APPENDIX B:
ENVIRONMENTAL OVERVIEW

Environmental Overview (EO) – US 68 Corridor Study, Jessamine and Mercer Counties, Kentucky

KYTC Item No. 7-80251.00

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Prepared for:

Kentucky Transportation Cabinet
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Abbreviations

ASBESTOS	Asbestos Notification System
AST	Above Ground Storage Tanks
ECHO	Enforcement & Compliance History Information
EDR	Environmental Data Resources
EDR Hist Auto	EDR Exclusive Historical Auto Stations
EO	Environmental Overview
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
FEMA	Federal Emergency Management Agency
FINDS	Facility Index System/Facility Registry System
HMIRS	Hazardous Materials Information Reporting System
IPaC	Information for Planning and Consultation
KDFWR	Kentucky Department of Fish and Wildlife Resources
KPDES	Kentucky Pollutant Discharge Elimination System
KDOW	Kentucky Division of Water
KHC	Kentucky Heritage Council
KHS	Kentucky Historical Society
KSS	Kentucky Speleological Society
KYTC	Kentucky Transportation Cabinet
LEAD	Environmental Lead Program Report Tracking Database
LWCF	Land and Water Conservation Fund
NAAQS	National Ambient Air Quality Standards
MS4	Municipal Separation Storm Sewer Systems
NEPA	National Environmental Policy Act

(Abbreviations continued)

NFHL	National Flood Hazard Layer
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OSA	Kentucky Office of State Archaeology
OKNP	Office of Kentucky State Nature Preserve
PADUS	Protected Areas Database of the United States
PSTEAF	Petroleum Storage Tank Environmental Assurance Fund
RCRA	Resource Conservation Recovery Act
RGA HWS	Recovered Government Archive State Hazardous Waste Facilities List
SHPO	State Historic Preservation Office
SHWS	State Hazardous Waste Sites
SSTS	Section 7 Tracking Systems
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tanks

EXECUTIVE SUMMARY

Stantec Consulting Services has prepared this Environmental Overview (EO) as part of the US 68 Corridor Study [Item No. 7-80251.00] for the Kentucky Transportation Cabinet (KYTC). This overview identifies known natural and human features which occur within the Study Area (Figure 1) that should be considered during the development and advancement of improvement concepts, as well as the avoidance or minimization of impacts.

The following is a summary of potential environmental concerns identified as part of the study:

- Section 4(f) Cultural Resources – public parks, recreational trails, and Shakertown Village at Pleasant Hill (NRHP historic district and National Historic Landmark) along with numerous NRHP and eligible Properties
- Protected Waters and Endangered Species – Kentucky River water designations and potential to support federally protected species, particularly in vicinity of the Lock & Dam #7. Multiple Source Water Assessment and Protection Program (SWAPP) public water systems present
- Karst – Known caves present and karst-prone

1.1 PROJECT DESCRIPTION

This Environmental Overview (EO) has been prepared as part of the Kentucky Transportation Cabinet's (KYTC) corridor study of US 68 between milepoint 14.45 in Mercer County and milepoint 1.38 in Jessamine County, Kentucky (the "Study Area") for the Kentucky Transportation Cabinet (KYTC) [Item No. 7-80251.00] (Figure 1). The basic goals of the study include the following:

- Evaluate existing conditions, crash history, and geometric deficiencies and obtain local input to identify potential safety improvements.
- Estimate future traffic volumes on state-maintained and other major routes within the study area to evaluate capacity needs of the transportation network.
- Evaluate possible improvement concepts and strategies for US 68, including new Kentucky River crossings, and estimate potential impacts and costs for improvement options.

The objective of this EO is to identify environmental resources of significance, potential jurisdictional features, and other environmental areas of concern that need to be considered in development of improvement concepts. Natural and human environmental resources within the Study Area were identified from secondary source information including available electronic databases, data files, and published data that may be publicly available or restricted to subject matter experts. Please recognize and adhere to restrictions for any report Attachments identified within as for "Internal Use Only".

1.2 RECORDS REVIEW

A review of agency databases and secondary sources was conducted to document known environmental resources including, but not limited to:

- Ecological resources in **Attachments 1a-1g**:
    - USFWS IPaC threatened and endangered species list
    - USFWS Map of known northern long-eared bat (*Myotis septentrionalis*) habitat in Kentucky
    - USFWS Map of known Indiana bat (*Myotis sodalis)* habitat in Kentucky
    - Kentucky Department of Fish and Wildlife Resources state species list
    - Office Kentucky Nature Preserves Kentucky Biological Assessment Tool database report
    - Kentucky Speleological Society caves and sinkholes database report
- Kentucky NAAQs Air Quality Map (**Attachment 2**)
- Kentucky Karst Potential Map (**Attachment 3**)
- Project Overview Map (**Figure 1**)
- Water resources (**Figures 2 & 3**):
    - FEMA National Flood Hazard Layer (NFHL) Data
    - USGS National Hydrography Dataset (NHD) Streams & Waterbodies
    - USFWS National Wetland Inventory (NWI)
    - KDOW Source Water Protection Area (SWAPP)
- Farmland Classification of Soils (**Figure 4**)
- NRCS Hydric Soils & NRCS Custom Soils Report for Jessamine and Mercer Counties, Kentucky (**Attachment 4, Figure 5)**
- Potential Bat Habitat (**Figure 6**)
- Human Environment (**Figure 7**)
- KGS Oil and Gas Wells (**Figure 7**)
- Hazardous Materials records (**Figure 7**)
    - EDR DataMap research report
    - EDR topographic maps
- Cultural and Historic resources:
    - Kentucky Office of State Archaeology preliminary records review (**Figure 8**) (For Internal Use Only. Not for Public Release.).
    - Kentucky Heritage Council report (**Figure 9**)
    - Kentucky Historical Society, Kentucky Cemeteries Database (**Figure 7**)

1.3 ENVIRONMENTAL FINDINGS

This Environmental Overview (EO) has been prepared to support the corridor study of US 68 between milepoint 14.45 in Mercer County and milepoint 1.38 in Jessamine County, Kentucky (the "Study Area") for the Kentucky Transportation Cabinet (KYTC) [Item No. 7-80251.00] (Figure 1). Natural and human environmental resources within the study area were identified from secondary source information including available electronic databases, data files, and published data that may be publicly available or restricted to subject matter experts. Table 4 (provided on pages 2.13-2.20) provides a summary of the features that were identified within the Study Area. Features are further detailed in Figures 1-9. This information provides an overview of resources of significance within the Study Area as well as other environmental issues of potential concern. More detailed environmental studies may be required as project concepts are further developed in accordance with the National Environmental Policy Act (NEPA). Based on this information, key environmental features within the Study Area include:

