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Threatened and Endangered Species Habitat
Survey Report
Stantec

February 26, 2021



**Marion County Solar Project,
Marion County, Ohio**

**Threatened and Endangered
Species Habitat Survey Report**

Prepared for:

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Sign-off Sheet

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Introduction
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1.0 INTRODUCTION

Marion County Solar Project, LLC (Marion County Solar) is proposing to construct a 100-megawatt solar energy facility, composed of photovoltaic solar modules mounted on a racking system, inverters, an electrical collection system transferring power from the inverters to a new project substation, and internal access roads with a perimeter fence securing the area (the Project). The Project will also include construction of an operations and maintenance building and will contain a battery energy storage system. The Project area includes 970 acres of existing agriculture, forest, grassland, old field, and new field areas. The Project is located north of the City of Marion, Marion County, Ohio (Figure 1, Appendix A). Stantec Consulting Services Inc. (Stantec) was retained by Marion County Solar to conduct environmental surveys of the Project area, including a threatened and endangered species assessment. Stantec biologists conducted a desktop review using publicly available information and a pedestrian field survey for potential threatened, endangered, and rare species habitat, conducted concurrently with a wetland and waterbody delineation. Field surveys were performed on September 9 – 11, 2020.

1.1 REGULATORY FRAMEWORK

1.1.1 Endangered Species Act

The purpose of the Endangered Species Act of 1973, as amended (ESA; 16 United States Code [U.S.C.] §1531–1544) is to conserve threatened and endangered species and the ecosystems upon which they depend. The ESA-listed species and designated critical habitat are governed by the ESA and the implementing regulations at 50 Code of Federal Regulations (CFR) Parts 13 and 17. Section 9 of the ESA are most relevant to this document.

Section 9 of the ESA prohibits the “take” of any fish or wildlife species listed under the ESA as endangered. Take is defined as “...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct” (50 CFR §10.12), and “harm” is “an act which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering” (50 CFR §17.3). Harm is further defined to mean “significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering”. Harass is “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering”.

Under federal regulation, take of fish or wildlife species listed as threatened is also prohibited unless specifically exempted by a section 4(d) rule. Take of ESA-listed plants is not prohibited unless they are on federal lands, there is a federal nexus (e.g., federal permit), or are taken in knowing violation of any state law or state regulation or in violation of state trespass law.

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1.1.2 State Regulations

Ohio Revised Code 1531.25 grants the chief of Ohio Department of Natural Resources (ODNR) Division of Wildlife (DOW), with the approval of the wildlife council, the authority to adopt rules, modify and repeal rules, restricting the taking or possession of native wildlife that is threatened with state-wide extinction. These rules may only provide for the taking of species for zoological, educational and scientific purpose, and for propagation in captivity to preserve the species. In Ohio, animals and plants listed as threatened or endangered receive regulatory protection under Ohio Revised Code 1518.01 – 99, 1531.25, 1531.99. At this time, the ODNR DOW does not have the explicit authority to authorize take for any ESA-listed species for commercial or business purposes, such as the construction of the Project.

1.2 LOCATION OF PROJECT

The Project is located in Marion Township, Marion County, Ohio (Appendix A, Figure 1). The Project area is depicted on the Morral, Ohio and Marion West, Ohio U.S. Geological Survey (USGS) 7.5-minute series topographic maps and the approximate center point of the Project in latitude and longitude coordinates is 40.626071° N, -83.150937° W, respectively. The Project area is located in the Rock Fork watershed (HUC 12: 050600010301) and the City of Marion – Little River watershed (HUC 12: 050600010303), both of which drain into the Little Scioto River. One USGS-named stream, Little Scioto River (Stream 1), flows through the west side of the Project area. Two tributaries of the Little Scioto River, Rock Swale (Stream 2), a perennial stream, and Stream 3, an intermittent stream, are located in the southern portion of the Project area (Appendix A, Figure 2).

1.3 GEOLOGY AND TOPOGRAPHY

The Project lies within the Till Plains section of the Central Lowland physiographic province. The Project is within the Central Ohio Clayey Till Plain region, which is characterized by: (1) a surface of clayey till; (2) well-defined moraines with intervening flat-lying ground moraine and intermorainal lake basins; (3) no boulder belts; (4) silt-, clay-, and till-filled lake basins; and (5) few large streams and limited sand and gravel outwashes. The geology of the region consists of clayey, high-lime Wisconsinan-age till from a northeastern source and lacustrine materials over Lower Paleozoic-age carbonate rocks. The Project is in the eastern part of the region, which also contains shales. Elevation ranges from 700 – 1,150 feet with moderate relief (ODGS 1998).

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2.0 METHODS

2.1 DESKTOP REVIEW

Prior to completing the field habitat survey, a desktop review of threatened and endangered species located in Marion County, Ohio was conducted using the Ohio State Listed Wildlife and Plant Species by County list, revised in March 2020 (ODNR Division of Wildlife 2021) and the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation tool (IPaC; USFWS 2020c). This information was used to inform field staff on the threatened and endangered species that could occur in the Project area.

The IPaC tool listed two ESA-listed bats within Marion County: Indiana bat and northern long-eared bats. These bat species winter in hibernacula that include caves and mines within Ohio (USFWS 2020b). To perform a desktop analysis for this type of habitat, topography and aerial imagery was viewed. A review was also conducted for mines (active or abandoned) and areas of potential cave locations, using interactive tools available on the ODNR website to search for abandoned or active mines and locations of karst geology (ODNR 2021a, 2021b).

2.2 FIELD SURVEY EFFORT

The field survey part of the threatened and endangered species habitat assessment was performed September 9 – 11, 2020 and was conducted concurrently with wetland and waterbody delineations. The method used was a pedestrian survey of habitats types within the Project area. Vegetation species within each habitat were recorded, and the boundaries of each habitat are delineated and are represented in Figure 2 (Appendix A). The vegetation communities were categorized using the Ohio Department of Transportation (ODOT) Office of Environmental Services Ecological Manual (ODOT Office of Ecological Services 2014), which is the same system used by the National Land Cover Database (Anderson 1982). However, wetlands were categorized using the Cowardin system (Cowardin et al. 1979).

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3.0 RESULTS

3.1 TERRESTRIAL HABITAT

Stantec completed field surveys within the Project area on September 9 – 11, 2020, for potentially suitable habitats for threatened and endangered species. Figure 2 (Appendix A) shows the land cover types, as defined by Anderson (1982) and Cowardin et al. (1979), observed in the Project area. Representative photographs of the vegetation communities/habitats identified within the Project area are included in Appendix B of this report (photo locations are shown on Figure 2 in Appendix A). Information regarding the vegetation communities/habitats identified within the Project area is provided in Table 1.

3.2 WETLAND AND STREAM HABITAT

Four wetlands and three streams were observed within the Project area. Two wetlands, totaling 0.77 acre, were classified as palustrine emergent (PEM) wetlands and one wetland, totaling 0.24 acre, was classified as a palustrine forested (PFO) wetland. One wetland contained two communities, PEM and palustrine scrub-shrub (PSS) totaling 2.62 acres. Dominant vegetative species for these wetland classifications are included in Table 1. A total of 10,442 linear feet of stream was observed within the Project area. Two delineated streams Stream 1 (Little Scioto River) and Stream 2 (Rock Swale), totaling 9,047 linear feet, had a perennial flow regime and were flowing at the time of site visit. A third stream, Stream 3, had an intermittent flow regime, totaled 1,395 linear feet, and was flowing at the time of site visit.

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Table 1. Vegetation Communities and Land Cover Found within the Marion County Solar Project Area, Marion County, Ohio

Land Cover Type	Vegetation Communities within the Project Area	Degree of Human-Related Ecological Disturbance and Representative Species List	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Upland Forest	Second Growth Deciduous Forest	Moderate Disturbance/Natural Community (dominated by native and herbaceous species and/or opportunistic invaders). Dominant species include honey locust (<i>Gleditsia triacanthos</i>), box elder (<i>Acer negundo</i>), silver maple (<i>Acer saccharinum</i>), wingstem (<i>Verbesina alternifolia</i>), Canadian goldenrod (<i>Solidago canadensis</i>), sunflower (<i>Helianthus</i> sp.), and common hackberry (<i>Celtis occidentalis</i>).	No	17.0
Wetland	Palustrine Emergent Wetland	Moderate Disturbance/Natural Community (dominated by native and herbaceous species and/or opportunistic invaders). Dominant species include common panic grass (<i>Panicum capillare</i>), creeping-jenny (<i>Lysimachia nummularia</i>), barnyard grass (<i>Echinochloa crus-galli</i>), reed canary grass (<i>Phalaris arundinacea</i>), and yellow bristle grass (<i>Setaria pumila</i>).	No	2.4
Wetland	Palustrine Scrub-shrub Wetland	Moderate Disturbance/Natural Community (dominated by native and herbaceous species and/or opportunistic invaders). Dominant species included green hawthorn (<i>Crataegus viridis</i>), devil's pitchfork (<i>Bidens frondosa</i>), Canadian clearweed (<i>Pilea pumila</i>), and farewell-summer aster (<i>Symphyotrichum lateriflorum</i>).	No	1.0
Wetland	Palustrine Forested Wetland	Moderate Disturbance/Natural Community (dominated by native and herbaceous species and/or opportunistic invaders). Dominant species include silver maple, dotted smartweed (<i>Persicaria punctata</i>) and Canadian clearweed.	No	0.2

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Land Cover Type	Vegetation Communities within the Project Area	Degree of Human-Related Ecological Disturbance and Representative Species List	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Grassland/Herbaceous	Old Field	Moderate to extreme disturbance/ruderal community (dominated by opportunistic invaders and/or native highly tolerant taxa). Dominant plant species include Canadian goldenrod, wingstem, perennial ryegrass (<i>Lolium perenne</i>), farewell-summer aster, yellow bristle grass, yellow Indian grass (<i>Sorghastrum nutans</i>), great ragweed (<i>Ambrosia trifida</i>), box elder, crab grass (<i>Digitaria</i> sp.), Japanese honeysuckle (<i>Lonicera japonica</i>), blue mistflower (<i>Conoclinium coelestinum</i>), Amur honeysuckle (<i>Lonicera maackii</i>), Kentucky bluegrass (<i>Poa pratensis</i>), red clover (<i>Trifolium pratense</i>), and Queen Anne's lace (<i>Daucus carota</i>).	No	15.7
Grassland/Herbaceous	Grassland	Moderate to extreme disturbance/ruderal community (dominated by opportunistic invaders and/or native highly tolerant taxa). Dominant plant species include big bluestem (<i>Andropogon gerardii</i>), yellow Indian grass, Canadian goldenrod, blackberry (<i>Rubus</i> sp.), raspberry (<i>Rubus</i> sp.), and spreading dogbane (<i>Apocynum cannabinum</i>).	No	41.7
Grassland/Herbaceous	New Field	Moderate to extreme disturbance/ruderal community (dominated by opportunistic invaders and/or native highly tolerant taxa). Dominant plant species include poison ivy (<i>Toxicodendron radicans</i>), Canada thistle (<i>Cirsium arvense</i>), Kentucky bluegrass, field bindweed (<i>Convolvulus arvensis</i>), Japanese bristle grass (<i>Setaria faberi</i>), reed canary grass, red clover, Queen Anne's lace, and spreading dogbane.	No	15.7
Cultivated Crop	Cultivated Crop	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa). Dominant species include soybean (<i>Glycine max</i>) and amaranth (<i>Amaranthus viridis</i>).	No	865.7

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Land Cover Type	Vegetation Communities within the Project Area	Degree of Human-Related Ecological Disturbance and Representative Species List	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Developed, Open Space	Residential/Maintained Lawn	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa). Dominant species include alsike clover (<i>Trifolium hybridum</i>), great plantain (<i>Plantago major</i>), common dandelion (<i>Taraxacum officinale</i>), Kentucky bluegrass, box elder, sugar maple, crab grass, and yellow bristle grass.	No	1.4
Developed, High Intensity	Existing Roadway	Moderate to Extreme Disturbance/ Ruderal Community (free of vegetation and/or dominated by opportunistic invaders, planted non-native species, and native highly tolerant taxa).	No	2.9
TOTAL				963.7*

*Total acreage does not reflect the amount of stream area in Project area

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3.3 THREATENED, OR ENDANGERED SPECIES ASSESSMENT

The results from the Ohio State Listed Wildlife and Plant Species by County list (ODNR DOW 2020) and IPaC (USFWS 2020c) are listed in Table 2. Species identified in ODNR and USFWS correspondence were also added to Table 2. Species preferred habitats or conditions are included in the table for each species. Whether the habitat was found within the Project area during field surveys and an impact analysis for each species is also included. Delineation of the habitat types are represented on Figure 2 (Appendix A) and representative photographs of the habitats are in Appendix B.

