

MEMO

TO	Justified DataPower LLC
FROM	Environmental Resources Management, Inc.
DATE	19 December 2025
REFERENCE	Hawesville Site Project
SUBJECT	Protected Species Habitat Assessment

1. INTRODUCTION

Environmental Resources Management, Inc. (ERM) is pleased to provide Justified DataPower LLC with the following Protected Species Habitat Suitability Assessment for the Hawesville Site Project (Project), a proposed commercial development site located along the Ohio River in an unincorporated area of Hancock County northwest of the city of Hawesville, Kentucky. The assessment efforts included a desktop analysis and field survey for protected species habitat that may be impacted by development of the Project. ERM recognizes that the U.S. Fish and Wildlife Service (USFWS) and Kentucky Department of Fish and Wildlife Resources (KDFWR) have responsibility for the protection of various natural resources within the Commonwealth of Kentucky.

The Project is situated on approximately 156.5 acres in Hancock County, approximately 4 miles northwest of Hawesville, Kentucky. Based on ERM's review of desktop resources, including aerial imagery via Google Earth, access to the Project is primarily available from Big River Road to the southwest from US 60. The eastern boundary runs along the Ohio River. Figures 1 and 2 in Attachment A display aerial and topographic maps of the Project location.

2. METHODOLOGY

Overall conditions of the Project were assessed utilizing readily available datasets from the U.S. Geological Survey (USGS) National Mapper, aerial orthoimagery, USGS topographic maps, the Multi-Resolution Land Characteristics (MRLC) Consortium National Land Cover Database, and observations during the habitat survey. ERM reviewed published occurrence records of federally and state protected species from available online data sources, including the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation Tool (IPaC) and the Office of Kentucky Nature Preserves (OKNP) Biological Assessment Tool (KYBAT). Consultation with USFWS is advised under Section 7 of the Endangered Species Act (ESA) if the Project has a federal nexus, such as Clean Water Act (CWA) 404 permitting. Bald and golden eagles (*Haliaeetus leucocephalus* and *Aquila chrysaetos*, respectively) are protected by federal law under the Bald and Golden Eagle Protection Act (BGEPA) which prohibits the “take” of bald or golden eagles, including their parts, nests, or eggs (USFWS 2025a). Migratory bird species designated by USFWS are protected by the Migratory Bird Treaty Act (MTBA; USFWS 2025b). This assessment included an analysis of bald and golden eagles, and protected migratory bird species, as identified by the USFWS IPaC resource list.

The Kentucky Nongame Species Conservation Act (KRS 150.183) is the primary law that governs the legal listing of threatened and endangered species in Kentucky. According to this Act, species listed as “endangered” and “threatened” are legally protected under state law and are managed by the KDFWR.

ERM further investigated potential habitat identified from the desktop assessment by conducting a habitat field survey on 09 December 2025. The field survey effort included a targeted pedestrian and vehicular survey to identify potential habitat for species listed in the IPaC and KYBAT datasets. Photographs from the habitat survey are included in Attachment B.

ERM additionally reviewed wetland and waterbody data obtained from the wetland delineation effort which was completed simultaneously with the habitat survey for potential protected aquatic species habitat. ERM utilized the delineation data in lieu of utilizing USGS National Hydrography Dataset and USFWS National Wetland Inventory in this assessment.

An analysis and discussion of the identified species, associated habitat, presence/absence of suitable habitat, and recommendations for further actions to de-risk the Project’s potential impact on protected species is summarized below.

3. RESULTS

3.1 EXISTING OVERALL CONDITIONS

The Project is in the Wabash-Ohio Bottomlands (72a) Level IV Ecoregion (Woods et. al 2002). Topography at the Project is classified as flat with gentle slopes. Elevation within the Project ranges from 366 to 424 feet above mean sea level (AMSL). The Project area is within the South Yellow Creek Fork-Ohio River watershed (HUC 12: 051402010703; USGS 2025). The Project is irregularly shaped and consists of a fallow field with emergent wetlands in the lower elevation. The field is bushhogged yearly when conditions allow. The area surrounding the Project is industrial on the north and south sides, the Ohio River on the east, and agricultural lands on the west. A Quonset hut was identified within the Project using aerial imagery and confirmed during the field visit. The structure was not entered and was assumed to be associated with the power lines crossing the Project.

Observations from the site visits and aerial photographs identified the Project as being comprised predominantly of open herbaceous fields with a trenched ditch running southwest to northeast across the Site. There are a few drainages that drain southeast to northwest towards the ditch. The drainage flows offsite, presumably into the Ohio River. A GIS analysis of land use, utilizing the Multi-Resolution Land Characteristics (MRLC) Consortium's 2024 National Land Cover Database (NLCD), further characterized the Project area. This analysis indicates that most of the Project is classified as pasture/hay (72%), with developed, open space (8%) and low intensity (12%) also present in notable amounts. A complete summary of land use classifications, acreages, and percentages is provided in Table 1, with a corresponding map included in Attachment A (Figure 3).

TABLE 1. LAND USE WITHIN THE PROJECT AREA AS DEFINED BY NATIONAL LAND COVER DATA.

Land Use Type	Acreage	Percent of Project Area
Developed, Open Space	13.14	8.4
Developed, Low Intensity	18.71	12.0
Developed, Medium Intensity	3.24	2.1
Developed, High Intensity	0.24	0.1
Deciduous Forest	0.13	0.1
Mixed Forest	0.46	0.3
Pasture/Hay	112.89	72.1
Woody Wetlands	1.64	1.0
Emergent Herbaceous Wetlands	6.03	3.8
Total	156.50	99.9%

The Kentucky Speleological Survey (KSS), an organization dedicated to the study of cave and karst resources throughout the Commonwealth of Kentucky, was contacted by ERM on 24 November 2025, to request data regarding potential cave or karst habitat within the Project area. No new correspondence was received at the time of this report. The Kentucky Geological Survey Karst Occurrence Map, maintained by the University of Kentucky, was analyzed for potential karst and cave habitat located within the Project. Based on a review of the Karst Occurrence in Kentucky Map, the Project is in an area underlain by bedrock with limited or no potential for Karst development; therefore, the presence of karst features at the Project is unlikely (University of Kentucky Geological Survey 2002; Attachment C).

A wetland delineation was performed in conjunction with the habitat assessment 09 December 2025. Full results of the delineation are included in the Hawesville Site Project Wetland Delineation Report. Aquatic features observed during the delineation included 6.23 acres of wetlands, and 3,343 linear feet of jurisdictional ditches. The aquatic features identified during the delineation are included as Figure 4.

3.2 PROTECTED SPECIES ASSESSMENT

3.2.1 FEDERAL SPECIES

The IPaC Resource List (USFWS 2025c) identified 10 federally listed species with potential to occur in the Project Area including:

- gray bat (*Myotis grisescens*)

- northern long-eared bat (*Myotis septentrionalis*)
- Indiana bat (*Myotis sodalis*)
- whooping crane (*Grus americana*)
- fanshell (*Cypergenia stegaria*)
- longsolid (*Fusconaia subrotundra*)
- orangefoot pimpleback (*Plethobasus cooperianus*)
- rabbitsfoot (*Quadrula cylindrica cylindrica*)
- sheepnose (*Plethobasus cyphus*)
- pink mucket (*Lampsilis abrupta*)

Additionally, the monarch butterfly (*Danaus plexippus*) and tricolored bat (*Perimyotis subflavus*) were identified in the IPaC report, as proposed threatened and proposed endangered, respectively. These species are not currently protected under the Endangered Species Act (ESA) of 1973; however, they warrant analysis due to public opinion and potential uplisting (USFWS 2025b).

Bald eagles were identified by the IPaC tool to have potential to occur within the Project; however, there are no documented occurrences of bald or golden eagles within the Project according to the IPaC. Ten bird species identified in the IPaC that are protected by MTBA are also listed on the USFWS Birds of Conservation Concern (BCC) list, these include:

- black billed cuckoo (*Coccyzus erythrophthalmus*)
- bobolink (*Dolichonyx oryzivorus*)
- chimney swift (*Chaetura pelagica*)
- field sparrow (*Spizella pusilla*)
- Kentucky warbler (*Geothlypis formosa*)
- lesser yellowlegs (*Tringa flavipes*)
- prairie warbler (*Setophaga discolor*)
- prothonotary warbler (*Protonotaria citrea*)
- red-headed woodpecker (*Melanerpes erythrocephalus*)
- wood thrush (*Hylocichla mustelina*)

No designated USFWS critical habitat was identified within the Project. A copy of the IPaC Resource List is included in Attachment D.

3.2.2 KENTUCKY SPECIES

The OKNP KYBAT was utilized to assess potential natural resources and protected species within a one-mile buffer of the Project. KYBAT identified the following five state-protected species with occurrences within the Project (Attachment E; OKNP 2025):

- loggerhead shrike (*Lanius ludovicianus*): Special Concern
- clubshell (*Pleurobema clava*): Endangered
- ring pink (*Obovaria retusa*): Endangered
- catspaw (*Epioblasma olivacea*): Endangered
- fanshell (*Cyprogenia stegaria*): Endangered

The KYBAT data request was also utilized to assess potential natural resources and protected species within a one-mile buffer of the Project. KYBAT identified the additional state-listed species within the one-mile buffer area (Attachment E; OKNP 2025):

- pocketbook (*Lampsilis ovata*): Endangered
- sharp-shinned hawk (*Accipiter striatus*): Special Concern

The pocketbook is the only mussel not listed endangered at the federal level. The three remaining mussels are federally listed endangered.

While the identification of these species does not presume impacts to or from the Project, occurrence records within the buffer area warrants consideration in future permitting and compliance evaluations.

3.2.3 SPECIES HABITAT ANALYSIS

An on-site habitat assessment occurred concurrently with the wetland delineation. A location map of potential habitat, based on desktop and field analysis, is included as Figure 5. Table 2 presents a summary of the federal and state listed species assessed, their suitable habitats, and related findings. Species with suitable habitat considered present within the Project area are discussed in more detail following Table 2.

