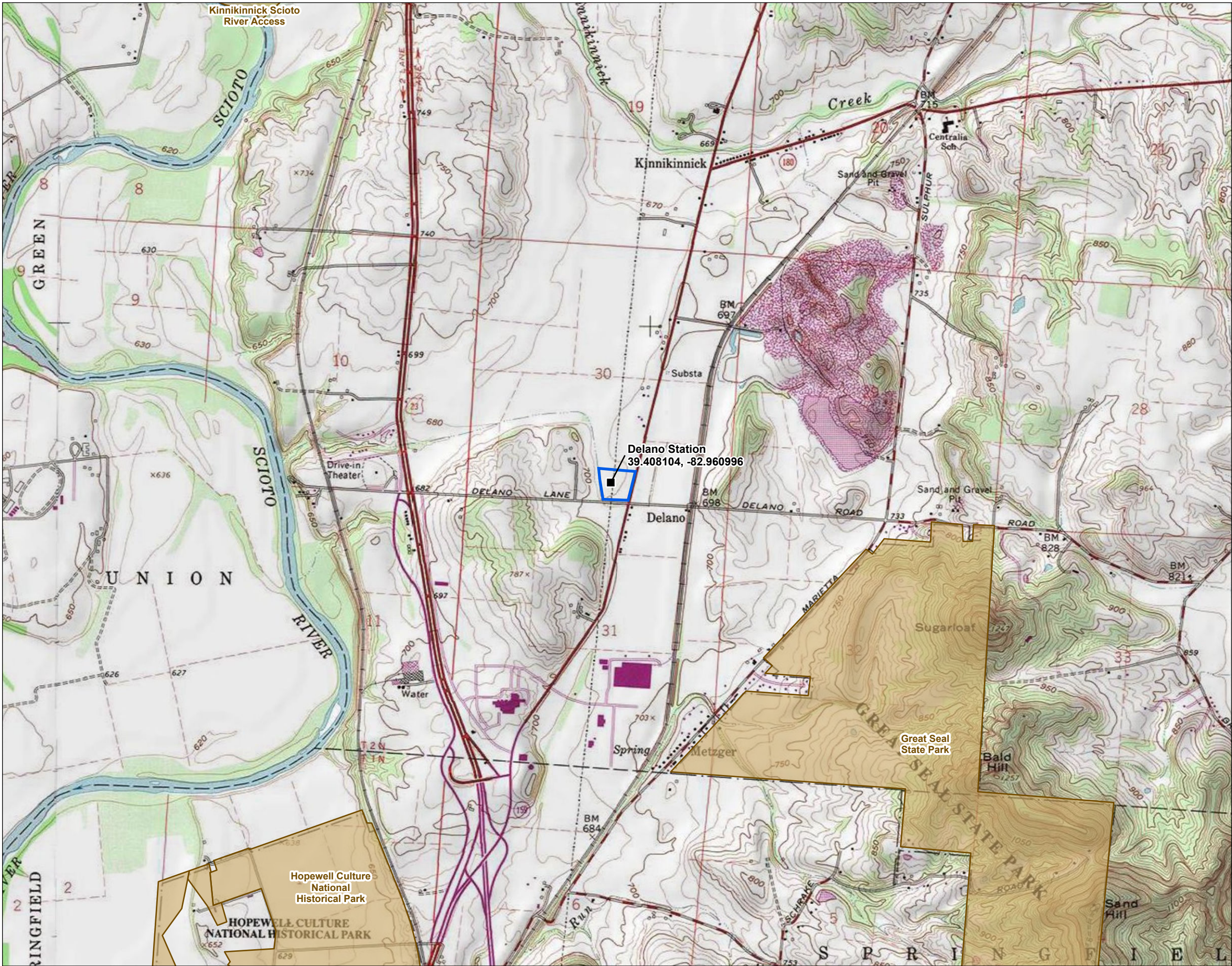


Figure No.

1

Title

Project Location Map

Client/Project
AEP Ohio Transmission Company, Inc.
Delano Station Expansion Project

193708938 & 193708939

Project Location
Ross County, Ohio

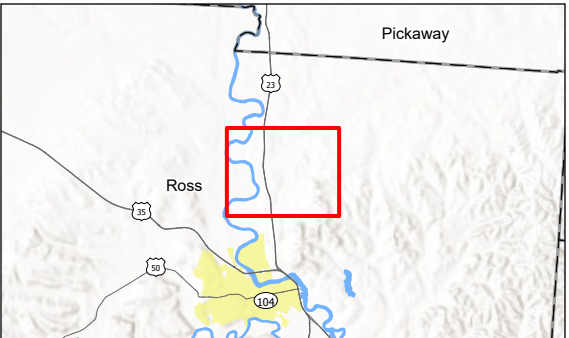
Prepared by RA on 2022-04-19
TR by KLB on 2022-05-12
IR by DJG on 2022-06-10