The desktop bat hibernaculum habitat assessment did not show any signs that this type of potential habitat was present within the Project area; however some mines were discovered near the Project. ODNR online interactive tools revealed no karst features within three miles of the Project area. Three mineral mines or quarries were identified using the ODNR Mines of Ohio interactive tool (ODNR 2021b). One mineral quarry, located on the west side of the City of Marion, is 0.3 mile south of the Project and a second limestone quarry is located within 0.4 mile east of the Project boundary (ODNR 2021a). An additional mineral mine is located approximately 1.0 mile east of the Project boundary. The ODNR response letter also mentions both quarries east of the Project and they are identified on Figure 1 (Appendix A), however, the letter does not mention the quarry south of the Project. The ODNR letter likely does not discuss this quarry because it is a historic site that has not been active for many years and landscape imagery shows that the quarry pits are filled with water. The pits are also shown on the Figure 1 as large bodies of water (Appendix A). No steep topography was evident using topographic maps, except surrounding quarry pits and aerial imagery did not reveal any obvious exposed rock (Figure 1 and 2, Appendix A). Stantec did not observe winter hibernacula for Indiana bat, northern long-eared bat, little brown, or tri-colored bats during field surveys and the ODNR response letter, discussed in more detail in Section 4.0, did not list any known bat hibernacula.

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Table 2. Summary of Potential Federal and State-Listed Species within the Marion County Solar Project Area, Marion County, Ohio.

Species Name	Federal/ State ¹ Listing	Known Within One-mile of Project Area? ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments/Recommendations	Impact Assessment
Birds						
Northern Harrier (<i>Circus hudsonis</i>)	SE	No	This bird hunts over grasslands, lightly grazed meadows, old fields, dry, upland prairies, shrub-steppe, and marshes with low, thick vegetation. Breeding northern harriers are most common in large, undisturbed tracts of wetlands and grasslands with low, thick vegetation. During winter, this species uses a wider range of habitats that also include deserts, coastal dunes, croplands, dry plains, estuaries, and open floodplains (Cornell Lab of Ornithology 2021).	Yes	ODNR DOW: The Project is within range of the northern harrier. Nesting northern harriers are rare in Ohio, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female often 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 during the species nesting period, May 15 – August 1. If this habitat will not be impacted, the Project is not likely to impact this species.	Potentially suitable winter habitat (i.e., croplands) and nesting habitat (i.e., wetland and grassland) was observed within the Project area. Marion County Solar intends to avoid the nesting habitat. Winter habitat will be impacted, however, due to the highly mobile nature of this species and availability of wintering habitat in the area, it is not anticipated that the Project will result in adverse impacts to this species.
American Bittern (<i>Botaurus lentiginosus</i>)	SE	No	Nesting bitterns are very secretive and prefer large undisturbed wetlands that have scattered small pools amongst the dense vegetation. They occasionally occupy bogs, large wet meadows, and dense, shrubby swamps (ODNR DOW 2021).	Yes	ODNR DOW: The Project is within the range of the American bittern. Nesting bitterns prefer large, undisturbed wetlands that have scattered small pools amongst dense vegetation. They occasionally occupy bogs, large wet meadows, and dense shrubby swamps. If this type of habitat will be impacted, construction should be avoided in this habitat during the nesting period for this bird, May 1 – July 31. If this type of habitat will not be impacted, this	Potentially suitable habitat (i.e., wetlands) were observed within the Project area. However, Marion County Solar intends to avoid wetlands, and therefore, impacts to this species are not expected.

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					Project is not likely to impact the species.	
Black-crowned Night-heron (<i>Nycticorax nycticorax</i>)	ST	No	These largely nocturnal herons are likely more common than suspected but tend to hide in thick vegetation during the day. They are often found roosting in thick vegetation along streams, lakes, and wetlands (ODNR DOW 2021).	Yes	ODNR DOW: The Project is within the range of the black-crowned night-herons. Night-herons are so named because they are nocturnal, conducting most of their foraging in the evening hours or at night, and roost in trees near wetlands and waterbodies during the day. Night-herons are migratory and are typically found in Ohio from April 1 through December 1 but can be found in more urbanized areas with reliable food sources year-round. Black-crowned night-herons primarily forage in wetlands and other shallow aquatic habitats, and roost in trees nearby. These night-herons nest in small trees, saplings, shrubs, or sometimes on the ground, near bodies of water and wetlands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 – July 31. If this type of habitat will not be impacted, this Project is not likely to impact the species.	Potentially suitable habitat (i.e., wetlands and streams) were observed within the Project area. However, Marion County Solar intends to avoid wetlands and streams, and therefore, impacts to this species are not expected.

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King Rail (<i>Rallus elegans</i>)	SE	No	Habitat includes freshwater marshes, upland-wetland marsh edges, rice fields, or similar flooded farmlands, and shrub swamps (NatureServe 2021). Nests for this species are deep bowls constructed out of grass and usually very well hidden in marsh vegetation (ODNR DOW 2021). Large areas of palustrine emergent wetland and/or palustrine scrub-shrub wetland habitats (≥ 20 acres) that include areas of open water are required to be suitable as king rail nesting habitat (Bull and Farrand 1977, NatureServe 2021, Pickens and Meanley 2015).	Yes	ODNR DOW: The Project is within the range of the king rail. Nests for this species are deep bowls constructed out of grass and usually hidden very well in marsh vegetation. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 – August 1. If no wetland habitat will be impacted, the Project is not likely to impact this species.	Potentially suitable habitat (i.e., wetlands) were observed within the Project area. However, Marion County Solar intends to avoid wetlands, and therefore, impacts to this species are not expected.
Least Bittern (<i>Ixobrychus exilis</i>)	ST	No	This species prefers to nest in marshes or swamps with dense emergent vegetation, especially cattails (ODNR DOW 2021).	Yes	ODNR DOW: The Project is within the range of the least bittern. This secretive marsh species prefers dense emergent wetlands with thick stands of cattails, sedges, sawgrass, or other semiaquatic vegetation interspersed with woody vegetation and open water. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 – July 31. If this type of habitat will not be impacted, this Project is not likely to impact this species.	Potentially suitable habitat (i.e., wetlands) were observed within the Project area. However, Marion County Solar intends to avoid wetlands, and therefore, impacts to this species are not expected.

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Sandhill Crane (<i>Grus canadensis</i>)	ST	No	This species is generally found in wetlands during the breeding season, including shallow marshes, bogs, or wet meadows. During winter, they will also feed and congregate in agricultural fields and roost in shallow, standing water or bottomland areas (ODNR DOW 2021).	Yes	ODNR DOW: The Project is within the range of the sandhill crane. These birds are primarily wetlands-dependent species. On wintering grounds, they utilize agricultural fields; however, they roost in shallow, standing water or moist bottomlands. On breeding grounds, they require large tracts of wet meadow, shallow marsh, or bog for nesting. If grassland, prairie, or wetland habitat will be impacted, construction should be avoided in this habitat during the nesting period for this bird, April 1 – September 1. If this type of habitat will not be impacted, this Project is not likely to impact the species.	Potentially suitable winter habitat (i.e., croplands) and nesting habitat (i.e., wetlands and streams) was observed within the Project area. However, Marion County Solar intends to avoid the nesting habitat. Winter habitat will be impacted, however, due to the highly mobile nature of this species and availability of wintering habitat in the area, it is not anticipated that the Project will result in adverse impacts to this species.
Trumpeter Swan (<i>Cygnus buccinator</i>)	ST	No	This species prefers large marshes and lakes, ranging from 40 – 150 acres. They like the water shallow, generally 1 – 3 feet deep with emergent and aquatic vegetation and open water. Vegetation typically includes arrowhead species, sage pondweed, wild celery tuber, and stems and leaves of waterweeds, pondweeds, water milfoil, white water buttercup, muskgrass, bur-reeds, and duckweed. (ODNR DOW 2021).	No	ODNR DOW: The Project is within the range of the trumpeter swan. These birds prefer large marshes and lakes, ranging in size from 40 – 150 acres. They like shallow wetlands, ranging from 1 – 3 feet in depth with a diverse mix of emergent and submergent vegetation and open water. If this type of habitat will be impacted, construction should be avoided during the nesting period of this bird, April 15 – June 15. If this type of habitat will not be impacted, this Project is not likely to impact the species.	No suitable habitat was observed within the Project area. Therefore, no impacts to this species are anticipated.

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Upland Sandpiper (<i>Bartramia longicauda</i>)	SE	No	This species nests in native prairie, cropland, pastureland, mountain meadows, dry tundra, and other grassy environments. During migration, this species is often found in cropland areas (Cornell Lab of Ornithology 2021).	Yes	ODNR DOW: The Project is within range of the upland sandpiper. Nesting birds utilize dry grasslands, including native or seeded grasslands, grazed or ungrazed pasture, hayfields, and grasslands established by the Conservation Reserve Program. If this type of habitat will be impacted, construction should be avoided during the nesting period of this bird, April 15 – July 31. If this type of habitat will not be impacted, this Project is not likely to impact the species.	Potentially suitable migration habitat (i.e., croplands) and nesting habitat (i.e., grassland) was observed within the Project area. However, Marion County Solar intends to avoid the nesting habitat. Winter habitat will be impacted, however, due to the highly mobile nature of this species and availability of wintering habitat in the area, it is not anticipated that the Project will result in adverse impacts to this species.
Mussels						
Snuffbox (<i>Epioblasma triquetra</i>)	FE/SE	No	Snuffbox is commonly found buried in the substrate. 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	USFWS: Due to the Project type, size, and location, the USFWS does not anticipate effects to this species. ODNR DOW: The Project is within range of this species. This Project must not impact freshwater native mussels, both listed and non-listed species. If any in-water work is planned in any stream that is Group 1, 2, 3, or 4, or has a watershed 5 square miles or greater, per the Ohio Mussel Survey Protocol, the stream should be assessed or a mussel survey should be conducted. If any in-water work is planned for streams that meet the above criteria, the DOW recommends	No suitable habitat, Group 2 or 4 streams (ODNR DOW and USFWS 2020), was observed within the Project area. Also, no stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.

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Species Name	Federal/ State ¹ Listing	Known Within One-mile of Project Area? ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments/Recommendations	Impact Assessment
					Marion County Solar provide information to indicate no mussel impacts will occur.	
Clubshell (<i>Pleurobema clava</i>)	FE/SE	No	Clubshell is found in small to medium rivers, but occasionally found in large rivers, especially those having large shoal areas. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle and cannot tolerate mud or slackwater conditions (USFWS 1994). Badra (2001) found the clubshell in gravel/sand substrate, runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.	No	USFWS: Due to the Project type, size, and location, the USFWS does not anticipate effects to this species. ODNR DOW: The Project is within the range of this species. This Project must not impact freshwater native mussels, both listed and non-listed species. If any in-water work is planned in any stream that is Group 1, 2, 3, or 4, or has a watershed 5 square miles or greater, per the Ohio Mussel Survey Protocol, the stream should be assessed or a mussel survey should be conducted. If any in-water work is planned for streams that meet the above criteria, the DOW recommends Marion County Solar provide information to indicate no mussel impacts will occur.	No suitable habitat, Group 2 or 4 streams (ODNR DOW and USFWS 2020), was observed within the Project area. Also, no stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.