TABLE 2. PROTECTED SPECIES POTENTIALLY OCCURRING AT OR IN THE VICINITY OF THE PROJECT.

Type	Species	Protection Status	Preferred Habitat	Preferred Habitat Observed in Project?	Likelihood for Occurrence in Project
Mammals	Indiana Bat (<i>Myotis sodalis</i>)	FE	Found in mixed, hardwood, and coniferous forests and riparian areas. Hibernation occurs in caves and abandoned mines. Roosts in sloughing bark and small crevices/cracks of dead or dying trees.	Yes	Possible; Suitable forested habitat observed in the along the Ohio River and northern boundary that could provide suitable summer roosting habitat.
	Gray Bat (<i>Myotis grisescens</i>)	FE	Roosts in caves with deep vertical shafts that provide a cold air trap during winter and caves with domed ceilings that trap warm air during summer.	No	Unlikely; No caves or cave-like features were observed at the Project, however the potential for the species to forage at the Project may exist.
	Tricolored Bat (<i>Perimyotis subflavus</i>)	PE	Hibernation occurs in caves and abandoned mines. In summer, roost among leaves of live or recently dead deciduous hardwood trees, but may also be found in Spanish moss, pine trees, and occasionally human structures.	Yes	Possible; Forested areas and dead trees observed along the Ohio River and northern boundary of the Project area provide potential habitat.
	Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	SE	May be found roosting singly or in colonies underneath bark, in	Yes	Possible; Suitable forested habitat observed along the

Type	Species	Protection Status	Preferred Habitat	Preferred Habitat Observed in Project?	Likelihood for Occurrence in Project
			cavities or in crevices of both live trees and snags, or dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines.		Ohio River and northern boundary of the Project Area.
Birds	Whooping Crane (<i>Grus americana</i>)	EXPN	Nest in pothole wetlands dominated by emergent aquatic vegetation, winters primarily in Florida, during migration they utilize freshwater wetlands and agricultural fields.	No	Unlikely; suitable stopover habitat and food sources are not present within the Project.
	Black Billed Cuckoo (<i>Coccyzus erythrophthalmus</i>)	MBTA	Prefers dense deciduous woodlands and shrubby areas during summer and nesting, prefers to migrate through forest edges.	No	Unlikely; Suitable habitat in the form of shrubby areas were not observed within the Project.
	Bobolink (<i>Dolichonyx oryzivorus</i>)	MBTA	Prefers large fields with a mixture of grasses and broad-leaved plants like legumes	Yes	Moderate; the field within the Project if not disturbed could provide the preferred habitat.
	Lesser Yellowlegs (<i>Tringa flavipes</i>)	MBTA	Breeds in boreal wetlands and tundra, migrates through shallow wetlands and	Yes	Moderate; shallow emergent wetlands are located

Type	Species	Protection Status	Preferred Habitat	Preferred Habitat Observed in Project?	Likelihood for Occurrence in Project
			mudflats, and winters in coastal and inland wetlands of South America.		throughout the Project Area.
Birds	Prothonotary Warbler (<i>Protonotaria citrea</i>)	MBTA	Breeds in bottomland hardwood forests and nests in tree cavities near water, migrates through forested wetlands, and winters in mangroves and swamps of Central America.	Yes	High; the hardwoods along the Ohio River provide tree cavities near water. Plus, there is bottomland wetlands adjacent to the Project area.
	Red-Headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	MBTA	Found in oak savannas and open woodlands during summer and nesting, migrates through forest edges, and winters in open forests of the southeastern U.S.	No	Unlikely; No preferred habitat present in Project.
	Field Sparrow (<i>Spizella pusilla</i>)	MBTA	Found in open fields with tall grass and brush. They can also be found along forest edges and fencerows. Nesting may occur multiple times during breeding season, with early spring nests being made on the ground and start to be placed higher as the season progresses.	Yes	High; Suitable habitat and food sources are present within the Project.

Type	Species	Protection Status	Preferred Habitat	Preferred Habitat Observed in Project?	Likelihood for Occurrence in Project
Birds	Chimney Swift (<i>Chaetura pelagica</i>)	MBTA	The Project is within the breeding range for this species. Found in silos and barns, and other manmade structures such as bridges and old and abandoned dwellings.	No	Unlikely; No preferred habitat present in Project.
	Kentucky Warbler (<i>Geothlypis formosa</i>)	MBTA	The Project is within the breeding range for this species. Found in woodlands with lush understory. Nesting occurs near streams and canopy gaps on the ground.	Yes	Low; Suitable nesting, habitat, and food sources are present within the Project along the Ohio River but are limited and of poor quality.
	Prairie Warbler (<i>Setophaga discolor</i>)	MBTA	The Project is within the breeding range for this species. Found in overgrown pastures, growing woodlands, pine stands, and powerline cuts. Nesting occurs in shrubs.	Yes	Low; Suitable nesting, habitat, and food sources are present within the Project along the Ohio River but are limited and of poor quality.
	Wood Thrush (<i>Hylocichla mustelina</i>)	MBTA	The Project is within the breeding range for this species. Found in deciduous and mixed forests where large trees are present. Nesting occurs in trees.	Yes	Low; Suitable nesting, habitat, and food sources are present within the Project along the Ohio River but are limited and of poor quality.

Type	Species	Protection Status	Preferred Habitat	Preferred Habitat Observed in Project?	Likelihood for Occurrence in Project
Birds	Bald Eagle (<i>Haliaeetus leucocephalus</i>)	BGEPA	Found near rivers, lakes, and marshes large enough and suitable to provide feeding habitat. Species additionally nests on large trees or artificial structures	Yes	High; suitable habitat is present within Project along the Ohio River.
Bivalves	Pink Mucket (<i>Lampsilis abrupta</i>)	FE	Prefers large rivers with strong currents and rocky and boulder substrate.	No	Unlikely; suitable habitat is not present within the Project.
	Fanshell (<i>Cyprogenia stegaria</i>)	FE	Prefers large rivers with sand, gravel, and gravel substrate.	No	Unlikely; suitable habitat is not present within the Project.
	Longsolid (<i>Fusconaia subrotundra</i>)	FT	Found in small streams to medium rivers with a blend of cobble, gravel, and sand substrates.	No	Unlikely; suitable habitat is not present within the Project.
	Orangefoot pimpleback (<i>Plethobasus cooperianus</i>)	FE	Found in large rivers with gravel and sand substrate.	No	Unlikely; suitable habitat is not present within the Project.
	Rabbitsfoot (<i>Quadrula cylindrica cylindrica</i>)	FT	Occurs in small to medium streams and large rivers with swift currents and gravel and sand substrate.	No	Unlikely; suitable habitat is not present within the Project.
	Sheepnose mussel (<i>Plethobasus cyphus</i>)	FE	Prefers medium to large rivers with fast-flowing water and gravel, clay, and cobble substrates.	No	Unlikely; suitable habitat is not present within the Project.

Type	Species	Protection Status	Preferred Habitat	Preferred Habitat Observed in Project?	Likelihood for Occurrence in Project
Bivalves	Clubsell (<i>Pleurobema clava</i>)	FE	Found in small streams to medium rivers with a blend of cobble, gravel, and sand substrates.	No	Unlikely; suitable habitat is not present within the Project.
	Ring pink (<i>Obovaria retusa</i>)	FE	Found in small streams to medium rivers with a blend of cobble, gravel, and sand substrates.	No	Unlikely; suitable habitat is not present within the Project.
	Catspaw (<i>Epioblasma olivacea</i>)	FE	Found in small streams to medium rivers with a blend of cobble, gravel, and sand substrates.	No	Unlikely; suitable habitat is not present within the Project.
	Pocketbook (<i>Lampsilis ovata</i>)	SE	Prefers medium to large rivers with fast-flowing water and gravel, clay, and cobble substrates.	No	Unlikely; suitable habitat is not present within the Project.
Insects	Monarch Butterfly (<i>Danaus plexippus</i>)	FC	Breeding exclusively occurs on patches of milkweed; otherwise, it may occupy old fields and mixed woodland habitats.	Yes	Moderate; the field was bushhogged during the site visit but would have the potential to contain milkweeds.

Note: FE = Federally Endangered; FC = Federal Candidate; FT = Federally Threatened; PFE = Proposed Federally Endangered, SE = State Endangered, ST = State Threatened, SS = State Special Concern, EXPN = Experimental Population, Non-Essential, BGEPA = Bald and Golden Eagle Protection Act, MBTA = Migratory Bird Treaty Act.

- Source: USFWS 2025c, OKNP 2025, USFWS 2025e.

3.2.3.1 BATS

During the summer, northern long eared bats (NLEB) and Indiana bats roost underneath bark, in cavities, and in crevices of live and dead trees that provide suitable roosting habitat, with access to nearby open areas for foraging opportunities. The tricolored bat roosts in alive and/or dead leaf clusters in the foliage of live and dead trees and sometimes utilize bridges and culverts for roosting. The gray bat uses caves year-round and forages over open water and medium to large streams when it is not hibernating. No caves were identified within the Project. Potential summer roosting habitat for the NLEB, Indiana bat, and tricolored bat is minimal across the Project area but was observed in a small, forested section in the southern portion of the Project (Figure 3). It should also be noted that the Quonset hut located in the center of the Project Area could potentially offer roost habitat but is unlikely due to being constructed out of metal. If tree clearing is anticipated to occur for this Project, timing restrictions for tree clearing, a contribution into the Imperiled Bat Conservation Fund, and/or additional bat-specific surveys may be required. The inactive season for bats in Kentucky is from November 16 – March 31.

3.2.3.2 BIRDS

Migratory birds travel annually between breeding and wintering grounds, relying not only on those endpoints but also on stopover sites during migration to rest and forage. The Project site contains potential stopover habitat for various migratory bird species protected under the MBTA. Notably, chimney swift habitat was identified within the central portion of the site, associated with the existing Quonset hut. While habitat quality may vary, the site may be utilized by a many of the migratory birds included in Table 2 during seasonal movements. Further coordination with the KDFWR may help clarify species-specific considerations and inform any necessary conservation measures.