USGS Streams and Wetlands: There are 164 U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) wetland features (315 acres total, 207 acres of which are assigned to the Kentucky River), 129 United States Geological Survey (USGS) National Hydrography Dataset (NHD) waterbodies (55.5 acres total) and 112 NHD streams (approximately 122,546 linear feet total) mapped within the Study Area. The Kentucky Watershed Viewer shows the Study Area includes four watersheds with the majority of the Study Area occurring within the Shawnee Run – Kentucky River watershed (HUC12: 051002050703) with the remainder within the Jessamine Creek watershed (HUC12: 051002050701), Little Hickman Creek-Kentucky River watershed (HUC12: 051002050702), and Lower Clear Creek watershed (HUC12: 051002050705). No Kentucky Division of Water (KDOW) outstanding state resources, or 303(d) Impaired and Threatened Waters were present. Five 305(b) Water Quality water assessment units were identified within the Study Area [Kentucky River 98.2 to 115.95, 115.95 to 116.95, 116.95 to 118.9, 119.75 to 120.75, and 120.75 to 137.25] with the Kentucky River 120.75 to 137.25 unit in full support of warmwater aquatic habitat, primary contact recreation, and secondary contact recreation. (Figure 2)

FEMA NFHL Floodplain & Floodway: Approximately 197.7 acres of 100-Year floodplains and 256.1 acres of FEMA designated floodway areas were identified within the Study Area. (Figure 2)

Farmland: Approximately 47% of the Study Area has a farmland designation because it contains soils of statewide importance or prime farmland soils, with the remaining 53% identified as not containing prime farmland soils. Table 1 on the next page further details these areas with farmland soils. In the Study Area some of 'Prime Farmland' has previously been developed. A small extent near the northeastern edge of the Study Area lies within the US census urban area surrounding the city of Wilmore which would be exempt from the Farmland Protection Policy Act. (Figures 1 & 4; Attachment 4)

Table 1. Farmland Designations within the Study Area

Row Labels	Acres	Percent (%)
Not prime farmland	4,060.6	53.0
Farmland of statewide importance	2,315.4	30.2
All areas are prime farmland	1,246.9	16.3
Prime farmland if protected from flooding or not frequently flooded during the growing season	23.7	0.3
Prime farmland if drained	15.4	0.2
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	5.9	0.1
Grand Total	**7,667.9**	**100***

***Sum total >100 due to rounding.**

Threatened and Endangered Species: According to U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC), there are seven federally listed endangered species, one federally listed threatened species, two federally listed proposed endangered species, and one federally listed candidate species. All have the potential to occur within the Study Area. Freshwater mussels typically require perennial waters for their habitat; many mussel species have been negatively impacted by creation of impoundments within the Kentucky River system, however some have adapted and may be present especially within a couple of river miles downstream of the Kentucky River dams. Forested areas are present that could provide suitable bat summer habitat. The Kentucky Speleological Society (KSS) identified 34 known caves within 5-kilometers of the Study Area which could provide potential bat habitat. Thirteen of the KSS known cave features lie within the Study Area and an additional six caves within a 1-mile buffer of the Study Area. A portion of the Study Area is located within the Kentucky River Palisades area (Palisades). Although formal regulatory protection or authority may be limited, the Palisades corridor contains numerous species noted as rare or regionally rare to the Bluegrass including starry cleft phlox (*Phlox bifida* var. *stellaria*) and Eggleston violet (*Viola septemioba* var. *egglestonii*), amongst others. (Figure 6; Attachments 1a-g)

Karst: Based on information from the USGS US Karst Occurrence Map, the majority of the study area is underlain by bedrock with high potential for karst development. The KyGovMaps Open Data Portal identified 156 sinkhole polygons within the Study Area. The Office of Kentucky State Nature Preserves (OKNP) data search reported no record of caves or sinkholes within the Study Area. The KSS database showed 13 caves within the Study Area and an additional six in a 1-mile buffer, and a total of 34 caves within a 5-kilometer buffer. A portion of the Study Area is within the Palisades which is broadly defined as corridors along the Kentucky River and its tributaries within the central Bluegrass region from Boonesborough to the mouth of Elkhorn Creek, often less than 1-2 miles wide (Campbell 2012). The Palisades is a cliff-lined entrenched meander that is considered one of the most significant calcareous ravine systems within the Interior Low Plateaus. Its most rugged section lies between Camp Nelson (or US 27 bridge) and Shakertown (or US 68 bridge) which exhibits a variety of habitats resulting in unusually high biological diversity for the region. The upper cliff lines exhibit a unique habitat at risk from land uses such as logging, farmland conversion, or residential development. (Figure 6; Attachments 1f, 1g, & 3)

Groundwater: The EDR Well Report and a search of the University of Kentucky Groundwater Data Repository identified active wells within the Study Area as: two agricultural wells, 10 domestic wells, one public well, and two miscellaneous wells. Nine springs were identified within the Study Area including four named springs: RR Spring (unused), RR Cave Spring (unused), Headwall Spring (no data), and Highbridge Bridge (public non-transient, non-community use by Highbridge Spring Water Co Inc). The Study Area includes four Source Water Assessment and Protection Program (SWAPP) public water systems including: Harrodsburg Municipal Water Department, Versailles Water System, Wilmore Water Works, and Lawrenceburg Water and Sewer Department. Harrodsburg Municipal Water Department has two permitted adjacent surface water intakes located at river mile 117.85 on the left bank of the Kentucky River (Pool 7). Wilmore Water Works has one permitted water intake located at river mile 114.0 along the right bank of the Kentucky River (Pool 6). One wastewater treatment plant (WWTP) outfall (Shakertown at Pleasant Hill; KDPES: KY0040151) is present in the Study Area near Shaker Creek/Unnamed Tributary. (Figure 3)

Hazardous Materials Concerns: The EDR report revealed 54 sites (195 records) within the Study Area. Eight underground storage tank (UST) sites were identified including four gas stations, one water treatment plant, and two miscellaneous businesses; only one business (Dix Drive Store) was located within the Study Area. One aboveground storage tank (AST) site at Asbury Equine Center was identified within the Study Area and one additional AST was identified at Asbury Theological Seminary within the one-mile buffer. Two RCRA Non-Generators / No Longer Regulated sites (Dollar General 7822; Asbury University) were identified within a one-mile buffer of the Study Area. A total of seven National Pollutant Discharge Elimination System (NPDES) sites were identified in the Study Area. No high risk historical records were identified in the Study Area; however, two historic auto sites and one historic cleaner were identified within 0.1-mile of the Study Area.