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Results

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Species Name	Federal/ State ¹ Listing	Known Within One-mile of Project Area? ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments/Recommendations	Impact Assessment
Rabbitsfoot (<i>Quadrula</i> (<i>Theliderma</i>) <i>cylindrica</i>)	FT/SE	No	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 2021).	No	USFWS: Due to the Project type, size, and location, the USFWS does not anticipate effects to this species. ODNR DOW: The Project is within range of this species. This Project must not impact freshwater native mussels, both listed and non-listed species. If any in-water work is planned in any stream that is Group 1, 2, 3, or 4, or has a watershed 5 square miles or greater, per the Ohio Mussel Survey Protocol, the stream should be assessed or a mussel survey should be conducted. If any in-water work is planned for streams that meet the above criteria, the DOW recommends Marion County Solar provide information to indicate no mussel impacts will occur.	No suitable habitat, Group 2 or 4 streams (ODNR DOW and USFWS 2020), was observed within the Project area. Also, no stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.
Rayed Bean (<i>Villosa fabalis</i>)	FE/SE	No	Habitat includes gravel or sandy substrate, especially in areas with thick roots from aquatic plants that increase substrate stability (Butler 2002, 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	No	USFWS: Due to the Project type, size, and location, the USFWS does not anticipate effects to this species. ODNR DOW: The Project is within range of this species. This Project must not impact freshwater native mussels, both listed and non-listed species. If any in-water work is planned in any stream that is Group 1, 2, 3, or 4, or has a watershed 5 square miles or greater, per the Ohio Mussel	No suitable habitat, Group 2 or 4 streams (ODNR DOW and USFWS 2020), was observed within the Project area. Also, no stream impacts will occur from the Project. Therefore, no impacts to this species are anticipated.

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			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).		Survey Protocol, the stream should be assessed or a mussel survey should be conducted. If any in-water work is planned for streams that meet the above criteria, the DOW recommends Marion County Solar provide information to indicate no mussel impacts will occur.	
Pondhorn (<i>Uniomerus tetralasmus</i>)	ST	No	This species typically inhabits the quiet or slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams. It is tolerant of poor water conditions and can be found well buried in a substrate of fine silt and/or mud. It has been known to survive for extended periods of time when a pond or slough has temporarily dried up by burying itself deep into the substrate (NatureServe 2021).	Yes	ODNR DOW: The Project is within range of this species. This Project must not impact freshwater native mussels, both listed and non-listed species. If any in-water work is planned in any stream that is Group 1, 2, 3, or 4, or has a watershed 5 square miles or greater, per the Ohio Mussel Survey Protocol, the stream should be assessed or a mussel survey should be conducted. If any in-water work is planned for streams that meet the above criteria, the DOW recommends Mark Center provide information to indicate no mussel impacts will occur.	Potentially suitable habitat (i.e., Little Scioto River, a Group 1 stream) was observed within the Project area. However, no stream impacts will occur from the Project. Therefore, no adverse effects to this species are anticipated.
Reptiles						

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Species Name	Federal/ State ¹ Listing	Known Within One-mile of Project Area? ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments/Recommendations	Impact Assessment
Eastern Massasauga (<i>Sistrurus catenatus</i>)	FT/SE	No	This species prefers different types of wet habitats in fall, winter, and spring, including bogs, fens, shrub-scrub wetlands, wet meadows, marshes, wet prairies and grasslands, and floodplain forests. During summer, this species occurs in drier habitats, such as forest/old field transition areas, agricultural fields, and prairies (USFWS 2021).	Yes	USFWS: Due to the Project type, size, and location, the USFWS does not anticipate effects to any other federally endangered, threatened, or proposed species. ODNR DOW: This Project is within the range of the eastern massasauga. The eastern massasauga uses a range of habitats including wet prairies, fens, and other wetlands, as well as drier upland habitat. 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.	Potentially suitable habitat (i.e., wetlands) were observed within the Project area. However, Marion County Solar intends to avoid wetlands, and therefore, impacts to this species are not expected.
Mammals						
Indiana Bat (<i>Myotis sodalis</i>)	FE/SE	No	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 permanent water source and foraging areas. Dead trees are	Yes	USFWS: Should the Project site contain trees ≥3 inches diameter at breast height (dbh), the USFWS recommends avoiding tree removal whenever possible. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, USFWS recommends tree removal occur between October 1 and March 31. Seasonal tree clearing is recommended to avoid adverse effects to this species. If seasonal tree clearing cannot be implemented, a summer presence/absence survey may be conducted for this species.	No suitable winter hibernacula were observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. Marion County Solar intends to avoid woodlots with infrastructure. If any tree clearing is needed, it will occur between October 1-March 31. Therefore, no adverse effects to this species are anticipated.

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			<p>preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007, USFWS 2020b). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes.</p> <p>Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).</p>		<p>ODNR DOW: The entire state lies within the range of the Indiana bat. Therefore, the DOW recommends tree cutting only occur from October 1 through March 31, conserving trees with loose shaggy bark and/or crevices, holes, or cavities as well as trees with DHB\geq20 inches if possible. The DOW also recommends an assessment for potential hibernacula.</p>	
Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	FT/SE	No	<p>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 2020a). 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).</p>	Yes	<p>USFWS: Should the Project site contain trees \geq3 inches diameter at breast height (dbh), the USFWS recommends avoiding tree removal whenever possible. If no caves or abandoned mines are present and trees \geq3 inches dbh cannot be avoided, USFWS recommends tree removal occur between October 1 and March 31. Seasonal tree clearing is recommended to avoid adverse effects to this species. However, incidental take of this species for most tree clearing is exempted by the 4(d) rule.</p> <p>ODNR DOW: The entire state lies within the range of the northern long-eared bat. Therefore, the DOW recommends tree cutting</p>	<p>No suitable winter hibernacula were observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. Marion County Solar intends to avoid woodlots with infrastructure. If any tree clearing is needed, it will occur between October 1-March 31. Therefore, no adverse effects to this species are anticipated.</p>

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Species Name	Federal/ State ¹ Listing	Known Within One-mile of Project Area? ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments/Recommendations	Impact Assessment
					only occur from October 1 through March 31, conserving trees with loose shaggy bark and/or crevices, holes, or cavities as well as trees with DHB≥20 inches if possible. The DOW also recommends an assessment for potential hibernacula.	
Tri-colored Bat (<i>Perimyotis subflavus</i>)	SE	No	This species is found throughout Ohio and is associated with forested landscapes, foraging near trees and along waterways. Maternity and summer roosts usually occur in dead or live tree foliage, or in the south, in clumps of Spanish moss. Maternity colonies may also use tree cavities or man-made structures, such as buildings or bridges. Caves, mines, and rock crevices may be used as night roosts between foraging (NatureServe 2021).	Yes	ODNR DOW: The entire state lies within the range of the tri-colored bat. Therefore, the DOW recommends tree cutting only occur from October 1 through March 31, conserving trees with loose shaggy bark and/or crevices, holes, or cavities as well as trees with DHB≥20 inches if possible. The DOW also recommends an assessment for potential hibernacula.	No suitable winter hibernacula were observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. Marion County Solar intends to avoid woodlots with infrastructure. If any tree clearing is needed, it will occur between October 1-March 31. Therefore, no adverse effects to this species are anticipated.
Little Brown Bat (<i>Myotis lucifugus</i>)	SE	No	This bat uses a wide range of habitats and man-made structures for roosting, including buildings and attics. Less frequently, they use hollows of trees. Winter hibernation sites typically consist of caves, tunnels, abandoned mines. Foraging habitat for this species generally occurs over water,	Yes	ODNR DOW: The entire state lies within the range of the little brown bat. Therefore, the DOW recommends tree cutting only occur from October 1 through March 31, conserving trees with loose shaggy bark and/or crevices, holes, or cavities as well as trees with DHB≥20 inches if possible. The DOW also	No suitable winter hibernacula were observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. Marion County Solar intends to avoid woodlots with infrastructure. If any tree clearing is needed, it will occur between October 1-March 31.

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Species Name	Federal/ State ¹ Listing	Known Within One-mile of Project Area? ²	Habitat Preference	Potential Habitat Observed in Project Area?	USFWS and ODNR DOW Comments/Recommendations	Impact Assessment
			along the edges of lakes and stream or in woodlands near waterbodies (NatureServe 2021).		recommends an assessment for potential hibernacula.	Therefore, no adverse effects to this species are anticipated.
American Badger (<i>Taxidea taxus</i>)	SOC	Yes	This species prefers open areas, such as cropland, hedgerows, grasslands, savannah, or desert or brushlands with little ground cover. They burrow underground when they are inactive or have young (NatureServe 2021).	Yes	ODNR DOW: A record of this species is known within one-mile of the Project area. No further comments.	Potentially suitable habitat (i.e., croplands, grassland) were observed within the Project area. However, Marion County Solar intends to avoid the grasslands. Cropland will be impacted, however, due to the highly mobile nature of this species and the availability of cropland in the area, Marion County Solar does not anticipate impacts to this species.
¹ FE = federally listed endangered; FT = federally listed threatened; SE=state-listed endangered; ST=state-listed threatened; SOC=Species of Concern						
² According to Ohio Natural Heritage Program (Appendix C)						

MARION COUNTY SOLAR PROJECT THREATENED AND ENDANGERED SPECIES HABITAT SURVEY REPORT

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4.0 CONCLUSIONS AND RECOMMENDATIONS

Stantec conducted a desktop analysis and field surveys for threatened and endangered species and their habitats on September 9 – 11, 2020. During the field surveys, cultivated crops and grassland were the dominant vegetation communities observed. Additionally, a Group 1, USGS-named stream, Little Scioto River (Stream 1), was identified. Another USGS-named stream, Rock Swale (Stream 2), has a drainage area greater than 5 miles². Due to the Group 1 designation of the Little Scioto River and the Rock Swale drainage area, these streams represent potential mussel habitat for state-listed species (ODNR DOW and USFWS 2020).

As noted in Table 2, Stantec observed potentially suitable habitat for state-listed threatened and endangered species within the Project area, including: northern harrier, American bittern, black-crowned night-heron, king rail, least bittern, sandhill crane, upland sandpiper, pondhorn, eastern massasauga, Indiana bat, northern long-eared bat, tri-colored bat, little brown bat, and American badger. Suitable habitat was not present within the Project area for the other species, including trumpeter swan, rayed bean, snuffbox, clubshell, and rabbitsfoot.

An ODNR Ohio Natural Heritage Program data request and environmental review request letter was sent to the ODNR Office of Real Estate on September 22, 2020 and a response was received November 24, 2020 (Appendix C). One record of a state-listed species of concern was found during the Natural Heritage Program search, which was the American badger. In the ODNR response letter, the DOW indicates the entire state of Ohio is within the range of the Indiana bat, northern long-eared bat, little brown bat, and tri-colored bat. The DOW recommends tree cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities as well as trees with dbh ≥20 inches, if possible. However, limited summer tree cutting may be acceptable after further consultation with the ODNR DOW.