During the site visit a northern harrier (*Circus hudsonius*) was observed flying over the Project area potentially foraging. It was seen flying close to the ground in typical foraging fashion.

The field sparrow and bobolink typically occur in open fields with grass and herbaceous ground cover. Suitable open grassland areas predominately cover the land within the Project. Although the KYBAT report identifies that the loggerhead shrike has historically occurred within the Project, the USFWS IPaC does not list it as potentially occurring at the Project.

The bald eagle was previously delisted from protection under the ESA; however, bald and golden eagles are still provided federal protection under the BGEPA. Bald eagles prefer mature forest near large bodies of water that are minimally disturbed, this suitable habitat is present on the Project along the Ohio River.

The Kentucky warbler, prairie warbler, black-billed cuckoo, red-headed woodpecker, wood thrush, and prothonotary warbler typically require substantial woodland or forest cover for nesting. Such habitat is limited to a small band of trees along the Ohio River; however, more suitable nesting habitat for these species exists directly adjacent to the west of the Project where forested cover is more extensive. Although foraging habitat is present throughout the Project Area for all species, the quality is considered marginal due to the dominance of a dense monoculture of plant species, which limits structural diversity and resource availability.

The whooping crane, rusty blackbird, and lesser yellowlegs are species that typically migrate through or forage within wetland habitats. ERM identified potential habitat in four wetlands scattered throughout the Project area (Figure 4); however, it provides only marginal habitat value due to its limited size and disturbance from bushhogging.

3.2.3.3 BIVALVES

Six federally endangered mussels were identified in the IPaC Resource List and an additional five mussels, four federally listed and one state listed were identified in the KYBAT list due to the Projects proximity to the Ohio River. The project will not impact the Ohio River; therefore, no impacts to the listed mussel species are expected.

3.2.3.4 INSECTS

The monarch butterfly can be found in a variety of habitats, such as forests, agricultural fields, and meadows; however, wildflowers for feeding adults and native milkweeds (*Asclepias* spp.) as host plants must be available. During the field survey conducted from December 9, 2025, the field was in winter conditions and recently bushhogged; therefore, there is potential for the preferred habitat occurring within the Project area. Since the monarch butterfly is currently a proposed threatened species, no additional coordination with USFWS is required regarding this species at this time. If the species is listed prior to project completion, additional coordination may be necessary.

4. CONCLUSIONS AND RECOMMENDATIONS

The Project is predominately open fields with herbaceous vegetation. At the time of the site visit the Project is heavily disturbed, though potential habitat exists for multiple federally and state protected species, the current level of disturbance would indicate that the habitat is of low quality for these species. No designated critical habitat is present in the Project. Based on the habitat assessment, considerations of the above-mentioned species, and current design plans, ERM concludes that there is some potential for federally or state listed threatened and endangered species to occur at the Project. Development of the proposed Project has the potential to affect species under the jurisdiction of the USFWS and KDFWR.

Consultation with USFWS is advised under Section 7 of the ESA if the Project has a federal nexus, such as Clean Water Act (CWA) Section 404 permitting, to determine potential Project impacts to federally listed species and recommended mitigation measures to ensure compliance. If the Project has no federal nexus, informal consultation with USFWS is recommended as a best management practice to ensure general compliance with MBTA, BEGPA, and Section 10 of the ESA. The MBTA and BGEPA prohibit individuals from intentionally taking, possessing, transporting, selling and/or purchasing migratory birds and eagles along with their parts, nests, or eggs without a valid permit. Any person or organization who plans activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures.

The Project should incorporate avoidance and minimizations measures for Project activities that may affect wetlands and forested areas to reduce impacts to listed species. If avoidance of habitat impacts cannot be incorporated into the Project design, species specific presence/probable absence surveys may be necessary.

The following summarizes recommendations of next steps:

- Correspond with USFWS and KDFWR for further recommendations regarding protected species impact avoidance and minimization.
- Avoid and/or minimize impacts to suitable stream, wetland, and forested areas to the greatest extent practicable.
- Use Best Management Practices to avoid silt and other potential pollutants from entering the Ohio River.
- If the Project cannot avoid cutting trees, adhere to tree cutting time of year restrictions minimize impacts to suitable forested wetlands, perform a bat presence/probable absence survey, and coordinate with USFWS and KDFWR.
- Perform migratory bird nest sweep if clearing, grubbing, or mowing vegetation during bird nesting season (March 1 to August 15).

5. REFERENCES

- Kentucky Office of Nature Preserves (OKNP). 2025. Kentucky Biological Assessment Tool (KYBAT) Data Request 240910M01. Accessed August 2025.
- Multi-Resolution Land Characteristics (MRLC) Consortium. 2024. National Land Cover Database. United States Geological Survey (USGS). <https://www.mrlc.gov/>. Accessed August 2025.
- United States Fish and Wildlife Service Information for Planning and Consultation (USFWS). 2025a. Bald and Golden Eagle Protection Act. [https://www.fws.gov/law/bald-and-golden-eagle-protection-act#:~:text=The%20Bald%20and%20Golden%20Eagle,\)%2C%20nests%2C%20or%20eggs](https://www.fws.gov/law/bald-and-golden-eagle-protection-act#:~:text=The%20Bald%20and%20Golden%20Eagle,)%2C%20nests%2C%20or%20eggs). Accessed August 2025.
- USFWS. 2025b. Migratory Bird Treaty Act. <https://www.fws.gov/law/migratory-bird-treaty-act-1918>. Accessed August 2025.
- USFWS. 2025c. Information for Planning and Consultation (IPaC) Tool. <https://ecos.fws.gov/ipac/>. Accessed August and November 2025.
- United States Geological Survey (USGS). 2025. The National Map. <https://apps.nationalmap.gov/viewer/>. Accessed August 2025
- University of Kentucky. 2025. Survey, Kentucky Geological. www.uky.edu/KGS/karst/karst_resources.php. Accessed August 2025.
- Woods, A.J., Omernik, J.M., Martin, W.H., Pond, G.J., Andrews, W.M., Call, S.M., Comstock, J.A., and Taylor, D.D. 2006. Ecoregions of Kentucky. https://gaftp.epa.gov/EPADDataCommons/ORD/Ecoregions/ky/ky_front.pdf. Accessed August 2025

ATTACHMENT A – FIGURES

Figure 1 – Site Location Map

Figure 2 – Topographic Map

Figure 3 – Land Classification Map

Figure 4 – Wetland Delineation Map

Figure 5 – Protected Species Potential Habitat Map

DRAWN BY: GIS

FILE: M:\US\Projects\US-UTeraWulf Inc\Hawesville_KY\ArcGIS\Hawesville.aprx, REVISED: 12/12/2025, SCALE: 1:100,000 when printed at 11x17



Legend
 Project Boundary

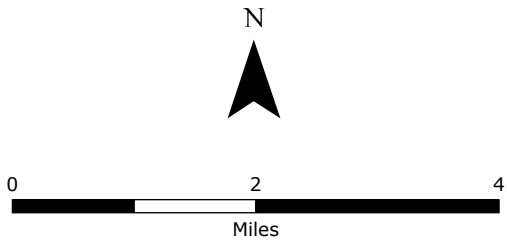
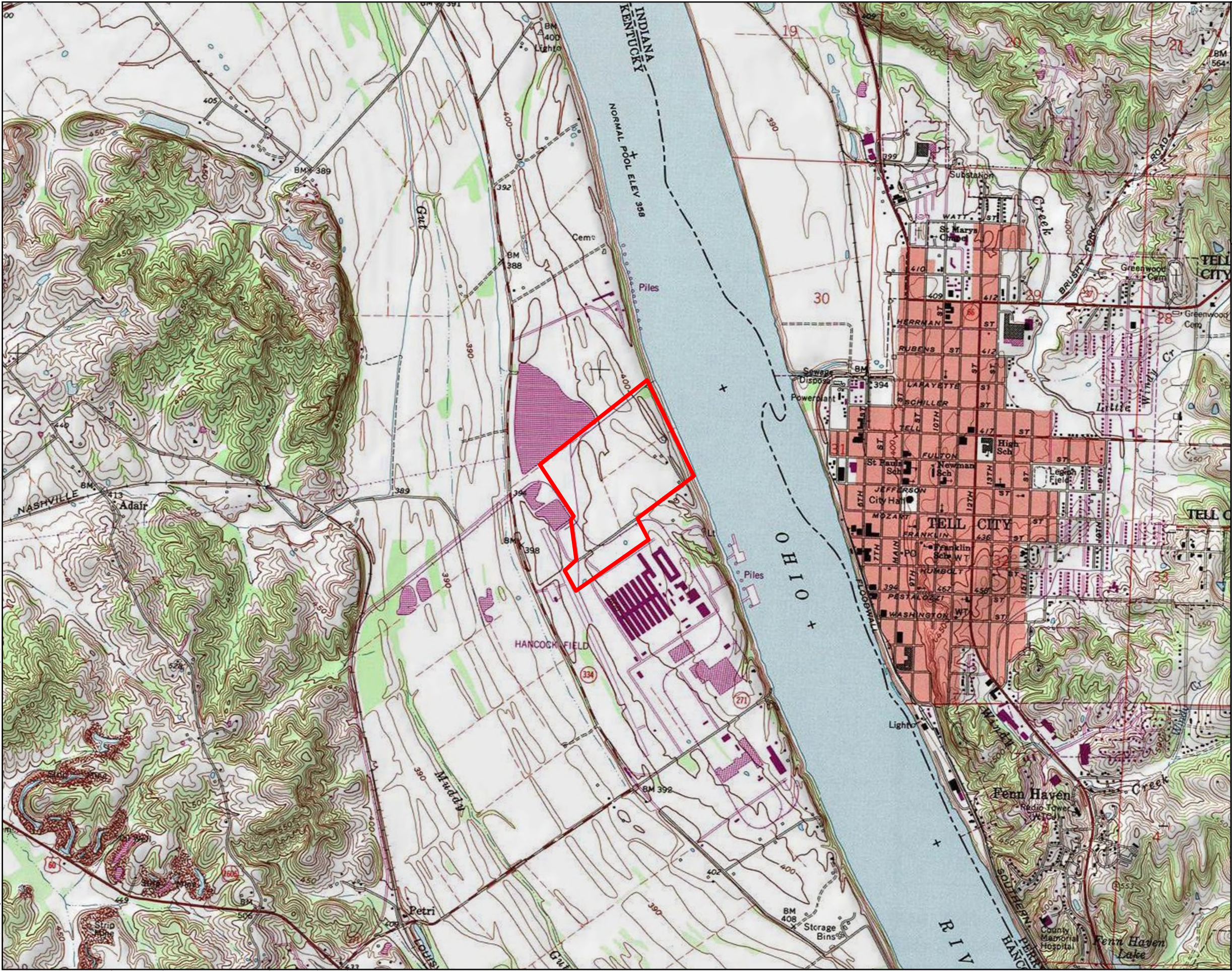