0 1,000 2,000 Feet
(At original document size of 11x17)
1:24,000

Legend

- AEP Substation
- ▭ Project Area (Station Property)
- ▭ Managed Land



- Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
 2. Data Sources: Stantec, AEP, USGS, NADS
 3. Background: USGS 7.5' Topographic Quadrangles - Galena, OH (1984)



A.2 FIGURE 2 – WETLAND AND WATERBODY DELINEATION MAP

V:\1937\Active\193708938-193708939_DelanoStationExp\03_data\gis_cad\gis\mxd\eco_figures\193708938_193708939_DelanoStationExp_Eco.aprx Revised: 2022-06-10 By: JHeideman



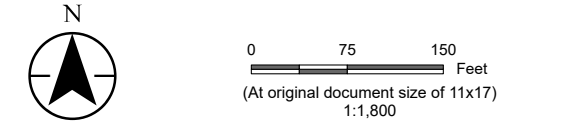
Figure No.
2
Title
Wetland and Waterbody Delineation Map

Client/Project
AEP Ohio Transmission Company, Inc.
Delano Station Expansion Project

193708938 & 193708939

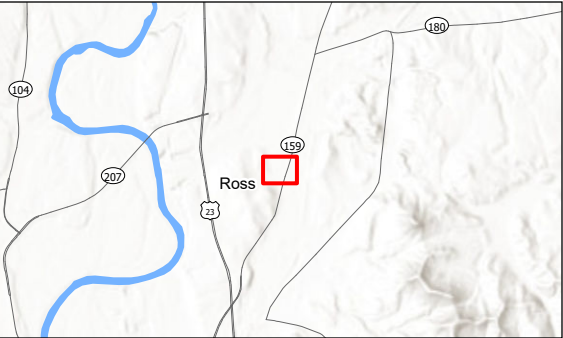
Project Location
Ross County, Ohio

Prepared by RA on 2022-04-19
TR by KLB on 2022-05-12
IR by DJG on 2022-06-10



- Legend
- AEP Substation
 - Project Area (Station Property)
 - Parcel Boundary
 - Photo Location
 - △ Existing Culvert
 - Wetland Determination Sample Point
 - Upland Drainage Feature
 - - - Approximate Waterway
 - National Wetlands Inventory Feature
 - FEMA Flood Hazard Area*
 - 100-year Floodplain
 - Floodway

*No features within data frame



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS, OGRIP
3. Orthophotography: 2019 NAIP



A.3 FIGURE 3 – HABITAT ASSESSMENT MAP

V:\1937\Active\193708938-193708939_DelanoStationExp\03_data\gis_cad\gis\mxd\eco_figures\193708938_193708939_DelanoStationExp_Eco.aprx Revised: 2022-06-10 By: JHeideman



Figure No.
3

Title
Habitat Assessment Map

Client/Project
AEP Ohio Transmission Company, Inc.
Delano Station Expansion Project

193708938 & 193708939

Project Location
Ross County, Ohio

Prepared by RA on 2022-04-19
TR by KLB on 2022-05-12
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N

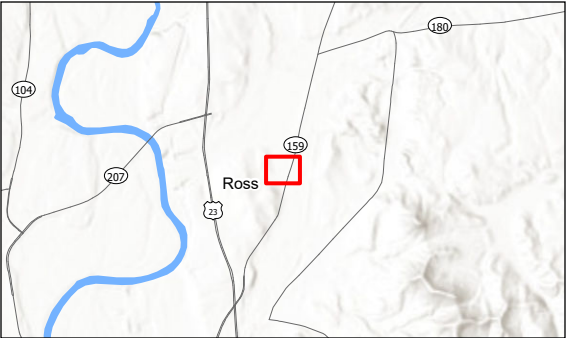
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(At original document size of 11x17)
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Legend

- AEP Substation
- ▭ Project Area (Station Property)
- ▭ Parcel Boundary
- Photo Location
- ▲ Existing Culvert
- Upland Drainage Feature
- Approximate Waterway

Habitat Area

- New Field
- Old Field
- Mixed Early Successional/Second Growth Deciduous Forest
- ▨ Industrial Land



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, NADS, OGRIP
3. Orthophotography: 2019 NAIP



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in

Case No(s). 22-0579-EL-BNR

Summary: Notice Construction Notice Delano-Salt City Solar 138 kV Line Project.
Part 2 of 3 electronically filed by Hector Garcia-Santana on behalf of AEP Ohio
Transmission Company, Inc.