Potential hazardous materials concerns exist throughout the Study Area. For additional information on specific hazardous materials concerns in and around the surrounding Study Area, please reference the full EDR report (provided separately). (Figure 7, Attachment 6)

Oil and Gas Wells: According to both the EDR and KGS reports, no oil and gas wells were identified within the Study Area. (Figure 7; Attachment 6)

Cultural Archaeology Resources: A preliminary records review provided by the Kentucky Office of State Archaeology (OSA) indicates that nine previously identified archaeological sites have been documented in the Study Area (Table 2). These sites include four precontact sites and five historic sites. The precontact sites include one cave and three open habitation sites without mounds. The NRHP status of two of the sites has not been assessed and the other two sites were recommended to be not eligible for inclusion in the NRHP. The historic sites include three farm/residences, one industrial site and one undetermined site type. Three of the historic sites, including two farm/residences and the industrial site, are NRHP listed properties. All three of these sites are associated with the Shaker Village at Pleasant Hill. Stantec recommends avoidance of these sites. The other two sites have been recommended to be not eligible for inclusion in the NRHP.

The distribution of archaeological sites shows clusters of sites on the east and west side of the Study Area. Four sites, including those associated with the Shaker Village at Pleasant Hill, are located on or west of the Kentucky River. All the remaining sites are located near the eastern boundary of the Study Area. Three sites are located near Wilmore and two are located northwest of Wilmore near the northeastern corner of the Study Area.

The distribution of recorded sites likely reflects a lack of archaeological survey in the central portion of the Study Area. The OSA data indicate that eight archaeological investigations have been undertaken in the Study Area. Like the sites, these projects have largely been focused around the Shaker Village at Pleasant Hill and the Kentucky River, or near Wilmore. No archaeological investigations have been initiated in the central portion of the Study Area. (Figure 8 - For Internal Use Only. Not for Public Release.)

Table 2. Archaeological Sites in the Study Area

Site	Site Type	Age and Affiliation	NRHP Status
15Js4	Cave	Precontact indeterminate age	Not assessed
15Js55	Open habitation without mounds	Precontact, indeterminate Woodland, Middle Woodland	Not assessed
15Js57	Open habitation without mounds	Precontact, indeterminate age	Not assessed
15Js179	Farm/Residence	Historic, 1900-2000	Inventory Site, not NRHP eligible
15Js204	Undetermined	Historic, 1851-1950	Inventory Site, not NRHP eligible
15Me58	Industrial	Historic, 1801-1950	NRHP listed Property/ District
15Me59	Farm/Residence	Historic, 1801-1950	NRHP listed Property/ District
15Me60	Farm/Residence	Historic, 1801-1950	NRHP listed Property/ District
15Me79	Open habitation without mounds	Precontact, indeterminate age	Inventory Site, not NRHP eligible

Cultural Historic Architecture Resources: This critical issues analysis is based on results from the Kentucky State Historic Preservation Office (KHC-SHPO). The data has not been field-checked for locational accuracy, continued National Register of Historic Places eligibility, and/or whether each property is extant. There are three types of data collected to assess any cultural-historic critical issues:

(1) Survey or Inventory data. This information is at the identification level only per SHPO. These properties may or may not be eligible for the NRHP.

(2) NRHP Eligible Properties. These properties have been identified, analyzed, and determined eligible for the NRHP under Criterion A (history), Criterion B (people), or Criteria C (architecture). This determination generally happens at the SHPO level.

(3) NRHP Listed Properties. These properties have been listed in the NRHP. They receive at least two reviews: one at the SHPO level and another at the federal level with the National Park Service.

A total of 193 previously recorded historic architectural properties are within the project study area and 500 ft. buffer. A 500-ft. buffer extended beyond the study area footprint to account for parcels that may be partially clipped, but likely included in future survey efforts. This number includes NRHP listings, NRHP eligible properties, and survey/inventory level properties. One of these properties was noted as demolished by KHC-SHPO (ME-67). Background data from the KHC-SHPO identifies eight NRHP listed properties within the 500-foot buffer of the study area. Four of the NRHP listed properties are historic districts; the remaining four are individually listed properties. One of the historic districts also is a National Historic Landmark (NHL). See Table 3.

Table 3. NRHP Listed and Eligible Properties within 500-ft. buffer of Study Area

Property Name	Date listed or DOE	NRIS Number/KHC Number
Shakertown at Pleasant Hill Historic District and National Historic Landmark (NHL)	November 11, 1971; NHL February 20, 1972	71000353
Stone House on Brooklyn Hill[1]	June 23, 1983	83002802/JS 186
Benjamin Daniel House	August 2, 1983	83002827/ME 66
Bicknell House	July 5, 1984	84001600/JS 68
Curd House	July 13, 1984	84001621/JS 66
East Main Historic District, Wilmore	August 5, 1994	94000840
Lexington and Main Historic District, Wilmore	August 5, 1994	94000842
Lexington, Harrodsburg, and Perryville Turnpike Rural Historic District	October 23, 2003	03000087
High Bridge	Determined Eligible	JS 65
Small Bridge on County Route 1230	Determined Eligible	JS 192

Two of the previously recorded historic architectural properties have been recommended individually eligible for listing in the NRHP (JS 65 and JS 192). No cultural resource reports were located during the KHC-SHPO background data check.

[1] Historic aerials indicate that the resource may have been demolished between 1986 and 1997. Field verification would be necessary to determine if the resource is no longer extant.

The US 68 route was historically part of the Lexington, Harrodsburg & Perryville Turnpike. In addition to a substantial number of previously recorded resources, there are numerous undocumented historic architectural resources that are fifty years of age or older, which is the approximate age required for historic architectural field work and NRHP eligibility. A few of these may be eligible for the NRHP. These properties are likely to represent urban and rural resources, such as houses, farmsteads, cemeteries, bridges, and commercial buildings.