Figure 1
Site Location Map
Hawesville
Justified DataPower LLC
Hancock County, Kentucky





Legend
Project Boundary



0 0.5 1
Miles

Figure 2
USGS Topographic Map
Hawesville
Justified DataPower LLC
Hancock County, Kentucky





Legend

- Project Boundary
- Hydric Soils
- AIF
- EkA
- EkB
- EkC
- OtA
- W
- Wh
- WnA
- uGnA
- uGnoA
- uMeIA

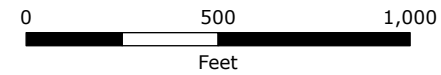
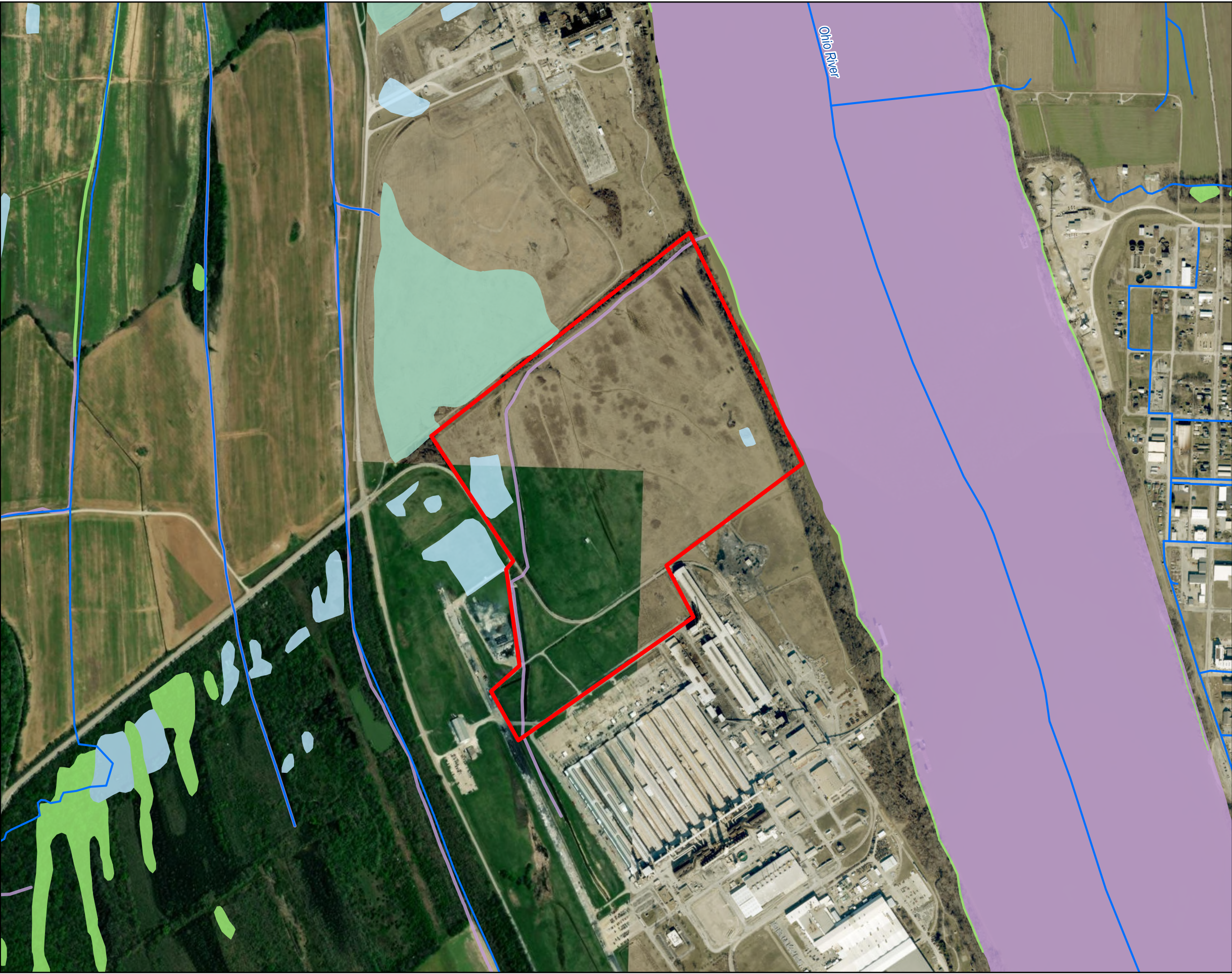


Figure 3
Soils Map
Hawesville
Justified DataPower LLC
Hancock County, Kentucky





- Legend**
- Project Boundary
 - National Hydrography Dataset
 - National Wetland Inventory**
 - Freshwater Emergent Wetland
 - Freshwater Forested/Shrub Wetland
 - Freshwater Pond
 - Lake
 - Other
 - Riverine

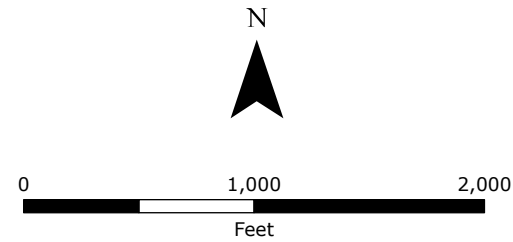
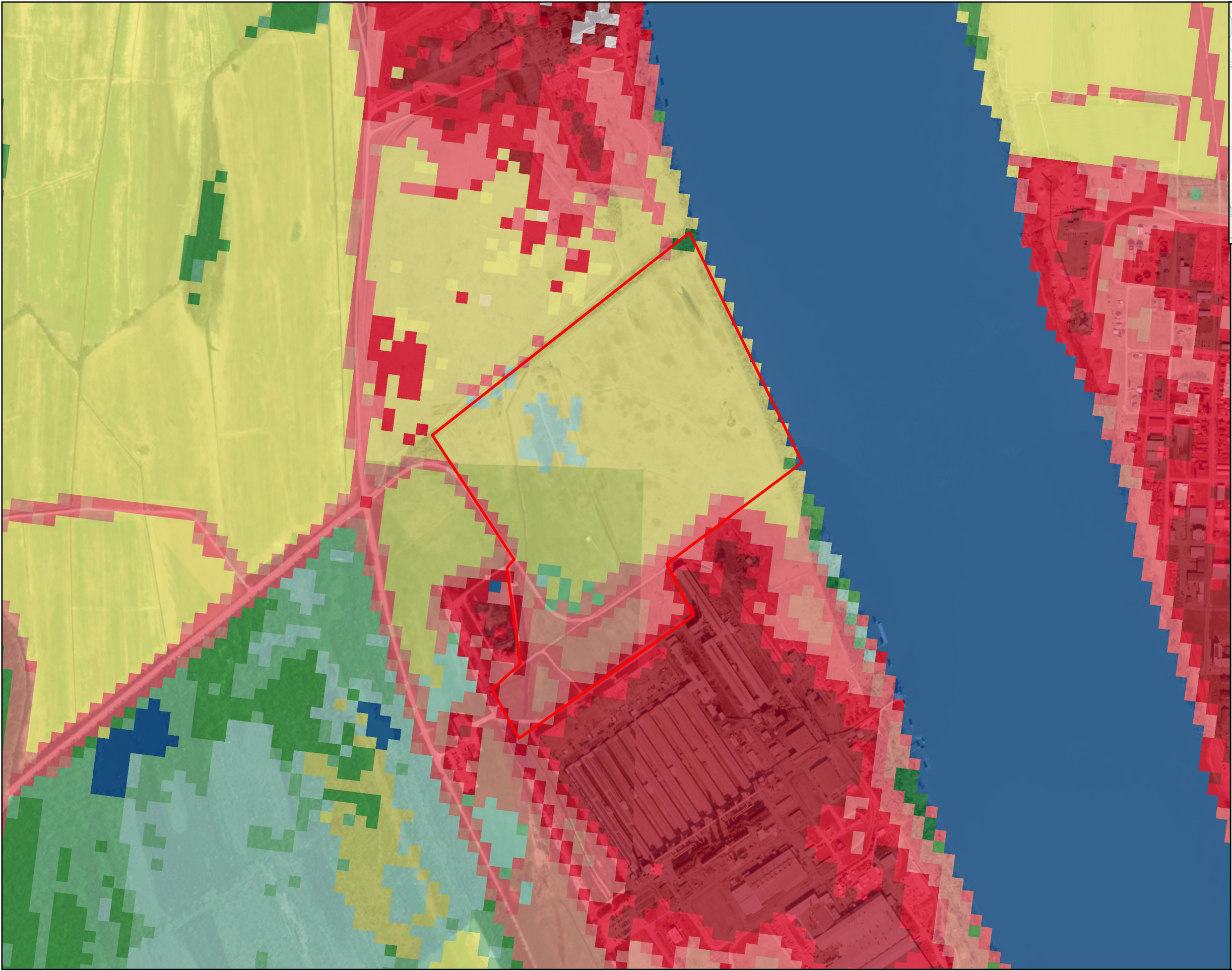


Figure 4
NWI and NDH Map
Hawesville
Justified DataPower LLC
Hancock County, Kentucky





Legend

- Project Boundary
- Open Water
- Developed Open Space
- Developed Low Intensity
- Developed Medium Intensity
- Developed High Intensity
- Barren Land
- Deciduous Forest
- Mixed Forest
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

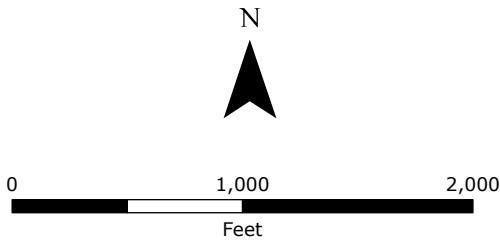


Figure 5
NLCD Map
Hawesville
Justified DataPower LLC
Hancock County, Kentucky



ATTACHMENT B - PHOTOGRAPH LOG

CLIENT: Justified DataPower LLC

SITE LOCATION: Hawesville Site
Project

PROJECT NO.: 0809776

PHOTO NO.