The ODNR DOW also recommends that a desktop habitat assessment, followed by field assessment be conducted to determine if there are potential bat hibernaculum present within the Project area. The desktop assessment, using ODNR interactive tools revealed no karst features within three miles of the Project area. However, several mines were identified near the Project area using the ODNR Mines of Ohio interactive tool. One mineral quarry, located on the west side of the City of Marion, is 0.3 mile south of the Project and a second limestone quarry is located within 0.4 mile east of the Project boundary. An additional mineral mine is located approximately 1.0 mile east of the Project boundary. The ODNR response letter also mentions both quarries east of the Project and they are indicated on Figure 1 (Appendix A); however, the letter does not mention the quarry south of the Project. The ODNR letter likely does not discuss this quarry because it is a historic site that has not been active for many years and landscape imagery shows that the quarry pits are filled with water. The pits are also indicated on the Figure 1 as large bodies of water (Appendix A). No steep topography was evident using topographic maps and aerial imagery did not reveal any obvious exposed rock within the Project area (Figure 1 and 2, Appendix A). During the field visit, Stantec did not observe winter hibernacula for Indiana bat, northern long-eared bat, little brown, or tri-colored bats; however, the Project area does contain potentially suitable summer habitat, including foraging and roosting

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habitat for the Indiana bat, northern long-eared bat, little brown bat, and tri-colored bats. Forested areas that could provide suitable summer habitat for the federal and state-listed Indiana and northern long-eared bat and state-listed tri-colored and little brown bat have been avoided when siting Project infrastructure eliminating the need for tree clearing. If tree clearing is needed for construction of the Project trees will be cleared outside of the summer maternity season October 1 through March 31, as recommended by ODNR to avoid adverse effects to the species.

The ODNR response states that the Project is within one mile of records of the American badger, a state-listed species of concern. Potentially suitable habitat for this species was observed within the Project area, including croplands and grasslands. However, Marion County Solar is avoiding impacts to the grassland habitat within the Project by siting all Project infrastructure to avoid those areas. Also, due to the highly mobile nature of this species, they are not likely to be impacted by the Project.

The ODNR response also states the Project is within the range of the clubshell, snuffbox, rayed bean, rabbitsfoot, and pondhorn freshwater mussel species. The ODNR DOW recommends if in-water work is planned in any Group 1, 2, 3, or 4 streams and unlisted streams with a watershed of 5 miles² or larger above the impact, Marion County Solar should provide information to indicate no mussel impacts will occur. Two streams within the Project area represent potential freshwater mussel habitat, including Little Scioto River (Stream 1) and Rock Swale (Stream 2), according to the Ohio Mussel Protocols (ODNR DOW and USFWS 2020). However, Project infrastructure has been sited to avoid all streams, therefore no in-water work is proposed for the Project and the Project will not impact the freshwater mussel species.

The ODNR response states the Project is within the range of several state-listed species that breed/nest in wetlands or streams, including: American bittern, black-crowned night-heron, king rail, least bittern, and sandhill crane. The DOW recommends avoiding impacts to this type of habitat in order to avoid impacts to these species. Marion County Solar has sited Project infrastructure to avoid impacts to wetlands and streams for this Project. Therefore, the Project is not likely to impact these species.

The ODNR response states that the Project is within range of the eastern massasauga, a state-listed endangered species. However, ODNR states that due to the location, type of habitat available within the Project area, and the type of work proposed, the Project is not likely to impact the species.

The ODNR response states that the Project is within range of the northern harrier, a state-listed endangered species. Nesting northern harriers are more rare than wintering birds and they nest in large marshes and grasslands. If this habitat is present within the Project area and will be impacted, construction should occur outside the nesting period for this species, which is May 15 – August 1. If this habitat will not be impacted, the Project is not likely to impact this species. Marion County Solar has sited all infrastructure to avoid wetlands and grasslands within the Project area. During winter, when this bird is likely to be using cropland habitat, they are highly mobile and the availability of cropland in the vicinity of the Project for the species is not limited. Therefore, the northern harrier is not likely to be adversely affected by the Project.

The ODNR response states that the Project is within range of the upland sandpiper, a state-listed endangered species. Nesting upland sandpipers utilize grasslands and in migration, will also use croplands. If grassland habitat is present within the Project area and will be impacted, construction should occur

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outside the nesting period for this species, which is April 15 – July 31. If this habitat will not be impacted, the Project is not likely to impact this species. Marion County Solar has sited infrastructure to avoid wetlands and grasslands within the Project area. During migration, when this bird is likely to be using cropland habitat, they are highly mobile and the availability of cropland in the vicinity of the Project for the species is not limited. Therefore, the upland sandpiper is not likely to be adversely affected by the Project.

A technical assistance request letter was also submitted to the USFWS on September 22, 2020. The USFWS response letter dated October 9, 2020 (Appendix C), notes that 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/absence survey has been performed to document absence. Stantec did not observe winter habitat for the Indiana bat or northern long-eared bats, however, the Project area does contain potentially suitable summer habitat, including foraging and roosting habitat. The USFWS response letter stated that should the Project site contain trees ≥ 3 inches dbh, clearing of those areas should be avoided if possible. If trees ≥ 3 inches dbh cannot be avoided, the USFWS recommends that removal of those trees only occur between October 1 and March 31. Following the seasonal tree clearing timeframe should avoid adverse effects to Indiana bats and northern long-eared bats. Marion County Solar is avoiding woodlots, but any other tree clearing for the Project will follow the USFWS recommended time frame of October 1 through March 31.

The USFWS and ODNR response letters both provided the Ohio Solar Site Pollinator Habitat Planning and Assessment Form, which is included in Appendix C. The agencies recommend Marion County Solar use this form to assist in planting grasses, forbs, and legume species that benefit pollinators, such as the monarch butterfly and rusty patched bumblebee, and other wildlife, such as songbirds.

The USFWS response indicates that due to the Project type, size, and location, the USFWS does not anticipate effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Further, the USFWS letter recommends that the Project avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands) and that best management practices should be utilized to minimize erosion, especially on slopes.

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**MARION COUNTY SOLAR PROJECT THREATENED AND ENDANGERED SPECIES HABITAT SURVEY
REPORT**

Figures
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Appendix A **FIGURES**

FIGURE 1 – PROJECT LOCATION AND TOPOGRAPHY MAP

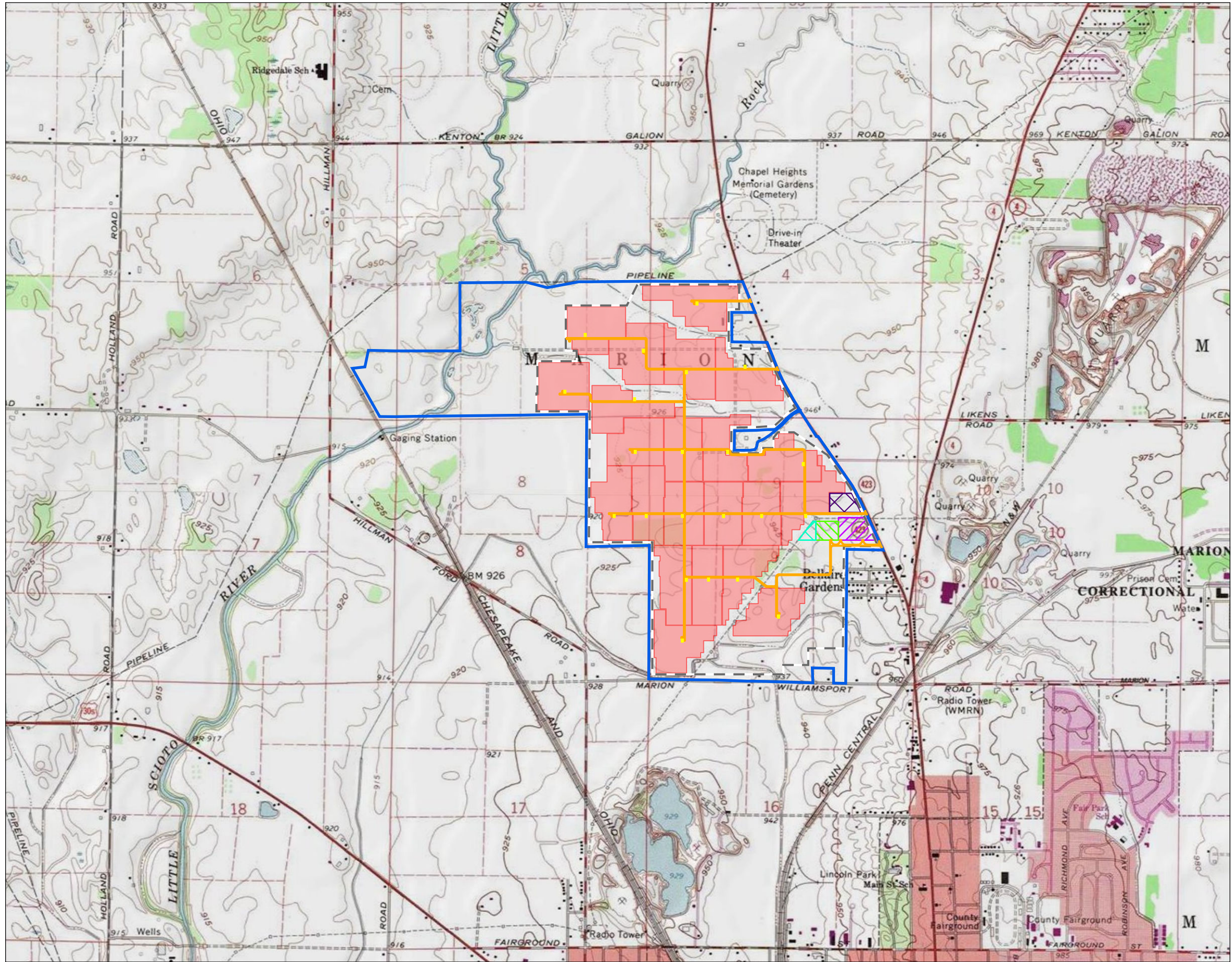
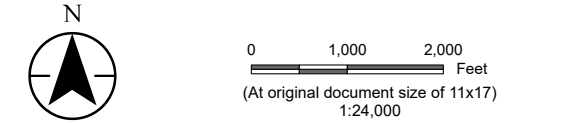


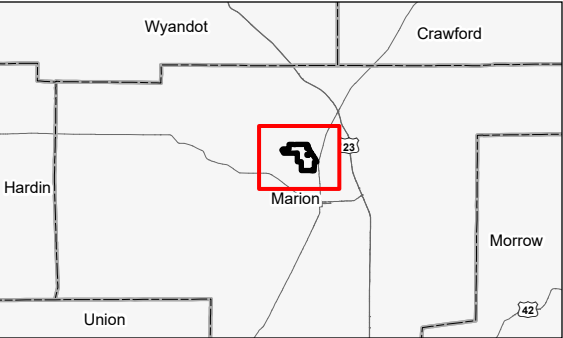
Figure No. 1
Title Project Location and Topography

Client/Project Marion County Solar Project, LLC
Marion County Solar Project

Project Location Marion County, Ohio
Prepared by JLH on 2021-01-05
TR by AS 2021-01-20
IR by CMD on 2021-02-17



- Legend
- Project Area
 - Solar Array
 - Inverter
 - Substation
 - O&M Building
 - BESS Building
 - Switchyard
 - Access Road
 - Security Fence Boundary



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Savion Solar, USGS, NADS
3. Background: USGS 7.5' Topographic Quadrangles