Based upon these initial results and a knowledge of the area, Stantec recommends a reconnaissance historic architectural survey, regardless of funding source. This survey work will be required if the project is determined to be a federal undertaking, per Section 106 of the National Historic Preservation Act of 1966. (Figure 9)

Community Resources: The majority of the Study Area is comprised of agricultural and rural residential properties. Urban residential development is concentrated at the eastern end of the Study Area near City of Wilmore. The Study Area also includes businesses such as railroad line, Shakertown Village at Pleasant Hill, Kentucky Underground Storage, Potter's Inn bed and breakfast, various equestrian facilities, and Kentucky River-associated services such as the Mother Ann Lee Hydroelectric Station and private boating/boat ramp attractions. Community resources identified within the Study Area include Wilmore City Hall, Shakertown Fire Department, High Bridge Community Fire Department, Wilmore Fire Department, and the Wilmore Water Treatment Plant. One public high school was identified within the Study Area. Multiple athletic facilities, a challenge course, and an equine center associated with Asbury University were also identified in the Study Area. Four houses of worship were identified within the Study Area. A railroad line runs primarily east-west across the southern extent of the Study Area. Boone Tunnel, the first tunnel in Kentucky constructed for highway traffic during the mid-1920s, is present within the Study Area but is no longer in service and there are no apparent cultural reports from Kentucky Heritage Council appearing to address this local feature. (Figure 7)

Utilities: No natural gas pipelines were located within the Study Area. Seven electric transmission lines and three electric substations were located within the Study Area. Kentucky River Lock and Dam #7 and associated Mother Ann Lee Hydroelectric Station are located within the Study Area. (Figure 7)

Parks: High Bridge Park, Wilmore Park (also known as Downtown Green) and Abiding Pavilion and Reservoir Park were identified within the Study Area. Asbury University's Equine Farm (home to the Equine Center, Mission Farm and Challenge Course) has approximately a mile of cliffs along the river and a ravine which leads down to the river and provides access; there are over two miles of hiking trails available to students and the public including the Great Wall Trail and Parking Area within the Study Area. A significant trail system throughout Shakertown Village of Pleasant Hill was also identified within the Study Area. A cross country trail route near Asbury University was also noted within the Study Area. There are no NRCS Wetland Reserve Program Lands within the Study Area. The Tom Dorman State Nature Preserve, one of the largest protected areas of the Palisades is located approximately 3.7 miles southeast of the Study Area. No Wildlife Management Areas or Federal Public Lands were located within the Study Area. A Non-Government Organization holds the 'Kentucky Palisades Fee' protected lands area located south of the central portion of the Study Area. Kentucky River Pool 6 is part of the Unbridled KY Adventure and KDFWR's Blue Water Trails. KDFWR's Kentucky River High Bridge public boat ramp

and the Palisade Adventures boat ramp are located within the Study Area. Dix River Trail is also noted from the KDFWR High Bridge boat ramp upstream to the headwaters of the Dix River. (Figure 7 and Attachment 7)

Cemeteries: Five cemeteries were identified by KHC within the Study Area and are shown in Figure 9. Additionally, the Kentucky Historical Society's (KHS) cemeteries database notes numerous cemeteries within Mercer and Jessamine Counties; however, many KHS cemetery locations referenced family farm names or were generally incomplete so addresses were unable to be confirmed. Additional research or field verification is recommended, but based on preliminary review of the KHS list additional cemeteries within the Study Area may include Jewell Cemetery (226 Gillespie Lane), Guerrant Cemetery (825 High Bridge Pike), Lillard/Nooe Cemetery (Brooklyn Hill US 68 S or 9620 Harrodsburg Road), Champion Family Cemetery (Cornishville, KY 40330), and general areas of interest within the Study Area may include near High Bridge and Brooklyn Hill. (Figure 7, Figure 9)

Air Quality / Noise: The Study Area is located in Attainment/Unclassifiable Areas for the 2015 8-hour ozone and 2012 PM 2.5 NAAQS standards. There are no USEPA air emissions facilities located within the Study Area; however, the E.W. Brown Generating Station is located approximately 2.3 miles south of the Study Area. Sensitive noise receptors in the Study Area include numerous houses and residential neighborhoods, noise-sensitive buildings at Asbury University (i.e. library, recital hall, dorms, etc), Shakertown Village at Pleasant Hill, and Potter's Inn bed and breakfast.

Section 4(f) and Section 6(f) Resources: Public parks, boat ramps, recreational facilities, and recreational trails (on land and waterways) identified in the 'Parks' section above may be considered Section 4(f) resources. Historic and archaeologic sites or districts are considered significant, for Section 4(f) purposes, if they are on or determined eligible for listing on the NRHP (FHWA 2024). As detailed in Tables 2 and 3, four NRHP listed historic districts, four NRHP listed historic properties, and 2 additional sites (High Bridge and CR-1230 bridge) are considered eligible for listing. Shaker Village of Pleasant Hill is a NRHP listed historic district and National Historic Landmark and is identified by PAD-US as a 4(f) resource with GAP3 status.

Sites are considered a 6(f) protected resource if they have received grant-in aid federal funds under the Land and Water Conservation Fund Act (LWCF) , the Federal Aid in Fish Restoration Act (Dingell-Johnson Act), or the Federal Aid in Wildlife Act (Pittman-Robertson Act), or other similar law. Multiple LWCF parks are in the City of Wilmore but only one overlaps with the Study Area; 'Wilmore Park' (also known as Downtown Green) received LWCF funds in both 1988 and 1995 (Trust for Public Land 2023). (Figure 7)

Table 4. Environmental Resources/Features in US 68 Study Area, Jessamine and Mercer Counties, Kentucky