1.

DATE

12/09/2025

DIRECTION PHOTO TAKEN

Looking north

DESCRIPTION

Pasture / hay field, the dominate land form on the Project



PHOTO NO.

2.

DATE

12/09/2025

DIRECTION PHOTO TAKEN

Looking southeast

DESCRIPTION

Potential bat habitat in southeastern portion of the Project



CLIENT: Justified DataPower LLC

SITE LOCATION: Hawesville Site
Project

PROJECT NO.: 0809776

PHOTO NO.

3.

DATE

12/09/2025

DIRECTION PHOTO TAKEN

Looking south

DESCRIPTION

Potential bat habitat in
southeastern portion of the
Project



PHOTO NO.

4.

DATE

12/09/2025

DIRECTION PHOTO TAKEN

Looking east

DESCRIPTION

Looking over a typical PEM
in the Project with the Ohio
River in the background.



CLIENT: Justified DataPower LLC

SITE LOCATION: Hawesville Site
Project

PROJECT NO.: 0809776

PHOTO NO.

5.

DATE

12/09/2025

DIRECTION PHOTO TAKEN

Looking southwest

DESCRIPTION

The ditch transversing the
Project area.



PHOTO NO.

6.

DATE

12/09/2025

DIRECTION PHOTO TAKEN

Looking east

DESCRIPTION

A line of silver maples
along the northern
boundary of the Project
area.



ATTACHMENT C – KARST OCCURRENCE IN KENTUCKY MAP

This map was compiled from a digital version of the 1:500,000-scale geologic map of Kentucky (Noger, M.C., comp., 1988, Geologic map of Kentucky: U.S. Geological Survey). The areas of potential karst development were delineated using stratigraphic units mapped on the geologic map. The classification of the potential for karst development was based on the field experience of the authors and other data. A number of isolated carbonate units that would not have otherwise been differentiated on the geologic map were newly digitized for this map.

This karst map should not be used for evaluating karst geologic hazards or hydrogeology at scales larger than 1:500,000. The base geologic map was digitized at 1:500,000 scale and is limited in precision to that scale. Because of the small scale of the original geologic map, lithostratigraphic units were consolidated into thicker chronostratigraphic units to create an area large enough to delineate on the geologic map. In some cases, the consolidation resulted in carbonates (limestone or dolomite) and noncarbonates (sandstone or shale, for example) being grouped; these rocks are not redivided on this map. Although the potential for karst development can be predicted from lithology, other factors such as relief and length of time the rock is exposed are also important and were not considered in the making of this map. Finally, areas where the near-surface bedrock is insoluble and closely underlain by soluble rock are common, particularly in the Eastern Pennyroyal. Conduits that pirate drainage commonly extend through ridges capped with insoluble rocks. Therefore, some areas mapped as having limited potential that are adjacent to areas of higher potential are actually karst, but cannot be differentiated on this map.

Karst is a terrane that is generally underlain by limestone or dolomite, where the topography is formed chiefly by the dissolving of rock. Karst landscapes are commonly characterized by sinkholes, sinking streams, closed depressions, subterranean drainage, large springs, and caves.

Karst regions are susceptible to unique problems such as sinkhole collapse, sinkhole flooding, and rapid groundwater pollution. Springs in karst areas are an important, productive source of groundwater. Rare biologic communities and endangered species can be found in the fragile underground environments developed in karst landscapes.

For information on obtaining copies of this map and other Kentucky Geological Survey maps and publications call:

Publication Sales
859.257.3896

View the KGS World Wide Web site at
www.uky.edu/kgs

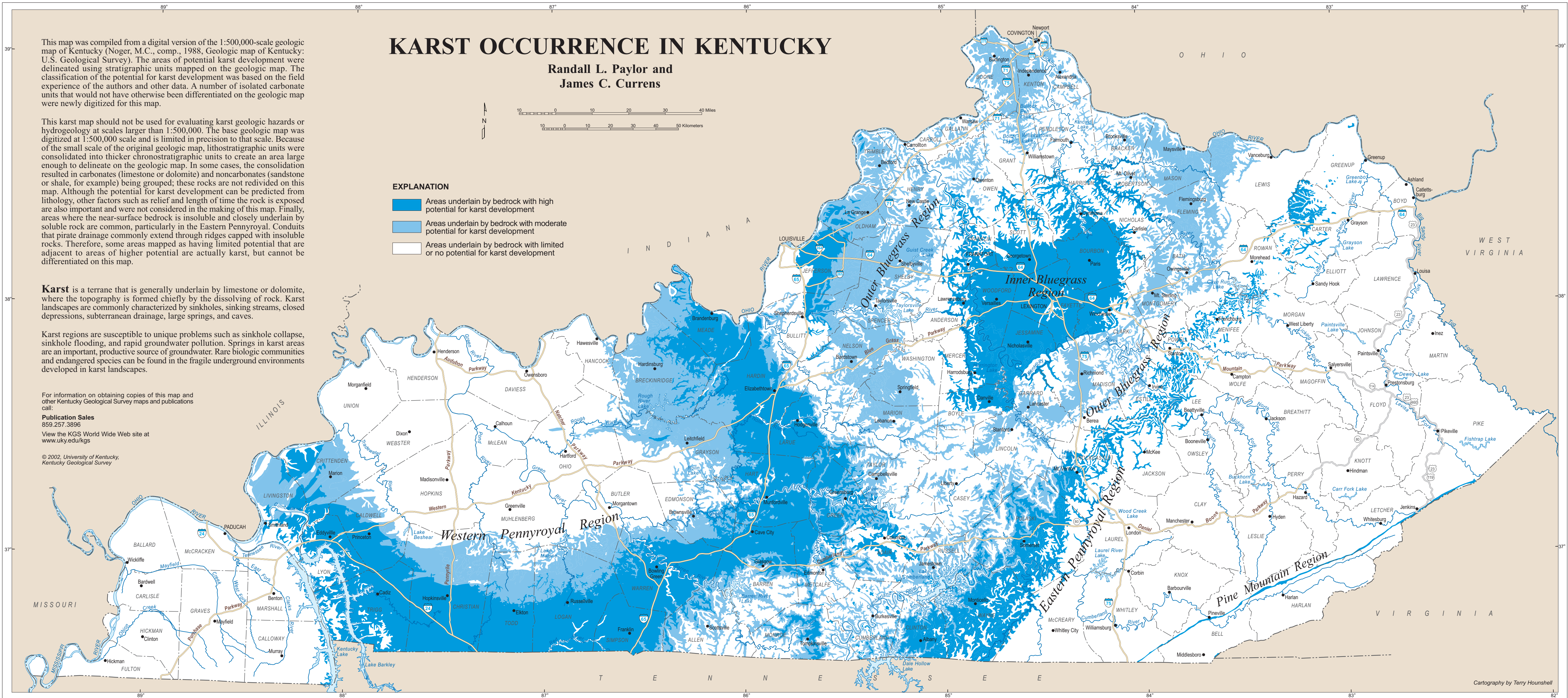
© 2002, University of Kentucky,
Kentucky Geological Survey

KARST OCCURRENCE IN KENTUCKY

Randall L. Paylor and
James C. Currens

EXPLANATION

- Areas underlain by bedrock with high potential for karst development
- Areas underlain by bedrock with moderate potential for karst development
- Areas underlain by bedrock with limited or no potential for karst development



ATTACHMENT D - USFWS INFORMATION PLANNING AND CONSULTATION (IPAC)

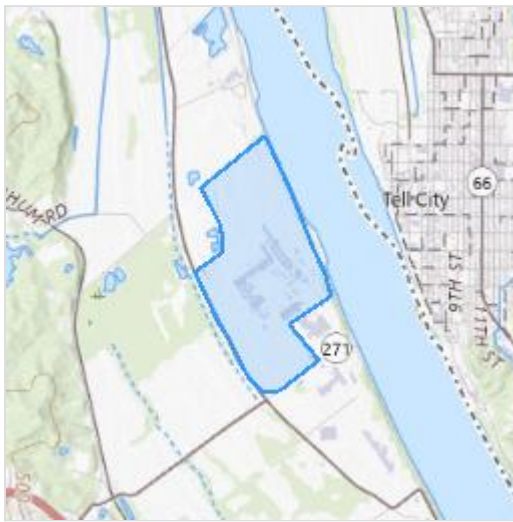
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Hancock County, Kentucky



Local office

Kentucky Ecological Services Field Office

☎ (502) 695-0467

📠 (502) 695-1024

✉ kentuckyes@fws.gov

J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Gray Bat <i>Myotis grisescens</i> Wherever found This species only needs to be considered if the following condition applies: • The project area includes potential gray bat habitat. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat <i>Myotis sodalis</i> Wherever found This species only needs to be considered if the following condition applies: • The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species. There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered

Tricolored Bat *Perimyotis subflavus*

Proposed Endangered

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/10515>

Birds

NAME	STATUS
Whooping Crane <i>Grus americana</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/758	EXPN

Clams

NAME	STATUS
Fanshell <i>Cyprogenia stegaria</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4822	Endangered
Longsolid <i>Fusconaia subrotunda</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9880	Threatened
Orangefoot Pimpleback (pearlymussel) <i>Plethobasus cooperianus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1132	Endangered
Pink Mucket (pearlymussel) <i>Lampsilis abrupta</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7829	Endangered
Rabbitsfoot <i>Quadrula cylindrica cylindrica</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5165	Threatened
Sheepnose Mussel <i>Plethobasus cyphus</i> Wherever found There is proposed critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6903	Endangered

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> Wherever found There is proposed critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The [data](#) in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the [Supplemental Information on Migratory Birds and Eagles document](#) to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

- 1. The [Migratory Birds Treaty Act](#) of 1918.
- 2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases [birds of concern](#), including [Birds of Conservation Concern \(BCC\)](#), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the [Nationwide avoidance and minimization measures for birds](#) document, and any other project-specific avoidance and minimization measures suggested at the link [Measures for avoiding and minimizing impacts to birds](#) for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles document](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Field Sparrow <i>Spizella pusilla</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Aug 15
Kentucky Warbler <i>Geothlypis formosa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20

Breeds elsewhere

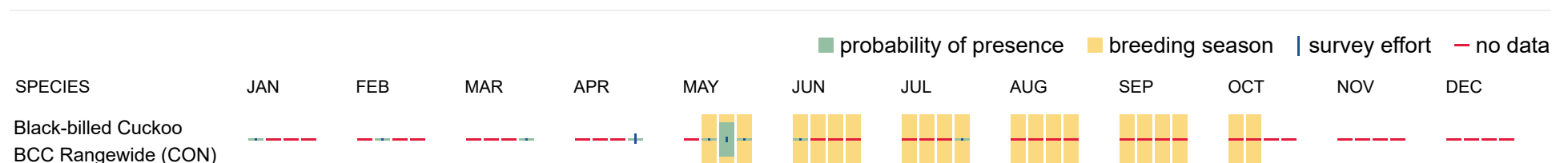
<https://ecos.fws.gov/ecp/species/9679>

Breeds May 1 to Jul 31

Breeds Apr 1 to Jul 31

Breeds May 10 to Sep 10

Breeds May 10 to Aug 31





Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Avoidance & Minimization Measures for Birds](#) describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the [Bald and Golden Eagle Protection Act](#) and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Bald and Golden Eagle Protection Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

ATTACHMENT E - OFFICE OF KENTUCKY NATURE PRESERVES BIOLOGICAL ASSESSMENT TOOL



Andy Beshear
Governor

Energy and Environment Cabinet

Office of Kentucky Nature Preserves

300 Sower Boulevard
Frankfort, Kentucky 40601
Telephone: 502-782-7828
EEC.KYBAT@ky.gov

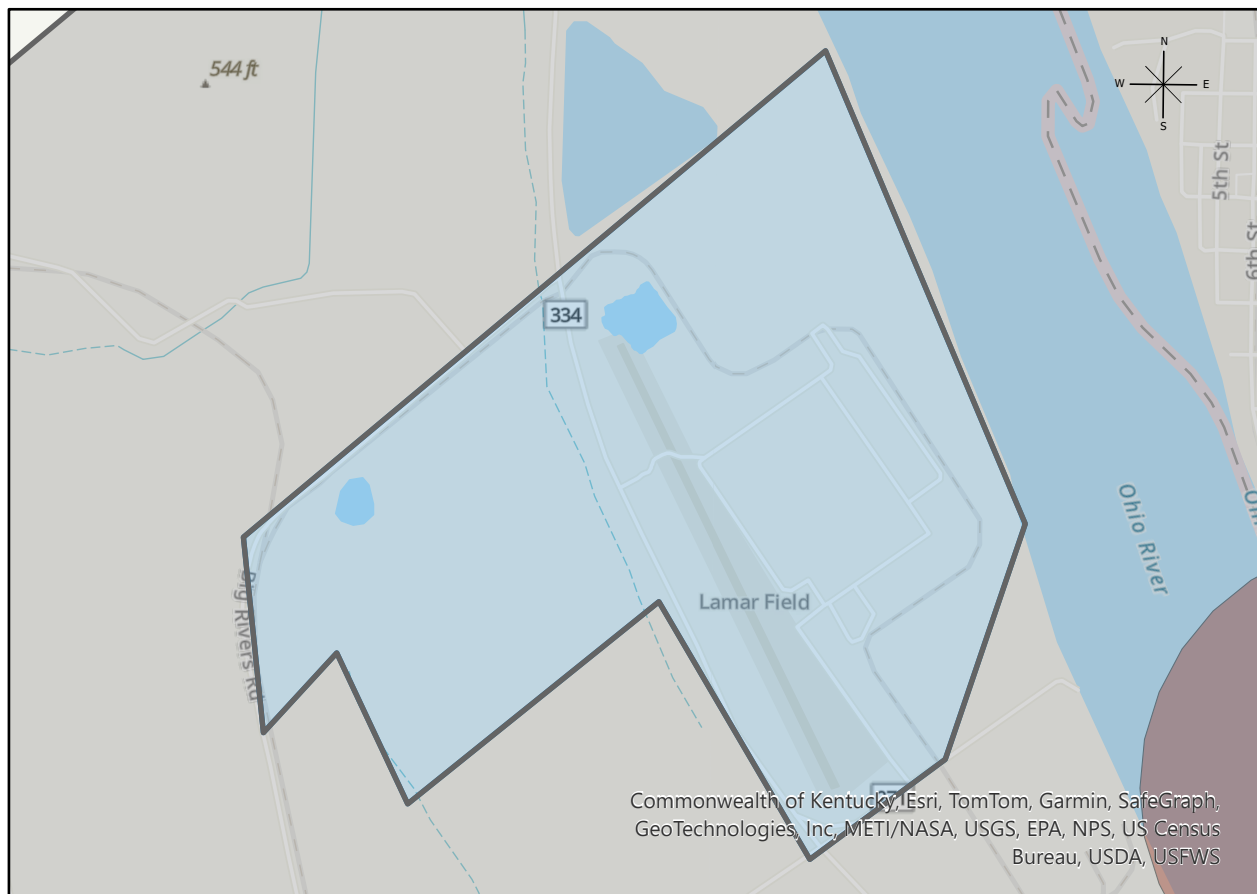
Rebecca W. Goodman
Secretary

Zack Couch
Executive Director

Requested on Monday, December 15, 2025 by Ralph Schluler, ERM

Re: Kentucky Biological Assessment Data Request 251215R11
ERM - Hawesville
Development (Outside Municipalities), 1 mile buffer.
HANCOCK County, Kentucky

This letter is in response to your data request for the project referenced above. We have reviewed our Natural Heritage Program Database to determine if any of the endangered, threatened, or special concern plants, animals, features, or exemplary natural communities monitored by the Office of Kentucky Nature Preserves are noted within your submitted project area.



Commonwealth of Kentucky, Esri, TomTom, Garmin, SafeGraph,
GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census
Bureau, USDA, USFWS

0 0.13 0.25 0.5 Miles



Andy Beshear
Governor

Energy and Environment Cabinet Office of Kentucky Nature Preserves

300 Sower Boulevard
Frankfort, Kentucky 40601
Telephone: 502-782-7828
EEC.KYBAT@ky.gov

Rebecca W. Goodman
Secretary

Zack Couch
Executive Director

Thank you for using the Office of Kentucky Nature Preserves' Biological Assessment Tool.

This report provides site-specific biological data for the proposed project area, offering documented occurrences of rare, threatened, and endangered species. Unlike other tools which may model potential species presence, this tool delivers verified field data collected by biologists, ensuring an accurate understanding of site conditions. Some regulatory processes request this information for project siting, permitting, and conservation planning. Understanding the presence of endangered, threatened, or special concern plants, animals or exemplary natural communities may help avoid delays, mitigate risks, and support compliance with environmental guidelines.

Key Findings included in the report:

- A - Occurrences which intersect the project area
- B - Occurrences which intersect the buffer around the project area
- C - References and Recommendations relevant to occurrences near to or within the project area

We would like to take this opportunity to remind you of the terms of the data request license, which you agreed upon in order to submit your request. Data and data products received from the Office of Kentucky Nature Preserves, including any portion thereof, may not be reproduced in any form or by any means without the express written authorization of the Office of Kentucky Nature Preserves. These products are provided on a temporary basis for the express project (described above) of the requester, and may not be redistributed, resold or copied without the written permission of the Office of Kentucky Nature Preserves.

Please note that the quantity and quality of data are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed and new plants and animals are still being discovered. For these reasons, we cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. These reports summarize the existing information known to the Kentucky Natural Heritage Database at the time of the request. They should never be regarded as final statements on the occurrences being considered, nor should they be substituted for on-site surveys required for environmental assessments. Please note that certain sensitive occurrences may be listed in this table but are not represented in the accompanying map.

If you have any questions, or if we can be of further assistance, please do not hesitate to contact our office by email at EEC.KYBAT@ky.gov.

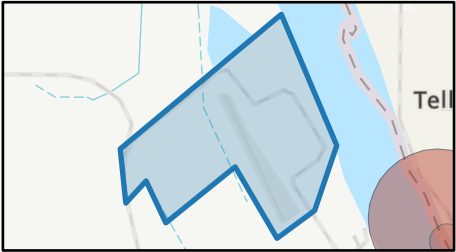
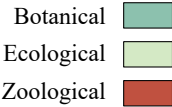
Sincerely,

Alexis R. Sheehan
Database Administrator
Office of Kentucky Nature Preserves

Sydnée Hansen
GIS Analyst
Office of Kentucky Nature Preserves

A. Project Area - Occurrence Report

This section details occurrences that have been documented within the project footprint through direct field surveys. Presence is based on confirmed biological observations. The table below includes the species' status at state and federal levels, as well as the dates each occurrence was last observed. Please review Precision, as it is indicative of the location uncertainty of the individual records.