**MARION COUNTY SOLAR PROJECT THREATENED AND ENDANGERED SPECIES HABITAT SURVEY
REPORT**

Figures
February 26, 2021

FIGURE 2 – VEGETATION COMMUNITIES MAP

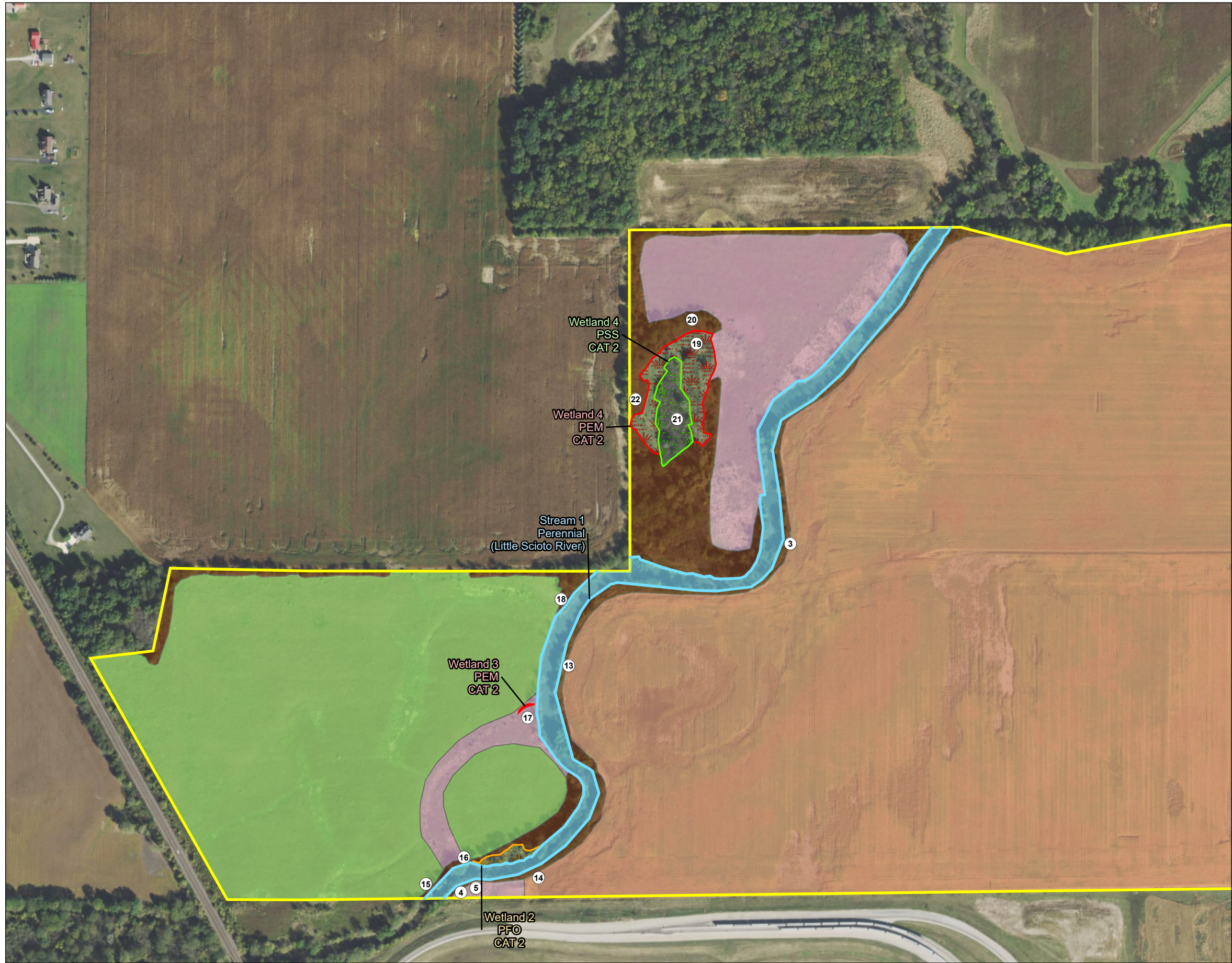


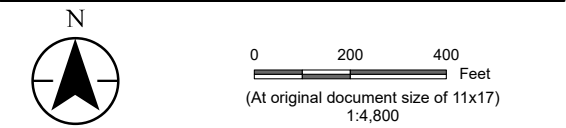
Figure No.
2
Title
Vegetation Communities Map

Client/Project
Marion County Solar Project, LLC
Marion County Solar Project

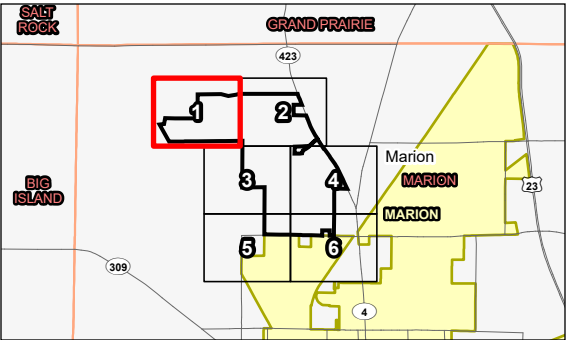
2028113241

Project Location
Marion County, Ohio

Prepared by JLH on 2021-01-05
TR by AS 2021-01-20
IR by CMD on 2021-02-17



- Legend
- Project Area
 - Photo Location
 - Field Delineated Waterway
 - Habitat Area
 - Cultivated Crop
 - Grassland
 - New Field
 - Old Field
 - Maintained Lawn
 - Second Growth Deciduous Forest
 - Existing Roadway



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Savion Solar, USGS, NADS
3. Orthophotography: 2017 NAIP



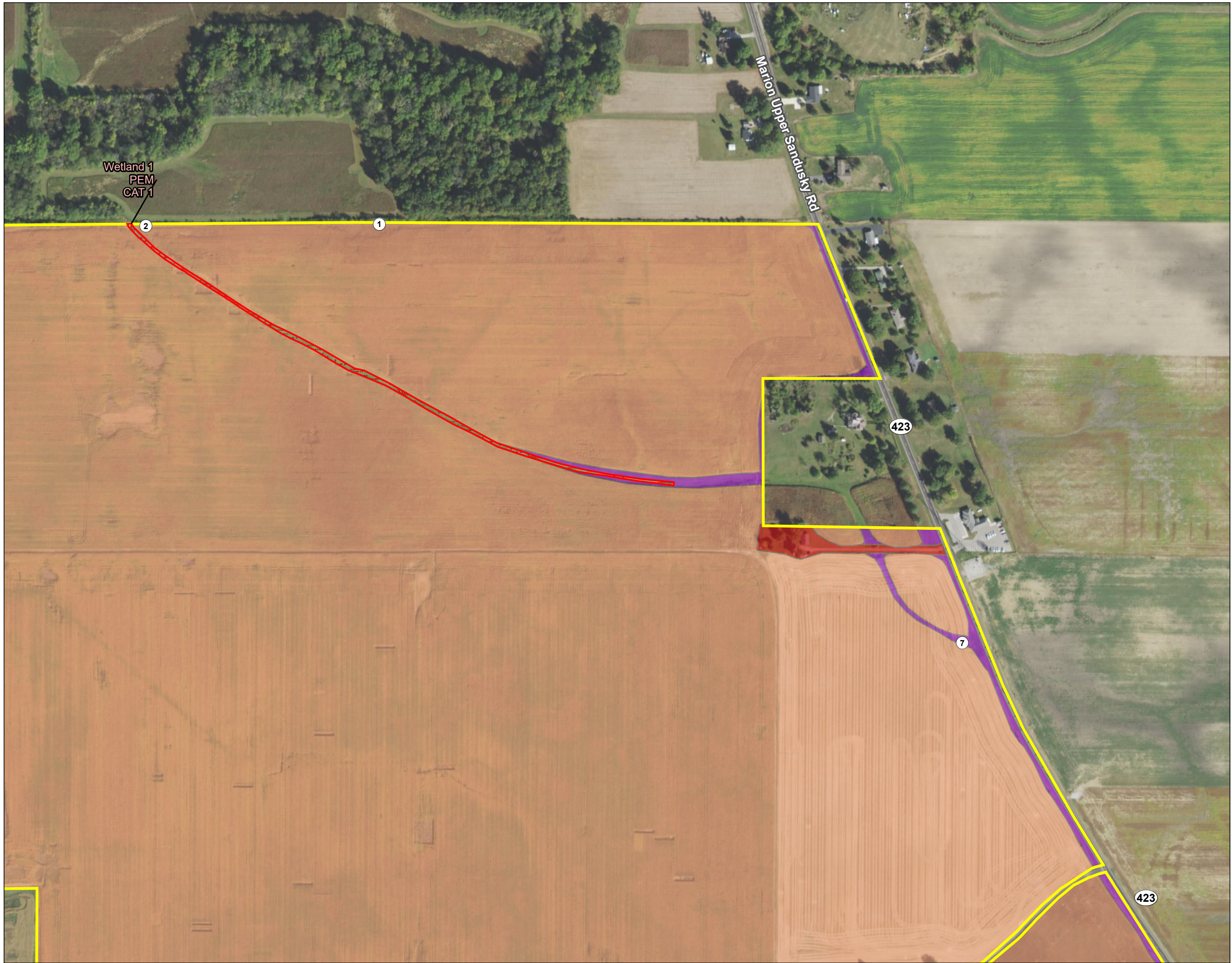


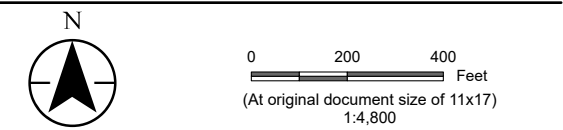
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Marion County Solar Project

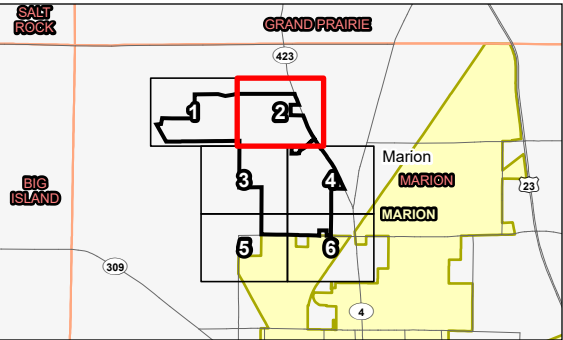
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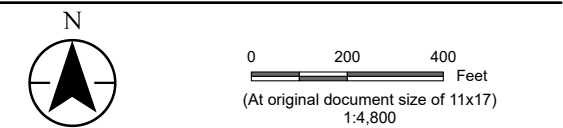
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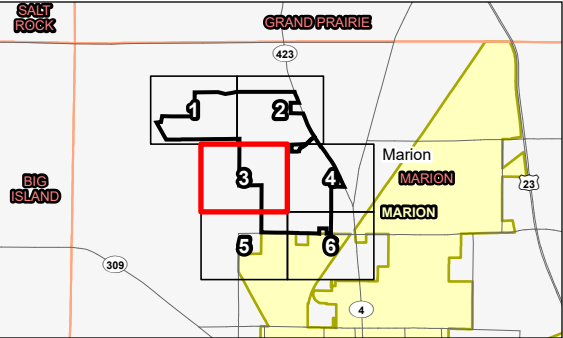
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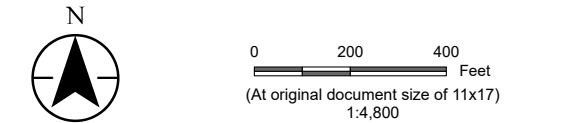
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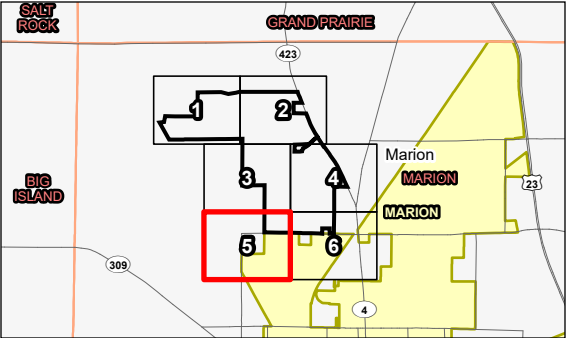
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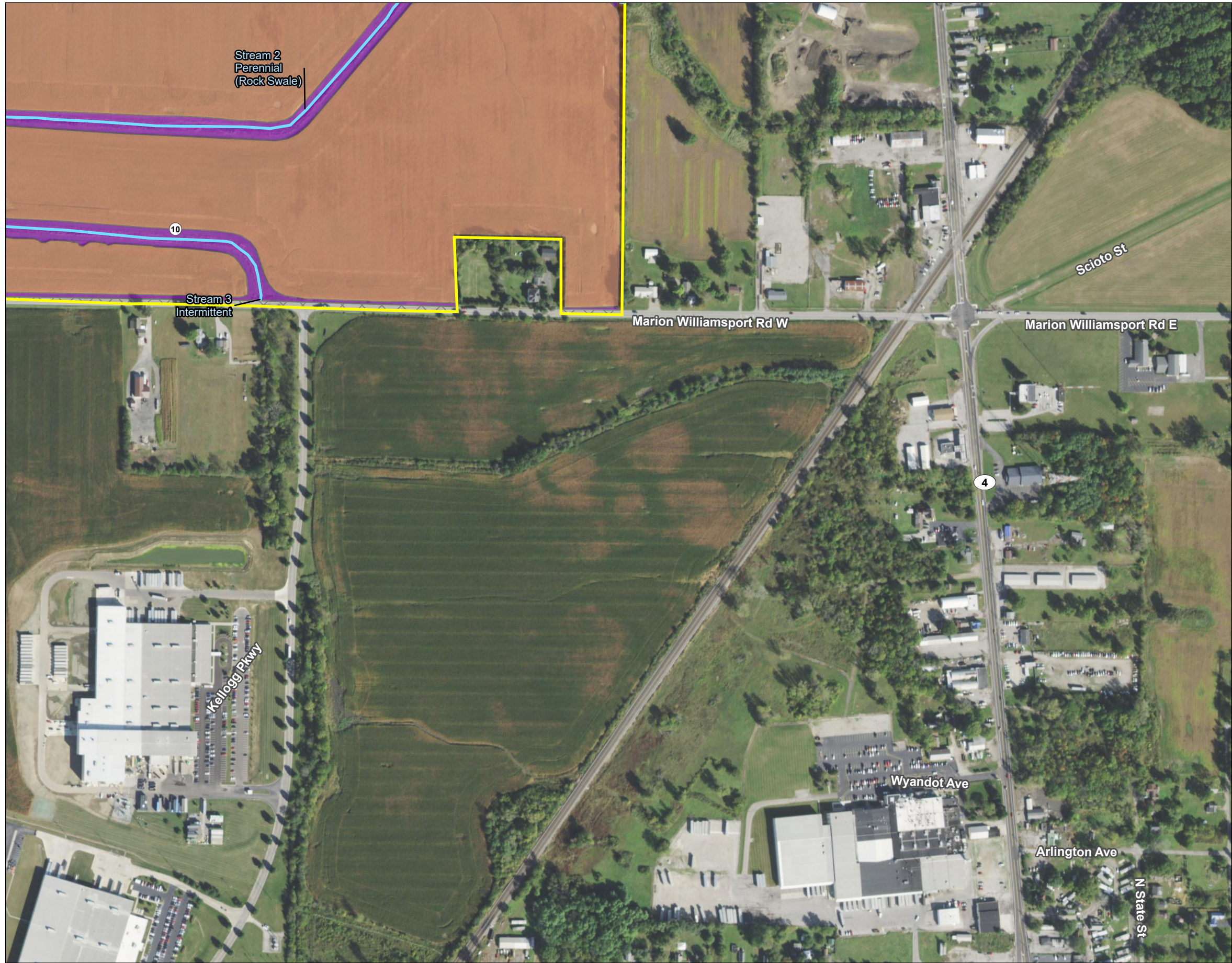