Environmental Category	Resource/Feature	Source/Information
USGS Streams	112 NHD streams (122,546 linear feet total) were mapped within the Study Area. There are no NRCS Wetland Reserve Program Lands within the Study Area. The Kentucky Watershed Viewer shows the majority of the Study Area falls within the Shawnee Run – Kentucky River watershed (HUC12: 051002050703) and the remainder is within the Jessamine Creek watershed (HUC12: 051002050701), Little Hickman Creek-Kentucky River watershed (HUC12: 051002050702), and Lower Clear Creek watershed (HUC12: 051002050705). No KDOW outstanding state resource waters or 303(d) list waters were identified. Five 305(b) Water Quality water assessment units were identified within the Study Area [Kentucky River 98.2 to 115.95, 115.95 o 116.95, 116.95 to 118.9, 119.75 to 120.75, and 120.75 to 137.25] with the Kentucky River 120.75 to 137.25 unit in full support of warmwater aquatic habitat, primary contact recreation, and secondary contact recreation. Please refer to Figure 2 for more information.	Source: KDOW Special Waters tables, KDOW 305(b) and 303(d) tables (2016), USFWS NWI, USGS National Hydrography Dataset Map, KY Water Health Portal
Other Streams	Surface streams are potentially present in the Study Area. These would likely consist of small headwater streams or springs and roadside drainage features not indicated on traditional mapping. Field reconnaissance would be required to determine their presence and/or extents. Please refer to Figure 2 for more information.	Source: USGS maps, ESRI topo maps
Wetlands	There are no NRCS Wetland Reserve Program lands within the Study Area. 164 NWI wetland features (315 acres total) were identified within the Study Area; most of the acreage identified is associated with the Kentucky River (207 acres). Additional wetland features not indicated via NWI or on traditional mapping are potentially present in the Study Area. Field reconnaissance would be required to determine their presence and/or extents. Please refer to Figure 2 for more information.	Source: USFWS NWI, USGS National Map
Lakes/Ponds	129 NHD waterbodies (55.5 acres total) were within the Study Area. Please refer to Figure 2 for more information.	Source: USFWS NWI, USGS National Hydrography Dataset Map

(Table 4 continued)

Environmental Category	Resource/Feature	Source/Information
Floodplain	According to NFHL data, approximately 197.7 acres of FEMA 100-Year floodplains were identified within the Study Area. Please refer to Figure 2 for more information regarding floodplain mapping.	Source: FEMA NFHL (2021)
Floodway	According to NFHL data, approximately 256.1 acres of FEMA designated floodway was identified within the Study Area. Please refer to Figure 2 for more information regarding floodway mapping.	Source: FEMA NFHL (2021)
Farmlands	Approximately 47% of the Study Area has a farmland designation with the remaining 53% identified as not prime farmland. In the Study Area some of 'Prime Farmland' has previously been developed. A small extent near the northeastern edge of the Study Area lies within the US census urban area surrounding the city of Wilmore which would be exempt from the Farmland Protection Policy Act. Please refer to Table 1, Figures 1 & 4, and Attachment 4 for the more information regarding soils and farmland designations.	Source: NRCS Web Soil Survey Map Data (2024)
USWFS Species List	The United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) resource list indicated the following six species were of concern for the Study Area: • Gray bat (*Myotis grisescens*) - Endangered • Indiana bat (*Myotis sodalis*)* - Endangered • Northern long-eared bat (*Myotis septentrionalis*) - Endangered • Tricolored bat (*Perimyotis subflavus*) – Proposed Endangered • Clubshell mussel (*Pleurobema clava*) – Endangered • Fanshell mussel (Cyprogenia stegaria) - Endangered • Longsolid mussel (*Fusconaia subrotunda*)* - Threatened • Salamander mussel (*Simpsonaias ambigua*)^ - Proposed Endangered • Sheepnose mussel (*Plethobasus cyphyus*) - Endangered • Monarch Butterfly (*Danaus plexippus*) – Candidate • Short's Bladderpod (*Physaria globosa*)* - Endangered * Species has designated Critical Habitat but none overlaps Study Area. ^ Species has proposed Critical Habitat but none overlaps Study Area. Please refer to Figure 6 and Attachments 1a - 1c for more information regarding species data.	Source: unofficial USFWS IPaC Trust Resource Report (July 15, 2024), USFWS Kentucky Ecological Field Office (2019).

(Table 4 continued)

Environmental Category	Resource/Feature	Source/Information
KDFWR Species List	Kentucky Department of Fish and Wildlife Resources (KDFWR) lists 7 Federal Threatened, Endangered, and Candidate Species as occurring (either recently or historically) in Jessamine and/or Mercer Counties, Kentucky. These include: • Fanshell mussel (*Cyprogenia stegaria*) - Endangered • Rabbitsfoot mussel (*Theliderma cylindrica*) – Threatened • Gray bat (*Myotis grisescens*) – Endangered • Indiana bat (*Myotis sodalis*) – Endangered • Northern long-eared bat (*Myotis septentrionalis*) – Endangered • Tricolored bat (*Perimyotis subflavus*) – Proposed Endangered • Monarch butterfly (*Danaus plexippus*) - Candidate KDFWR lists 53 State Threatened, Endangered, and Special Concern Species as occurring (either recently or historically) in Jessamine and/or Mercer Counties, Kentucky. These include: • 17 state endangered species (12 Aves, two Bivalvia, one Insecta, and two Mammalia) • 11 state threatened species (seven Aves, one Insecta, and three Mammalia) • 21 state sensitive species (13 Aves, three Bivalvia, two Mammalia, two Amphibia, and one Actinopterygii) • Four state historic species (two Aves and two Insecta). Please refer to Attachment 1d & 1e for more information regarding species data.	Source: KDFWR – Jessamine and Mercer Counties, KY (June 19, 2024)

(Table 4 continued)

Environmental Category	Resource/Feature	Source/Information

OKNP Species Database	The Office of Kentucky Nature Preserves (OKNP) provided records of species occurrences either in or within one mile of the Study Area.
	
	Within the Study Area there was one federal species listed:
	• Globe Bladderpod (*Physaria globosa*)
	
	Within the Study Area there are 11 state species listed:
	• *State Endangered*
	  ○ Frosted elfin (*Callophrys irus*)
	  ○ Water stitchwort (*Sabulina fontinalis*)
	• *State Threatened*
	  ○ Svenson's wildrye (*Elymus svensonii*)
	  ○ Eastern waterleaf (*Hydrophylum virginianum*)
	  ○ Hispid falsemallow (*Malvastrum hispidum*)
	  ○ Purple oat (*Schizachne purpurascens*)
	  ○ Downy arrowwood (*Viburnum rafinesqueanum*)
	• *State Special Concern*
	  ○ Eastern hellbender (*C. alleganiensis*)
	  ○ Branching whitlow grass (*Draba ramosissima*)
	  ○ Loggerhead shrike (*Lanius ludovicianus*)
	  ○ Longbeak buttercup (*Ranunculus longirostris*)
	
	Within one mile of the Study Area there are two additional federal species listed:
	• Gray bat (*Myotis grisescens*)
	• Tricolored bat (*Perimyotis subflavus*) [Proposed]
	
	Within one mile of the Study Area there are four additional state species listed:
	• Running buffalo clover (*Trifolium stoloniferum*)
	• Sharp-shinned hawk (*Accipiter striatus*)
	• Kentucky arrow-wood (*Viburnum molle*)
	• Eggleston's violet (*Viola egglestonii*)
	
	The OKNP Natural Heritage Database report summarizes the existing information known to the program at the time of the request for the Study Area provided. These biological elements or locations in question should not be regarded as final statements, nor should they be substituted for on-site surveys required for environmental assessments. Due to the sensitive nature of this data, the specific species' locations have been redacted. Eggleston's Violet is a rare species known to the Palisades area.
	