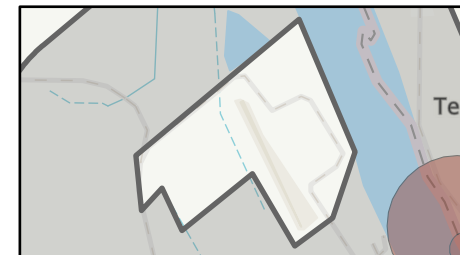


ID	Classification	Scientific Name	Common Name	Precisio	Fed. Status	State Status	G Rank	S Rank	SWAP	Last Obs. Date	Habitat	Location
15873	Breeding Birds	Lanius ludovicianus	Loggerhead Shrike	Quad.		Special Concern	G4	S3S4B,S	Yes	1990-07-19		CW block of quadrangle
862	Freshwater Mussels	Pleurobema clava	Clubshell	Cnty.	Endangered	Endangered	G1G2	S1	Yes	No Date		OHIO RIVER, ALONG INDIANA BORDER.
3642	Freshwater Mussels	Obovaria retusa	Ring Pink	Cnty.	Endangered	Endangered	G1	S1	Yes	No Date		OHIO RIVER, ALONG INDIANA BORDER.
6490	Freshwater Mussels	Epioblasma obliquata	Catspaw	Cnty.	Endangered	Endangered	G1	S1	Yes	No Date		Ohio River, along Indiana border (016A).
10580	Freshwater Mussels	Cyprogenia stegaria	Fanshell	Cnty.	Endangered	Endangered	G1	S1	Yes	No Date		OHIO RIVER, ALONG INDIANA BORDER.

B. Buffer Area - Occurrence Report

This section details occurrences recorded within the project footprint, as well as the designated buffer area surrounding the project site. While these species are not directly within the project footprint, their proximity may influence project planning due to habitat connectivity or regulatory considerations.

Botanical ■
Ecological ■
Zoological ■

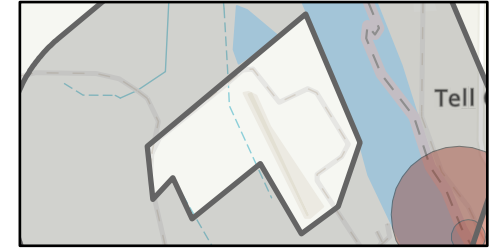


ID	Classification	Scientific Name	Common Name	Precisio	Fed. Status	State Status	G Rank	S Rank	SWAP	Last Obs. Date	Habitat	Location
1743	Breeding Birds	<i>Accipiter striatus</i>	Sharp-shinned Hawk	Gen.		Special Concern	G5	S3B,S4N	Yes	1990-07-19		CW Block of quadrangle.
14615	Freshwater Mussels	<i>Lampsilis ovata</i>	Pocketbook	Sec.		Endangered	G5	S1	Yes	2015-05-19		Ohio River along Kentucky/Indiana border
14616	Freshwater Mussels	<i>Lampsilis ovata</i>	Pocketbook	Min.		Endangered	G5	S1	Yes	2015-05-19		Ohio River, along Kentucky/Indiana border
14617	Freshwater Mussels	<i>Lampsilis ovata</i>	Pocketbook	Min.		Endangered	G5	S1	Yes	2015-05-19		Ohio River along Kentucky/Indiana border
15873	Breeding Birds	<i>Lanius ludovicianus</i>	Loggerhead Shrike	Quad.		Special Concern	G4	S3S4B,S	Yes	1990-07-19		CW block of quadrangle
862	Freshwater Mussels	<i>Pleurobema clava</i>	Clubshell	Cnty.	Endangered	Endangered	G1G2	S1	Yes	No Date		OHIO RIVER, ALONG INDIANA BORDER.
3642	Freshwater Mussels	<i>Obovaria retusa</i>	Ring Pink	Cnty.	Endangered	Endangered	G1	S1	Yes	No Date		OHIO RIVER, ALONG INDIANA BORDER.
6490	Freshwater Mussels	<i>Epioblasma obliquata</i>	Catspaw	Cnty.	Endangered	Endangered	G1	S1	Yes	No Date		Ohio River, along Indiana border (016A).
10580	Freshwater Mussels	<i>Cyprogenia stegaria</i>	Fanshell	Cnty.	Endangered	Endangered	G1	S1	Yes	No Date		OHIO RIVER, ALONG INDIANA BORDER.

C. References and Recommendations (1 of 9)

OKNP references the following references and recommendations regarding this project's potential impacts to natural resources within or surrounding the project area. These recommendations are based on state and federal conservation guidelines and may help proactively address potential constraints. Please contact the applicable office should you have further questions with regard to these references and recommendations related to the project area.

Botanical 
Ecological 
Zoological 



Per U.S. Fish and Wildlife Service, in-channel activities near this project may directly or indirectly impact mussel species that may be present in the nearby river system. Even upland disturbances can degrade habitats by increasing sedimentation or introducing pollutants. To minimize these impacts, projects should utilize Best Management Practices to minimize erosion, limit vegetation removal, revegetate disturbed areas with native vegetation, use bioengineering techniques to restore disturbance to stream banks, install upland sediment basins to minimize sediment input, install detention structures to manage stormwater runoff, and minimize the addition of impervious surfaces in the watershed.

This project area overlaps with one or more wetlands recorded in the NWI. Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes. Visit <https://www.fws.gov/program/national-wetlands-inventory>

The proposed project area overlaps with the species range for *Aneides aeneus*, Green Salamander. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Podilymbus podiceps*, Pied-billed Grebe. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Podiceps auritus*, Horned Grebe. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Botaurus lentiginosus*, American Bittern. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Ixobrychus exilis*, Least Bittern. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Ardea alba*, Great Egret. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Butorides virescens*, Green Heron. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Nycticorax nycticorax*, Black-crowned Night-heron. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

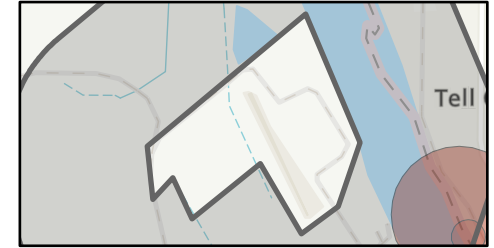
The proposed project area overlaps with the species range for *Nyctanassa violacea*, Yellow-crowned Night-heron. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Cygnus buccinator*, Trumpeter Swan. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

C. References and Recommendations (2 of 9)

OKNP references the following references and recommendations regarding this project's potential impacts to natural resources within or surrounding the project area. These recommendations are based on state and federal conservation guidelines and may help proactively address potential constraints. Please contact the applicable office should you have further questions with regard to these references and recommendations related to the project area.

Botanical 
Ecological 
Zoological 

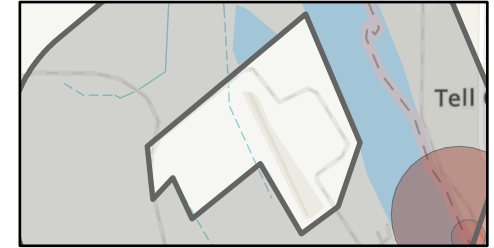


The proposed project area overlaps with the species range for <i>Anas rubripes</i> , American Black Duck. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Aythya marila</i> , Greater Scaup. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Aythya affinis</i> , Lesser Scaup. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Lophodytes cucullatus</i> , Hooded Merganser. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Pandion haliaetus</i> , Osprey. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Haliaeetus leucocephalus</i> , Bald Eagle. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Circus hudsonius</i> , Northern Harrier. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Accipiter striatus</i> , Sharp-shinned Hawk. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Falco sparverius</i> , American Kestrel. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Falco peregrinus</i> , Peregrine Falcon. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Colinus virginianus</i> , Northern Bobwhite. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Rallus limicola</i> , Virginia Rail. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Rallus elegans</i> , King Rail. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Porzana carolina</i> , Sora. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Grus americana</i> , Whooping Crane. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.

C. References and Recommendations (3 of 9)

OKNP references the following references and recommendations regarding this project's potential impacts to natural resources within or surrounding the project area. These recommendations are based on state and federal conservation guidelines and may help proactively address potential constraints. Please contact the applicable office should you have further questions with regard to these references and recommendations related to the project area.

Botanical 
Ecological 
Zoological 



The proposed project area overlaps with the species range for *Pluvialis squatarola*, Black-bellied Plover. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Pluvialis dominica*, American Golden-plover. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Charadrius melodus*, Piping Plover. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Tringa flavipes*, Lesser Yellowlegs. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Tringa solitaria*, Solitary Sandpiper. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Actitis macularius*, Spotted Sandpiper. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Bartramia longicauda*, Upland Sandpiper. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Calidris alba*, Sanderling. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Calidris pusilla*, Semipalmated Sandpiper. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Calidris alpina*, Dunlin. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Calidris himantopus*, Stilt Sandpiper. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

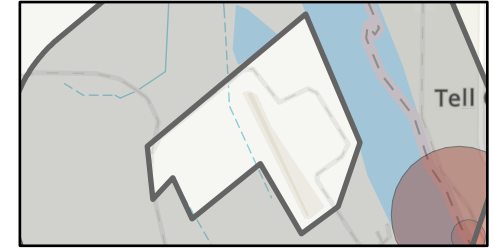
The proposed project area overlaps with the species range for *Calidris subruficollis*, Buff-breasted Sandpiper. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

The proposed project area overlaps with the species range for *Limnodromus griseus*, Short-billed Dowitcher. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

C. References and Recommendations (4 of 9)

OKNP references the following references and recommendations regarding this project's potential impacts to natural resources within or surrounding the project area. These recommendations are based on state and federal conservation guidelines and may help proactively address potential constraints. Please contact the applicable office should you have further questions with regard to these references and recommendations related to the project area.