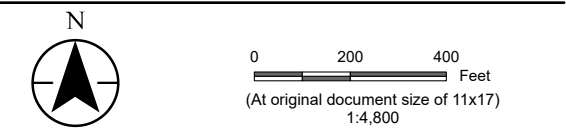
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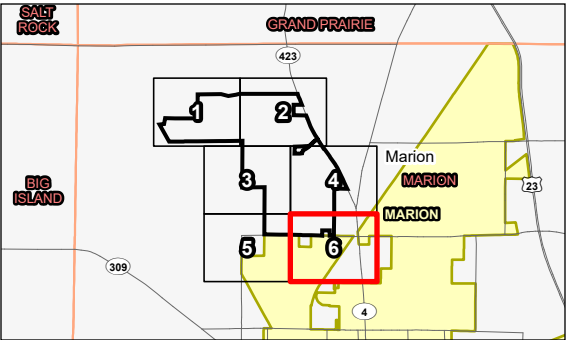
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**MARION COUNTY SOLAR PROJECT THREATENED AND ENDANGERED SPECIES HABITAT SURVEY
REPORT**

Site Photographs
February 26, 2021

Appendix B SITE PHOTOGRAPHS

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 1. View of cultivated crop vegetation community. Photograph taken facing south.



Photo Location 2. View of palustrine emergent (PEM) wetland (Wetland 1) vegetation community. Photograph taken facing south.

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 3. View of perennial stream habitat (Stream 1 – Little Scioto River). Photograph taken facing north.



Photo Location 4. View of second growth deciduous forest vegetation community. Photograph taken facing northeast.

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 5. View of old field vegetation community. Photograph taken facing east.



Photo Location 6. View of cultivated crop vegetation community. Photograph taken facing south.

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 7. View of cultivated crop vegetation community. Photograph taken facing southwest.



Photo Location 8. View of a perennial stream habitat (Stream 2 – Rock Swale). Photograph taken facing southeast.

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 9. View of intermittent stream habitat (Stream 3). Photograph taken facing east.



Photo Location 10. View of new field vegetation community. Photograph taken facing east.

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 11. View of second growth deciduous forest vegetation community. Photograph taken facing north.



Photo Location 12. View of cultivated crop vegetation community. Photograph taken facing east.

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 13. View of perennial stream habitat (Stream 1 – Little Scioto River). Photograph taken facing southwest.



Photo Location 14. View of grassland vegetation community. Photograph taken facing west.

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 15. View of palustrine forested wetland (Wetland 2) vegetative community. Photograph taken facing east.



Photo Location 16. View of PEM wetland (Wetland 3) vegetation community. Photograph taken facing south.

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 17. View of grassland vegetation community. Photograph taken facing southwest.



Photo Location 18. View of PEM wetland (Wetland 4) vegetation community. Photograph taken facing west.

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 19. View of second growth deciduous forest vegetation community. Photograph taken facing north.



Photo Location 20. View of palustrine scrub-shrub wetland (Wetland 4) vegetative community. Photograph taken facing south.

Marion County Solar Project, LLC
Threatened and Endangered Species Habitat Survey Report
Marion County, Ohio



Photo Location 21. View of second growth deciduous forest vegetation community. Photograph taken facing north.

**MARION COUNTY SOLAR PROJECT THREATENED AND ENDANGERED SPECIES HABITAT SURVEY
REPORT**

Agency Correspondence
February 26, 2021

Appendix C AGENCY CORRESPONDENCE



Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

Office of Real Estate

John Kessler, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6621
Fax: (614) 267-4764

November 24, 2020

Courtney Dohoney
Stantec Consulting Services, Inc.
3001 Washington Blvd. suite 500
Arlington, Virginia 22201

Re: 20-913; Marion County Solar Facility

Project: The proposed project involves the construction of a 100-megawatt (MW) utility-scale photovoltaic solar energy facility.

Location: The proposed project is located in Marion Township, Marion County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database has the following record at or within a one-mile radius of the project area:

Badger (*Taxidea taxus*), State species of concern

The review was performed on the project area you specified in your request as well as an additional one-mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.

The Division of Wildlife is working closely with our partners at Ohio Pollinator Habitat Initiative (OPHI) to create and enhance pollinator habitat at solar power installations. Attached for your use is the Ohio Solar Site Pollinator Habitat Planning and Assessment Form. This form was developed by the OPHI Solar Pollinator Program Advisory Team. We recommend that the areas between and around the solar panels be planted with legumes and wildflowers (i.e. forbs) that are beneficial to pollinators and other wildlife and reduce use of non-native grass and gravel. The recommended legumes and forbs listed below are low-growing so as not to cast shadows on the solar panels and would only require one to two mowings a year for maintenance, which should minimize maintenance costs. For other areas of the installation where vegetation does not have to be low-growing, alternative pollinator mixes are available with a more diverse array of flowering plants. This perennial vegetation will provide beneficial foraging habitat to songbirds and pollinators while reducing storm water runoff, standing water, and erosion. Please contact the Ohio Pollinator Habitat Initiative <http://www.ophi.info/>, and specifically Mike Retterer mretterer@pheasantsforever.org for further information on solar power facility pollinator plantings.

Recommended low-growing grasses and forbs may include:

Little Bluestem	<i>Schizachyrium scoparium</i>
Sideoats Grama	<i>Bouteloua curtipendula</i>
Alfalfa	<i>Medicago spp.</i>
Alsike Clover	<i>Trifolium hybridum</i>
Brown-eyed Susan	<i>Rudbeckia triloba</i>
Butterfly Milkweed	<i>Asclepias tuberosa</i>
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>
Partridge Pea	<i>Chamaecrista fasciculata</i>
Timothy	<i>Phleum pratense</i>
Orchardgrass	<i>Dactylis glomerata</i>
Crimson Clover	<i>Trifolium incarnatum</i>
Ladino or White Clover	<i>Trifolium repens</i>

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH ≥ 20 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. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the “OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING”. If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31, however, limited summer tree cutting may be acceptable after consultation with DOW (contact Sarah Stankavich, sarah.stankavich@dnr.state.oh.us).

The DOW also recommends that a desktop habitat assessment, followed by a field assessment if needed, is conducted to determine if there are potential hibernaculum(a) present within the project area. Information about how to conduct habitat assessments can be found in the current USFWS “Range-wide Indiana Bat Survey Guidelines.” If a habitat assessment finds that potential hibernacula are present within 0.25 miles of the project area, please send this information to Sarah Stankavich, sarah.stankavich@dnr.state.oh.us for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

This project is within the range of the following listed mussel species.

Federally Endangered

clubshell (*Pleurobema clava*)

rayed bean (*Villosa fabalis*)

snuffbox (*Epioblasma triquetra*)

Federally Threatened

rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Threatened

pondhorn (*Unio merus tetralasmus*)

This project must not have an impact on freshwater native mussels at the project site. This applies to both listed and non-listed species. Per the Ohio Mussel Survey Protocol (2020), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. This is further explained within the Ohio Mussel Survey Protocol. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, as a last resort, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. The Ohio Mussel Survey Protocol (2020) can be found at:

<http://wildlife.ohiodnr.gov/portals/wildlife/pdfs/licenses%20&%20permits/OH%20Mussel%20Survey%20Protocol.pdf>

The DOW recommends no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact aquatic species.

The project is within the range of the eastern massasauga (*Sistrurus catenatus*), a state endangered and federally threatened snake species. The eastern massasauga uses a range of habitats including wet prairies, fens, and other wetlands, as well as drier upland habitat. 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.

The project is within the range of the American bittern (*Botaurus lentiginosus*), a state endangered bird. Nesting bitterns prefer large undisturbed wetlands that have scattered small pools amongst dense vegetation. They occasionally occupy bogs, large wet meadows, and dense shrubby swamps. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the black-crowned night-heron (*Nycticorax nycticorax*), a state-threatened bird. Night-herons are so named because they are nocturnal, conducting most of their foraging in the evening hours or at night, and roost in trees near wetlands and waterbodies during the day. Night herons are migratory and are typically found in Ohio from April 1 through December 1 but can be found in more urbanized areas with reliable food sources year-round. Black-crowned night-herons primarily forage in wetlands and other shallow aquatic habitats, and roost in trees nearby. These night-herons nest in small trees, saplings, shrubs, or sometimes on the ground, near bodies of water and wetlands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the king rail (*Rallus elegans*), a state endangered bird. Nests for this species are deep bowls constructed out of grass and usually hidden very well in marsh vegetation. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to August 1. If no wetland habitat will be impacted, the project is not likely to impact this species.

The project is within the range of the least bittern (*Ixobrychus exilis*), a state threatened bird. This secretive marsh species prefers dense emergent wetlands with thick stands of cattails, sedges, sawgrass or other semiaquatic vegetation interspersed with woody vegetation and open water. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus hudsonis*), a state endangered bird. 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 May 15 to August 1. If this habitat will not be impacted, the project is not likely to impact this species.

The project is within the range of the sandhill crane (*Grus canadensis*), a state threatened species. Sandhill cranes are primarily a wetland-dependent species. On their wintering grounds, they will utilize agricultural fields; however, they roost in shallow, standing water or moist bottomlands. On breeding grounds they require a rather large tract of wet meadow, shallow marsh, or bog for nesting. If grassland, prairie, or wetland habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 to September 1. If this habitat will not be impacted, this project is not likely to have an impact on this species.