	Please refer to Attachment 1f for more information regarding species data.
		Source: OKNP Natural Heritage Database response (June 19, 2024)

(Table 4 continued)

Environmental Category	Resource/Feature	Source/Information
Groundwater	The EDR Well Report and a search of the University of Kentucky Groundwater Data Repository identified active wells within the Study Area as: two agricultural, 10 domestic, one public, and two miscellaneous. Nine springs were identified within the Study Area including four named springs: RR Spring, RR Cave Spring, Headwall Spring, and Highbridge Bridge. The Study Area includes four Source Water Assessment and Protection Program (SWAPP) public water systems including: Harrodsburg Municipal Water Department, Versailles Water System, Wilmore Water Works, and Lawrenceburg Water and Sewer Department. Two water intake locations were identified along the Kentucky River within the Study Area. Please refer to Figure 3 for more information regarding groundwater data.	Source: Kentucky Watershed Viewer (2024), EDR DataMap Well Search Report (2024), and Water Protection Viewer (2024), EDR Topographic Maps (2024)
Karst Areas	Based on information from the USGS US Karst Occurrence Map, the majority of the Study Area is underlain by bedrock with moderate potential for karst development. The KyGovMaps Open Data Portal identified 156 sinkhole polygons within the Study Area. The OKNP report found no record of caves or sinkholes within the Study Area and buffer zone. The KSS database identified 34 cave locations within 5-kilometers of the Study Area; 13 of these known caves lie within the Study Area and an additional six within a 1-mile buffer. A portion of the Study Area is part of the Palisades: corridors along the Kentucky River and its tributaries within the central Bluegrass region exhibiting cliff-lined entrenched meanders. Please refer to Figure 6 for KyGovMaps sinkhole, Attachment 1f for OKNP database report, Attachment 1g for KSS database response, and Attachment 3 for Kentucky karst potential map.	Source: Karst Occurrence in Kentucky map (Paylor and Currens 2002), KyGovMaps Open Data Portal – KY Water Resources Polygons Sinkholes, OKNP database response (2024), USGS
Hazardous Materials	The EDR report revealed 54 sites (195 records) within the Study Area. Eight underground storage tank (UST) sites were identified only one business (Dix Drive Store) was located within the Study Area. One aboveground storage tank (AST) site at Asbury Equine Center was identified within the Study Area. A total of seven National Pollutant Discharge Elimination System (NPDES) sites were identified in the Study Area. No high risk historical records were identified in the Study Area; however, two historic auto sites and one historic cleaner were identified within 0.1-mile of its boundary. Please refer to Figure 7 and digital Attachment 6 for more information regarding EDR data.	Source: Environmental Data Resources Report (EDR 2024)

(Table 4 continued)

Environmental Category	Resource/Feature	Source/Information
Oil and Gas Wells	The EDR and KGS revealed zero oil and gas wells within the Study Area. Please refer to Figure 7 and digital Attachment 6 for more information regarding well data.	Source: EDR DataMap Well Search Report (2024), KGS (2023)
Cultural-Archaeology	OSA indicated that nine previously identified archaeological sites have been documented within the Study Area. Like the sites, past archaeological surveys have largely been focused around the Shaker Village at Pleasant Hill and the Kentucky River, or near Wilmore. No archaeological investigations have been initiated in the central portion of the Study Area. Please refer to Table 2 and Figure 8 for more information regarding cultural-archaeology data.	Source: KY OSA report (2024)
Cultural- Historic Architecture	There are 193 previously recorded historic architectural properties within or adjacent to the Study Area. Eight properties are NRHP listed: four are rural historic districts and the remaining four are individual properties, one of which has likely been demolished. Shakertown Village of Pleasant Hill (one of the NRHP listed historic districts) is also a registered National Historic Landmark. Two previously recorded properties (High Bridge and Small Bridge on CR-1230) have been recommended individually eligible for listing in the NRHP. Based on these results and knowledge of the area, numerous undocumented historic architectural properties that are 50 years of age or older may be present and a reconnaissance historic architectural survey is recommended prior to construction regardless of project funding source. Please refer to Figure 9 for more information regarding cultural-historic data.	Source: Kentucky Heritage Council Site Files; National Register of Historic Places Map (2020), USGS topo maps
Community Resources	The majority of the Study Area is comprised of agricultural and rural residential properties. Urban residential development is concentrated at the eastern end of the Study Area near City of Wilmore. The Study Area also includes businesses such as a railroad line, Shakertown Village at Pleasant Hill, Kentucky Underground Storage, Potter's Inn bed and breakfast, various equestrian facilities, and Kentucky River-associated services such as the Mother Ann Lee Hydroelectric Station and private boating/boat ramp attractions. Community resources within the Study Area include Wilmore City Hall, three fire departments, Wilmore Water Treatment Plant, and Boone Tunnel.	Source: Google Earth Pro Maps, ESRI topo maps, NLCD (2021)
Houses of Worship	There are four houses of worship within the Study Area. Please refer to Figure 7 for more Human Resources data.	Source: Google Earth Pro Maps, ESRI topo maps

(Table 4 continued)