Botanical 
Ecological 
Zoological 

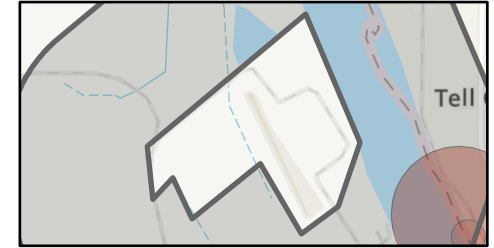


The proposed project area overlaps with the species range for <i>Gallinago delicata</i> , Wilson's Snipe. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Scolopax minor</i> , American Woodcock. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Phalaropus tricolor</i> , Wilson's Phalarope. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Sternula antillarum athalassos</i> , Interior Least Tern. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Chlidonias niger</i> , Black Tern. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Coccyzus americanus</i> , Yellow-billed Cuckoo. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Tyto alba</i> , Barn Owl. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Asio otus</i> , Long-eared Owl. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Asio flammeus</i> , Short-eared Owl. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Anthus carolinensis</i> , Chuck-will's-widow. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Anthus vociferus</i> , Whip-poor-will. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Melanerpes erythrocephalus</i> , Red-headed Woodpecker. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Empidonax traillii</i> , Willow Flycatcher. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Empidonax minimus</i> , Least Flycatcher. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.

C. References and Recommendations (5 of 9)

OKNP references the following references and recommendations regarding this project's potential impacts to natural resources within or surrounding the project area. These recommendations are based on state and federal conservation guidelines and may help proactively address potential constraints. Please contact the applicable office should you have further questions with regard to these references and recommendations related to the project area.

Botanical 
Ecological 
Zoological 

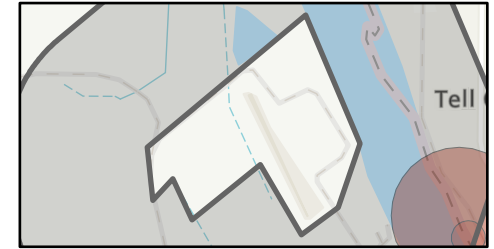


The proposed project area overlaps with the species range for <i>Riparia riparia</i> , Bank Swallow. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Thryomanes bewickii</i> , Bewick's Wren. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Cistothorus stellaris</i> , Sedge Wren. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Hylocichla mustelina</i> , Wood Thrush. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Lanius ludovicianus</i> , Loggerhead Shrike. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Vireo bellii</i> , Bell's Vireo. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Vermivora cyanoptera</i> , Blue-winged Warbler. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Vermivora chrysoptera</i> , Golden-winged Warbler. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Setophaga tigrina</i> , Cape May Warbler. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Setophaga virens</i> , Black-throated Green Warbler. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Setophaga discolor</i> , Prairie Warbler. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Setophaga striata</i> , Blackpoll Warbler. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Setophaga cerulea</i> , Cerulean Warbler. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.

C. References and Recommendations (6 of 9)

OKNP references the following references and recommendations regarding this project's potential impacts to natural resources within or surrounding the project area. These recommendations are based on state and federal conservation guidelines and may help proactively address potential constraints. Please contact the applicable office should you have further questions with regard to these references and recommendations related to the project area.

Botanical 
Ecological 
Zoological 

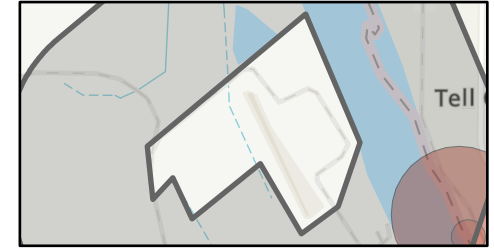


The proposed project area overlaps with the species range for <i>Protonotaria citrea</i> , Prothonotary Warbler. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Parkesia motacilla</i> , Louisiana Waterthrush. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Geothlypis formosa</i> , Kentucky Warbler. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Cardellina canadensis</i> , Canada Warbler. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Spiza americana</i> , Dickcissel. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Spizella pusilla</i> , Field Sparrow. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Passerculus sandwichensis</i> , Savannah Sparrow. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Ammodramus savannarum</i> , Grasshopper Sparrow. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Centronyx henslowii</i> , Henslow's Sparrow. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Dolichonyx oryzivorus</i> , Bobolink. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Sturnella magna</i> , Eastern Meadowlark. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Euphagus carolinus</i> , Rusty Blackbird. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Myotis lucifugus</i> , Little Brown Bat. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.

C. References and Recommendations (7 of 9)

OKNP references the following references and recommendations regarding this project's potential impacts to natural resources within or surrounding the project area. These recommendations are based on state and federal conservation guidelines and may help proactively address potential constraints. Please contact the applicable office should you have further questions with regard to these references and recommendations related to the project area.

Botanical 
Ecological 
Zoological 

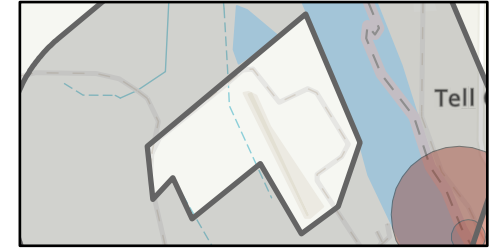


The proposed project area overlaps with the species range for <i>Myotis grisescens</i> , Gray Myotis. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Myotis sodalis</i> , Indiana Bat. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Myotis septentrionalis</i> , Northern Long-Eared Bat. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Perimyotis subflavus</i> , Tricolored Bat. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Neotoma magister</i> , Allegheny Woodrat. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Nerodia erythrogaster neglecta</i> , Copperbelly Watersnake. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Agkistrodon piscivorus</i> , Northern Cottonmouth. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Crotalus horridus</i> , Timber Rattlesnake. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Danaus plexippus plexippus</i> , Monarch. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Anodontoides ferussacianus</i> , Cylindrical Papershell. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Cyprogenia stegaria</i> , Fanshell. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Ellipsaria lineolata</i> , Butterfly. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Elliptio crassidens</i> , Elephantear. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.

C. References and Recommendations (8 of 9)

OKNP references the following references and recommendations regarding this project's potential impacts to natural resources within or surrounding the project area. These recommendations are based on state and federal conservation guidelines and may help proactively address potential constraints. Please contact the applicable office should you have further questions with regard to these references and recommendations related to the project area.

Botanical 
Ecological 
Zoological 

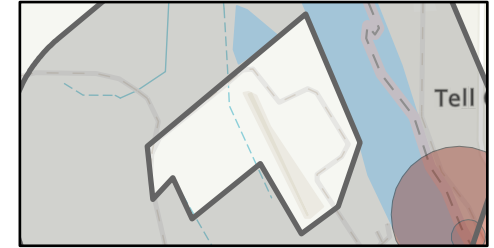


The proposed project area overlaps with the species range for <i>Epioblasma obliquata</i> , Catspaw. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Lampsilis abrupta</i> , Pink Mucket. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Lampsilis ovata</i> , Pocketbook. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Ligumia recta</i> , Black Sandshell. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Obovaria olivaria</i> , Hickorynut. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Obovaria retusa</i> , Ring Pink. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Obovaria subrotunda</i> , Round Hickorynut. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Plethobasus cicatricosus</i> , White Wartyback. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Plethobasus cooperianus</i> , Orangefoot Pimpleback. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Plethobasus cyphyus</i> , Sheepnose. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Pleurobema cordatum</i> , Ohio Pigtoe. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Pleurobema rubrum</i> , Pyramid Pigtoe. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Potamilus capax</i> , Fat Pocketbook. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.
The proposed project area overlaps with the species range for <i>Theliderma cylindrica</i> , Rabbitsfoot. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at https://app.fw.ky.gov/kyswap/ for information on possible management, research and habitat restoration efforts.

C. References and Recommendations (9 of 9)

OKNP references the following references and recommendations regarding this project's potential impacts to natural resources within or surrounding the project area. These recommendations are based on state and federal conservation guidelines and may help proactively address potential constraints. Please contact the applicable office should you have further questions with regard to these references and recommendations related to the project area.

Botanical 
Ecological 
Zoological 



The proposed project area overlaps with the species range for *Primula frenchii*, French's Shooting Star. This species is noted as a Species of Greatest Conservation Need in Kentucky's State Wildlife Action Plan. Review the Action Plan at <https://app.fw.ky.gov/kyswap/> for information on possible management, research and habitat restoration efforts.

Thank you for using the Office of Kentucky Nature Preserves Biological Assessment Tool.

OKNP's species dataset relies on continuous monitoring and surveying for species of concern throughout the state. Any records of species of concern found within this project area would greatly benefit the quality and comprehensiveness of the statewide dataset for rare, threatened and endangered species. If you would like to contribute any additional species information, please do not hesitate to contact our office by email at EEC.KYBAT@ky.gov or by phone at 502-782-7828.

Quick Key

For a full report key, visit naturepreserves.org

Global Rank (GRANK) - Estimate of species abundance on a global scale

GX	Presumed extinct
GH	Possibly extinct; Missing
G1	Extremely Rare
G2	Rare
G3	Uncommon
G4	Common
G5	Very Common
GNR	Not ranked
GU	Unrankable due to lack of information
?	Indicates Uncertainty
T #	Appended for infraspecific taxa
Q	Indicates Questionable

State Rank (SRANK) - Estimate of species abundance in Kentucky

SX	Presumed extirpated
SH	Possibly extirpated
S2	Rare
S3	Uncommon
S4	Many Occurrences
S5	Very Common
SNR	Not ranked
SU	Unrankable due to lack of information
SNA	Not Applicable
?	Indicates Uncertainty
B	Indicates breeding population
N	Indicates non-breeding population

Precision - The precision of a record

Sec.	Seconds; Can be accurately mapped within a 3-second radius (approximately 100 ft)
Min.	Minutes; Can be mapped within a 1-minute radius (approximately 1.5 miles)
Gen.	General; Only known to a place name (within about 5 miles)
Cnty.	County; Only known to the county
Quad.	Quad; Only known to the county