The project is within the range of the trumpeter swan (*Cygnus buccinator*), a state threatened bird. Trumpeter swans prefer large marshes and lakes ranging in size from 40 to 150 acres. They like shallow wetlands one to three feet deep with a diverse mix of plenty of emergent and submergent vegetation and open water. If this type of habitat will be impacted, construction

should be avoided in this habitat during the species' nesting period of April 15 to June 15. If this habitat will not be impacted, this project is not likely to have an impact on this species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. 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, the project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the U.S. Fish & Wildlife Service.

Geological Survey: The Division of Geological Survey has the following comment.

Physiographic Region

The proposed project area is in Marion Township, Marion County. This area is in the Central Ohio Clayey Till Plain physiographic region. This region is characterized by well-defined moraines as well as flat-lying ground moraines. Intermorainal lake basins filled with silt, clay and till are present. There are few large streams and limited sand and gravel outwash. A high-lime Wisconsinan-age till covers Lower Paleozoic-age carbonate rocks and shales (Ohio Department of Natural Resources, Division of Geological Survey, 1998).

Surficial/Glacial Geology

The project area lies within the glaciated margin of the state and includes several Wisconsinan-age glacial features. Alluvial, outwash and ground moraine features are present. Alluvial deposits are located within the floodplains of the Little Scioto River and consist of silt clay to coarse sand and gravel deposits. Outwash deposits surround the alluvial floodplains and extend through much of the center of the project area. Outwash deposits consist of well sorted and stratified sand and gravel that was deposited by meltwater from glacial ice. The eastern portion of the project area is made up of ground moraine deposits, featuring clayey till and flat to gently undulating terrain (Pavey et al, 1999). Glacial drift throughout most of the study area is between 0 and 54 feet thick. Drift is thickest in the western portion of the project area and thinner in the east (Powers and Swinford, 2004).

Bedrock Geology

The uppermost bedrock unit in the project area is the Columbus Limestone. This unit is Devonian-aged and consists of bluish gray to brown fossiliferous limestone. The unit may be dolomitic in places and frequently contains solution features. This unit makes up most of the project area. Underlying the Columbus Limestone is the Silurian-aged Salina Undifferentiated. This unit is characterized by a gray to brown dolomite which contains argillaceous partings, brecciated intervals, algal laminations and anhydrite/gypsum zones. This unit makes up a small portion of the project area at the western border. Bedrock may be exposed in outcrops and roadcuts within the boundary of the project area (Slucher et al, 2006).

Oil, Gas and Mining

ODNR has record of one oil and gas well within one mile of the proposed project area. This well is listed as plugged and abandoned (Ohio Department of Natural Resources, Division of Oil and Gas, *Ohio Oil and Gas Wells Locator*).

ODNR does not have record of any mining operations within the project area. The nearest mine to the project area is a former limestone quarry operated by J.M. Hamilton and Sons Company. This quarry is located approximately 0.27 miles from the site boundary. The Marion Plant operated by The National Lime and Stone Company is also nearby, located approximately 1 mile to the east of the project area (Ohio Department of Natural Resources, Division of Mineral Resources, *Mines of Ohio*).

Seismic Activity

Many small earthquakes have historically been recorded in Ohio. The three events closest to the site are listed in the chart below (Ohio Department of Natural Resources, Division of Geological Survey, *Ohio Earthquake Epicenters*):

Date	Magnitude	Distance to Site Boundary	County	Township
July 11, 1930	3.1	2.6 miles	Marion	Big Island
April 26, 2011	2.4	25.0 miles	Hancock	Delaware
January 12, 1995	3.3	26.8 miles	Richland	Springfield

Karst

Karst features usually form in areas that are covered by thin or no glacial drift and the bedrock is limestone or dolomite. The nearest known sinkhole to the project area is approximately 11.5 miles south of the site, in Prospect Township, Marion County. It should be noted that the Columbus Limestone is known to produce karst features, however ODNR does not have record of any such features in this area (Ohio Department of Natural Resources, Division of Geological Survey, *Ohio Karst*).

Soils

According to the USDA Web Soil Survey, the project area consists primarily of soils derived from glacial till, outwash and alluvium. Medway, Blount and Saranac are the most common soil series found within the boundaries of the project area. Together, these soils make up about 60% of the soil cover in the project area. Other prominent soil series include Pewamo, Matinsville, Sleeth, Glynnwood, Milford, Whitaker and Fox (USDA Web Soil Survey).

There is a low to moderate risk of shrink-swell potential in these soils. Other limiting factors include ponding and seasonal saturation in some soil series. Slope remains relatively flat, with slopes that do not exceed a 6% grade (USDA Web Soil Survey).

Groundwater

Groundwater resources are plentiful throughout the project area. Wells developed in bedrock are likely to yield up to 500 gallons per minute. Limestone bedrock is the primary aquifer in this area. Yields in excess of 1,000 gallons per minute have been known to occur in this region, but primarily yields less than 500 gallons per minute can be expected from wells developed to depths of less than 300 feet. Domestic and agricultural water supplies of 10 to 15 gallons per minute can typically be developed in wells less than 80 feet deep (Crowell, 1979 and Ohio Department of Natural Resources, Division of Water, *Bedrock Aquifer Map*, 2000). Wells developed in glacial

material are likely to yield up to 25 gallons per minute. Several unconsolidated aquifers are present in this project area. The Lima Ground Moraine Aquifer and the Galion Ground Moraine Aquifer are intersected by the Scioto Alluvial Aquifer in the western portion of the project area. Each of these units have an expected yield of 5 to 25 gallons per minute. The Galion Thin Upland Aquifer makes up the center and eastern portions of the project area. This unit has an expected yield of less than five gallons per minute. Higher groundwater yields typically reflect larger diameter, properly developed and screened wells (Ohio Department of Natural Resources, Division of Water, *Statewide Unconsolidated Aquifer Map*, 2000).

ODNR has record of 125 water wells drilled within one mile of the project area. These wells range in depth from 12 to 180 feet deep, with an average depth of 66.2 feet. The most common aquifer listed is limestone. There are a few wells that list limestone and shale, limestone and rock or rock as the aquifer. Two wells list silt and clay as the aquifer and one well lists gravel. A sustainable yield of 10 to 200 gallons per minute is expected from wells drilled in this area based on well log records. The average sustainable yield from these records was 26.2 gallons per minute. This is based on records from 39 wells within one mile of the project area that contain sustainable yield data (Ohio Department of Natural Resources, Division of Water, *Ohio Water Wells*).

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf

ODNR appreciates the opportunity to provide these comments. Please contact Sarah Tebbe, Environmental Specialist, at (614) 265-6397 or Sarah.Tebbe@dnr.state.oh.us if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator (Acting)

References

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- Slucher, E., Swinford, E., Larsen, G., Schumacher, G., Shrake, D., Rice, C., Caudill, M., Rea, R. and Powers, D. (2006). *Bedrock Geologic Map of Ohio*, Ohio Department of Natural Resources, Division of Geological Survey, map, scale 1:500,000.
- USDA Web Soil Survey, (Last modified 2019). *Web Soil Survey Interactive Map*, United States Department of Agriculture, National Resources Conservation Service, online interactive map, <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.



OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING JUNE 2020

Agency Contacts:

ODNR-DOW Permit Coordinator: Wildlife.Permits@dnr.state.oh.us, (614) 265-6315

ODNR-DOW Bat Survey Coordinator: Sarah Stankavich, sarah.stankavich@dnr.state.oh.us, (614) 265-6764

Due to the evolving situation with COVID-19, we are temporarily suspending bat-handling activities until more is known about the risk to North American bats. This document has been updated with new state guidance for the 2020 field season only, or until bat-handling activities are reinstated. These guidelines replace previous guidelines released in March 2020.

This guidance applies to state recommendations only. Contact the USFWS to determine if federal consultation is also necessary to comply with federal law.

Ohio Mist Net Surveys:

Mist-netting for presence/absence surveys, education events, or research activities will not be authorized for the 2020 season.

Ohio Acoustic Surveys:

Acoustic bat surveys for presence/absence will be accepted by ODNR for the 2020 season. Surveys should follow guidelines laid out in the USFWS Range-wide Indiana Bat Survey Guidelines (March 2020) with the following exceptions:

- Ohio survey dates are June 1 – August 15, 2020
- After conducting automated analyses using one or more of the currently available ‘approved’ acoustic bat ID programs¹, qualitative analysis (i.e., manual vetting) of any calls recorded from state-endangered species (*Myotis sodalis*, *M. septentrionalis*², *M. lucifugus*², and *Perimyotis subflavus*²) must be completed.
 - At a minimum, for each detector site/night a program considered presence of state-listed bats likely, review all files (including no IDs) from that site/night. If more than one acoustic bat ID program is used, qualitative analysis must also include a comparison of the results of each program by site and night.

During Field Season:

- **Prior to initiation of field work (a minimum of two weeks in advance)**, permittees must provide proposed survey plans to ODNR-DOW via e-mail. **Plans must be reviewed and approved by ODNR-DOW before ANY surveys take place.** Study plans must specify objectives, location details, dates of proposed work, and all other relevant details.

¹ <https://www.fws.gov/midwest/Endangered/mammals/inba/surveys/inbaAcousticSoftware.html>

² State listing as endangered effective July 1, 2020

After Field Season:

- By March 15, you must submit your final ODNR-DOW report(s) from the previous summer. You are not required to fill out the ODNR-DOW Wildlife Diversity Bat Excel Spreadsheet; instead, please forward your USFWS Midwestern US Spreadsheet (found here: <http://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html>) to the ODNR-DOW Bat Survey Coordinator and ODNR-DOW Permit Coordinator and include your state permit number along with an electronic copy of the project report. Electronic summaries emailed during the field season are NOT considered as full compliance of this reporting requirement.

Ohio Environmental Review Recommendations for projects involving disturbance near potential/known bat hibernacula (cliffs, caves, mines) or tree cutting:

Step 1: Coordinate with Ohio Division of Wildlife (DOW) regarding existing records for state-listed endangered bat summer and/or winter occurrence information.

If project site contains a known bat hibernaculum(a) –

- For state-listed endangered species other than the Indiana bat, a recommendation of 0.25-mile tree cutting buffer around all known entrances to protect existing conditions at the hibernaculum(a). If the project involves subsurface disturbance, consultation with DOW is required.
- Limited summer and winter tree cutting may be permitted within the buffer following guidelines detailed below. Coordinate with DOW before cutting.

If a project site does not contain known bat hibernaculum(a)

- Conduct a habitat assessment (desktop or field-based, using methods detailed in current USFWS Range-wide Indiana Bat Guidelines) to determine if a potential hibernaculum(a) is present within the action area.

Step 2: When conducted, a presence/absence survey must follow current DOW guidelines.

Step 3: If a state-listed endangered bat is captured or recorded during the survey:

- Recommendation of no summer tree cutting, or limited cutting following guidelines detailed below, within 5 miles of the capture site if a roost is not located.
- Recommendation of no summer tree cutting, or limited cutting following guidelines detailed below, within 2.5 miles of a roost tree if located.

If no state-listed endangered bat is captured or recorded during the survey:

- Summer tree cutting may proceed for 5 years before a new survey is needed under state guidance.

Limited summer tree cutting guidance for bats that are only state-listed endangered: Limited tree cutting in summer may be permitted after consultation with DOW, but clearing trees with the following characteristics should be avoided unless they pose a hazard: dead or live trees of any size with loose, shaggy bark; crevices, holes, or cavities; live trees of any species with DBH \geq 20.

FREQUENTLY ASKED QUESTIONS

When does the Bat Survey protocol have to be used?

This protocol should be used anytime Indiana bat, northern long-eared bat, little brown bat, or tricolored bat summer presence/probable absence surveys are conducted in the state of Ohio. For 2020 only, acoustic surveys will meet the ODNR-DOW requirements unless new guidance allowing for the handling of bats during presence/absence surveys is released from USFWS.