Environmental Category	Resource/Feature	Source/Information
Schools	One public high school was identified within the Study Area Multiple athletic facilities, a cross country course, a challenge course, and an equine center associated with Asbury University were also identified within the Study Area. Please refer to Figure 7 for more Human Resources data.	Source: Google Earth Pro Maps, ESRI topo maps, HIFLD
Utilities	Seven electric lines and three electric substations were identified within the Study Area. A railroad line runs primarily east-west across the southern extent of the Study Area. The Study Area includes: Shakertown Fire Department, High Bridge Community Fire Department, Wilmore Fire Department, and the Wilmore Water Treatment Plant. Kentucky River Lock and Dam #7 and associated Mother Ann Lee Hydroelectric Station is located within the Study Area. Please refer to Figure 7 and Attachment 1h for more Human Resources data.	Source: U.S. Department of Homeland Security Infrastructure data (2024). Google Earth Pro Maps, National Pipeline Mapping Systems Public Viewer (2024)
Cemeteries	KHC reported five cemeteries within the Study Area. Kentucky Historical Society's cemetery database indicates numerous within Mercer and Jessamine Counties; however, many locations were unable to be verified during this overview. There may be additional private or family cemeteries present in the Study Area that have not been previously mapped or located. Please refer to Figure 7 for more Human Resources data and Figure 9 for Historic Architecture Resources data.	Source: Google Earth Pro Maps, ESRI topo maps, USGS topo maps, Kentucky Heritage Council, Kentucky Historical Society Cemeteries Database (2008)
Air Quality	The Study Area is located in Attainment/Unclassifiable Areas for the 2015 8-hour ozone and 2012 PM 2.5 NAAQS standards. There are no USEPA air emissions facilities located within the Study Area; however, the E.W. Brown Generating Station is located approximately 2.3 miles south of the Study Area. Please refer to Attachment 2 for more information regarding air quality data.	Source: KYTC Air Quality Maps (2019), USEPA Green Book (2015), USEPA Envirofacts (2018)
Noise	Sensitive noise receptors in the Study Area include numerous houses and residential neighborhoods, Asbury University, and businesses such as Shakertown Village at Pleasant Hill and Potter's Inn bed and breakfast. Please refer to Figure 7 for more Human Resources data.	Source: KYTC Noise Policy (2020)

(Table 4 continued)

Environmental Category	Resource/Feature	Source/Information
Section 4(f)	Public parks, recreational facilities, and recreational trails (on land and waterways) identified in Study Area may be considered Section 4(f) resources. Historic or archaeologic sites or districts are considered significant, for Section 4(f) purposes, if it is on or determined eligible for listing on the NRHP (FHWA 2024). As detailed in Tables 2 and 3, four NRHP listed historic districts, four NRHP listed historic properties, and two additional sites (High Bridge and CR-1230 bridge) were considered eligible for listing. Shaker Village of Pleasant Hill is located within the Study Area, is a NRHP listed historic district and National Historic Landmark and is identified by PAD-US as a 4(f) resource with GAP3 status. Please refer to Attachment 7 for Shaker Village and Asbury Equine Center/Great Wall trail maps.	Source: KDFWR (2024), Google Earth Pro Maps, PADUS (2024)
Section 6(f)	Based on the Land and Water Conservation Fund (LWCF) records map, multiple LWCF parks are in the City of Wilmore but only one overlaps with the Study Area; 'Wilmore Park' (also known as Downtown Green) received LWCF funds in both 1988 and 1995.	Source: Trust for Public Land LWCF Federal and State Funding Map Data (2024)

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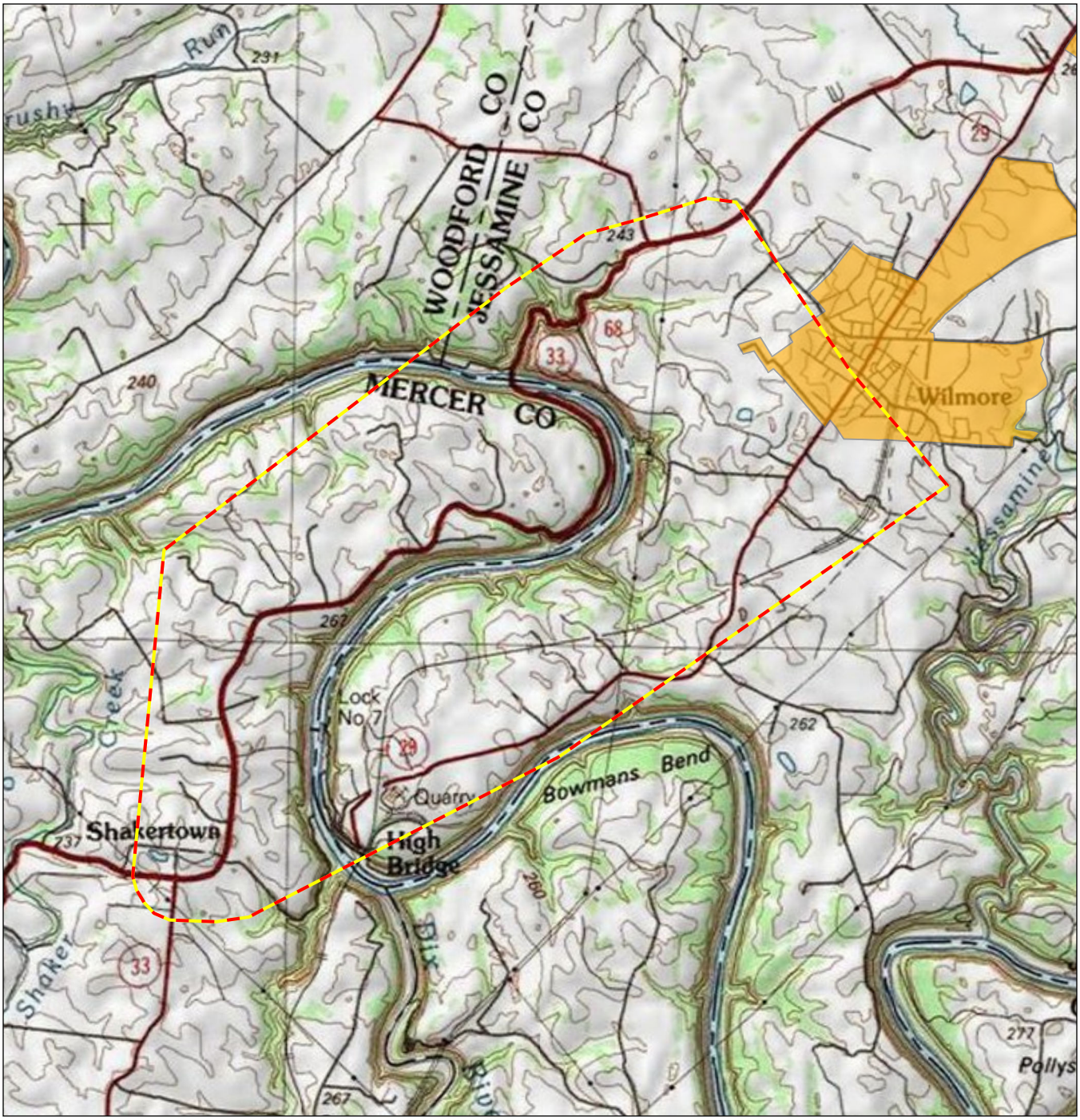
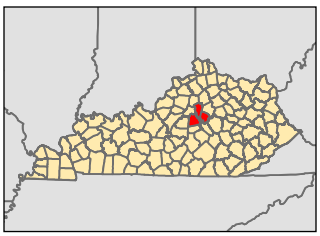
FIGURES