How many net surveys are required for presence/probably absence?

As described in the current USFWS Range-wide Indiana Bat Guidelines: Linear projects: a minimum of 2 detector nights per km (0.6 miles) of suitable summer habitat

Non-linear projects: a minimum of 8 detector nights per 123 acres (0.5 km²) of suitable summer habitat. At least 2 detector locations per 123 acre "site" shall be sampled until at least 8 detector nights has been completed over the course of at least 2 calendar nights (may be consecutive). For example:

- 4 detectors for 2 nights each (can sample the same location or move within the site)
- 2 detectors for 4 nights each (can sample the same location or move within the site)
- 1 detector for 8 nights (must sample at least 2 locations and move within the site)

How long are the results of the surveys valid for an assessment of an area?

Mist-net or acoustic surveys documenting probable absence of state-listed endangered bats are valid for five years.

When can acoustic surveys occur in Ohio?

In Ohio, acoustic surveys may only be conducted from June 1 through August 15 unless indicated otherwise in your state permit. Any surveys outside of the June 1 - August 15 timeframe cannot be used in Ohio to assess the presence/probable absence of state-listed bats.

Can a presence/probable absence survey be conducted within a known Indiana bat and/or northern long-eared bat capture/detection buffer?

Surveys generally cannot be used to document presence/probable absence of state-listed endangered bats bat where presence of the species has already been confirmed by prior surveys.

What if a project is proposing to clear trees between April 1 and September 30 when bats may be present but no bat records exist in the project area?

Any Ohio project that is not within a known bat record buffer, and tree clearing between April 1 and September 31 is being proposed, may have a presence/absence survey conducted between June 1 and August 15 following the range-wide guidance. If a presence/absence survey is not performed, presence of listed bats is assumed.

How does take of northern long-eared bats differ from Indiana bats?

Under Ohio law, there is no exemption for take of any listed bat species.

Ohio Solar Site Pollinator Habitat Planning and Assessment Form

1. Percent of total site planted with native or beneficial introduced flowering plants.

25-50%	10 points
51-75%	20 points
76-100%	30 points

2. Flowering plant diversity in site perimeter & buffer area (species with more than 1% cover).

9-12 species	5 points
13-16 species	10 points
17-20 species	15 points
20+ species	20 points
Site specific Milkweed included @2,000 pls/ac minimum	10 points

* If no boxes were selected in questions 1 or 2 then your site does not meet criteria to be considered as an OPHI Solar Pollinator Habitat. However, OPHI can work with you on ways to increase the pollinator score of your site.

3. Flowering plant seed mixes and plantings to be used.

Native species local to the site are preferred; otherwise species native to Ohio are encouraged.

Includes only native plant species	15 points
Includes native and beneficial introduced plant species	10 points
Includes only beneficial introduced plant species	5 points

4. Flowering plant diversity in rows & under solar array.

4-6	5 points
7+	10 points
Site specific Milkweed included @2,000 pls/ac minimum	10 points

5. Seasons with at least 3 blooming species. Check all that apply.

Spring (April – May)	5 points
Summer (June – August)	5 points
Fall (September – October)	5 points

6. Available habitat components within ¼ mile of site.

Check all that apply.

Native grasses	2 points
Trees and shrubs	2 points
Forest edge habitat	2 points
Cavity nesting sites	2 points
Clean perennial water sources	2 points

7. Planned vegetative buffers adjacent to the solar site. Check all that apply.

Site has planned buffer adjacent to solar site	5 points
Buffer is at least 30 feet wide as measured from array fencing or edge of flower plantings	5 points
Buffer is at least 50 feet wide as measured from array fencing or edge of flower plantings	10 points
Buffer includes flowering Shrubs/trees and other shrubs/trees that provide food for wildlife	5 points

8. Habitat site preparation prior to implementation.

Measures taken to control weeds and invasive species prior to seeding/planting.	10 points
Appropriate soil preparation done to reduce erosion	
And enhance germination/growth	5 points
None	-10 points

9. Planned management practices for areas designated as part of the pollinator habitat site. Check all that apply.

Detailed establishment and management plan developed for site	10 points
Mowing Follows OPHI mowing schedule for monarchs each year	5 points
Mowing is staggered over a 2 week period	5 points
Signage indicating site is wildlife & pollinator-friendly	5 points
Creation of habitat features (e.g. boxes, pass-through tunnels, bee hotels)	5 points
Long-term monitoring plan developed that includes re-certification as Solar Site Pollinator Habitat	10 points

10. Insecticide risk. Check if applicable.

Communication with adjacent landowners about the project and possible impacts of their insecticide use is critical

Site is adjacent to land (within 120 ft.) where insecticides are used	-20 points
Planned on-site insecticide use (including pre-treated seeds/plants)	-40 points

Total Points: _____

Provides High Quality Pollinator Habitat > 85
Meets OPHI Solar Pollinator Habitat Standards 70-84

Site Owner/Operator:

Project Location:

Project Size (acres):

Planned Source of Seeds:

Planned Seeding Date:

Habitat & Vegetation Consultant:

Refer to www.ophi.info for more information regarding solar pollinator habitat development.

Version 1 - March 2018

Developed by the OPHI Solar Pollinator Program Advisory Team



From: [Ohio, FW3](#)
To: [Dohoney, Courtney](#); [Lauren Devine](#)
Cc: nathan.reardon@dnr.state.oh.us; [Parsons, Kate](#); mretterer@pheasantsforever.org; [Stevenson, Lori](#)
Subject: Marion County Solar Project, Marion County, Ohio
Date: Friday, October 9, 2020 9:11:57 AM
Attachments: [pastedImagebase640.png](#)
[pastedImagebase641.png](#)
[Ohio Solar Site Pollinator Habitat Planning and Assessment Form v.9 FINAL 5 3 2018.pdf](#)



UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
Ecological Services Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / Fax (614) 416-8994



TAILS# 03E15000-2021-TA-0084

Dear Ms. Dohoney,

The U.S Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened and endangered species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: The endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and breed that may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, woodlots, fallow fields, and pastures. Roost trees for both species include live and standing dead trees ≥ 3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities. These roost trees may be located in forested habitats as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves, rock crevices and abandoned mines.

Seasonal Tree Clearing for Federally Listed Bat Species: Should the proposed project site contain trees ≥ 3 inches dbh, we recommend avoiding tree removal wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, we recommend removal of any trees ≥ 3 inches dbh only occur between October 1 and March 31. Seasonal clearing is recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see <http://www.fws.gov/midwest/endangered/mammals/nleb/index.html>), incidental take of

Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.

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. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

POLLINATOR COMMENTS:

The Service is working closely with our partners at Ohio Pollinator Habitat Initiative (OPHI) to create and enhance pollinator habitat at solar power installations. Attached for your use is the Ohio Solar Site Pollinator Habitat Planning and Assessment Form. This form was developed by the OPHI Solar Pollinator Program Advisory Team. We recommend that the areas between the solar panels be planted with legumes and wildflowers (i.e. forbs) that are beneficial to pollinators and other wildlife instead of non-native grass. Pollinators are beneficial to agricultural communities like the project area because they pollinate many varieties of fruits and vegetables. The recommended legumes and forbs are short (low-growing) so as not to cast shadows on the solar panels and would only require one to two mowings a year for maintenance, which should allow the project proponent to minimize maintenance costs. For other areas of the installation where vegetation does not have to be low-growing, alternative pollinator mixes are available with a more diverse array of flowering plants. This perennial vegetation will provide beneficial foraging habitat to songbirds and pollinators (e.g., monarch butterfly and the federally listed rusty patched bumblebee) while reducing storm water runoff, standing water, and erosion. Native plants can act as host plants for insect larva while flowering plants provide nectar sources for adult butterflies as well as other pollinators such as hummingbirds. Seeds from these plants can also provide food for a wide variety of bird species. Please contact the Ohio Pollinator Habitat Initiative (<http://www.ophi.info/>), and specifically Mike Retterer at mretterer@pheasantsforever.org for further information on solar power facility pollinator plantings.

Recommended low-growing grasses and forbs may include:

Little Bluestem	<i>Schizachyrium scoparium</i>
Sideoats Grama	<i>Bouteloua curtipendula</i>
Alfalfa	<i>Medicago spp.</i>
Alsike Clover	<i>Trifolium hybridum</i>
Brown-eyed Susan	<i>Rudbeckia triloba</i>
Butterfly Milkweed	<i>Asclepias tuberosa</i>
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>
Partridge Pea	<i>Chamaecrista fasciculata</i>
Timothy	<i>Phleum pratense</i>
Orchardgrass	<i>Dactylis glomerata</i>
Crimson Clover	<i>Trifolium incarnatum</i>
Ladino or White Clover	<i>Trifolium repens</i>

Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding

provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus it is important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,



Patrice M. Ashfield
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Kate Parsons, ODNR-DOW

Ohio Solar Site Pollinator Habitat Planning and Assessment Form

1. Percent of total site planted with native or beneficial introduced flowering plants.

25-50%	10 points
51-75%	20 points
76-100%	30 points

2. Flowering plant diversity in site perimeter & buffer area (species with more than 1% cover).

9-12 species	5 points
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17-20 species	15 points
20+ species	20 points
Site specific Milkweed included @2,000 pls/ac minimum	10 points

* If no boxes were selected in questions 1 or 2 then your site does not meet criteria to be considered as an OPHI Solar Pollinator Habitat. However, OPHI can work with you on ways to increase the pollinator score of your site.

3. Flowering plant seed mixes and plantings to be used.

Native species local to the site are preferred; otherwise species native to Ohio are encouraged.

Includes only native plant species	15 points
Includes native and beneficial introduced plant species	10 points
Includes only beneficial introduced plant species	5 points

4. Flowering plant diversity in rows & under solar array.

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5. Seasons with at least 3 blooming species. Check all that apply.

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Summer (June – August)	5 points
Fall (September – October)	5 points

6. Available habitat components within ¼ mile of site.

Check all that apply.

Native grasses	2 points
Trees and shrubs	2 points
Forest edge habitat	2 points
Cavity nesting sites	2 points
Clean perennial water sources	2 points

7. Planned vegetative buffers adjacent to the solar site. Check all that apply.

Site has planned buffer adjacent to solar site	5 points
Buffer is at least 30 feet wide as measured from array fencing or edge of flower plantings	5 points
Buffer is at least 50 feet wide as measured from array fencing or edge of flower plantings	10 points
Buffer includes flowering Shrubs/trees and other shrubs/trees that provide food for wildlife	5 points

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And enhance germination/growth	5 points
None	-10 points

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Mowing is staggered over a 2 week period	5 points
Signage indicating site is wildlife & pollinator-friendly	5 points
Creation of habitat features (e.g. boxes, pass-through tunnels, bee hotels)	5 points
Long-term monitoring plan developed that includes re-certification as Solar Site Pollinator Habitat	10 points

10. Insecticide risk. Check if applicable.

Communication with adjacent landowners about the project and possible impacts of their insecticide use is critical

Site is adjacent to land (within 120 ft.) where insecticides are used	-20 points
Planned on-site insecticide use (including pre-treated seeds/plants)	-40 points

Total Points: _____

Provides High Quality Pollinator Habitat > 85
Meets OPHI Solar Pollinator Habitat Standards 70-84

Site Owner/Operator:

Project Location:

Project Size (acres):

Planned Source of Seeds:

Planned Seeding Date:

Habitat & Vegetation Consultant:

Refer to www.ophi.info for more information regarding solar pollinator habitat development.

Version 1 - March 2018

Developed by the OPHI Solar Pollinator Program Advisory Team



This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

3/5/2021 10:22:27 AM

in

Case No(s). 21-0036-EL-BGN

Summary: Application - 23 of 30 (Exhibit T – Threatened and Endangered Species Habitat Survey Report) electronically filed by Christine M.T. Pirik on behalf of Marion County Solar Project, LLC