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2. Data Sources: KYTC, Stantec, US Census
3. Background: USGS Topographic Map

Stantec

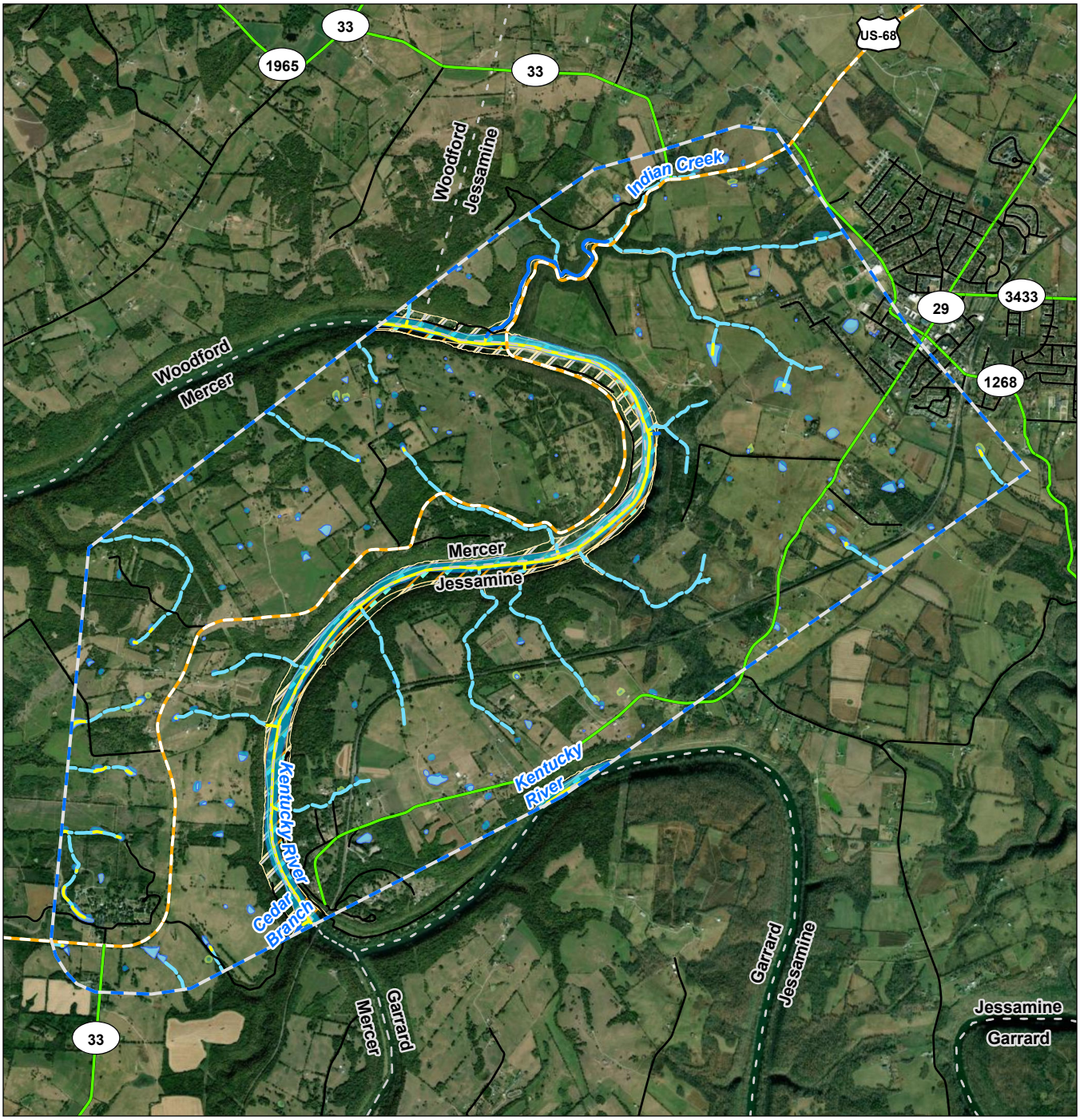
Project Location
Mercer, Jessamine, and Woodford County, Kentucky

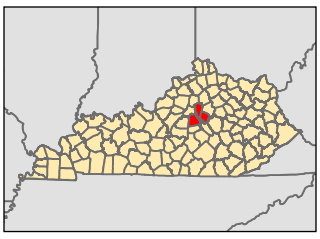
Prepared by TCN on 2024-07-16
TR by KC on 2024-07-18
IR by EM on 2024-07-18

Client/Project 178568101
Kentucky Transportation Cabinet (KYTC)
Item No. 7-80251: US 68 Corridor Study
Environmental Overview

Figure No.
1

Title
Project Overview





Legend
- Study Area
- US Highway
- Interstate*
- State Route
- Local Road
- Railroad

National Hydrography Dataset
- Intermittent Stream
- Perennial Stream
- Artificial Path
- Waterbody

NWI Feature
- Freshwater Emergent Wetland
- Freshwater Pond/Lake
- Riverine

FEMA Special Flood Hazard Areas
- 100-Year Floodplain
- 100-Year Floodway

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Stantec

Project Location
Mercer, Jessamine,
and Woodford County, Kentucky

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Client/Project
178568101
Kentucky Transportation Cabinet (KYTC)
Item No. 7-80251: US 68 Corridor Study
Environmental Overview

Figure No.
2

Title
Water Resources

Notes
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2. Data Sources: KYTC, Stantec, KGS, KDOW, USGS, USFWS, FEMA
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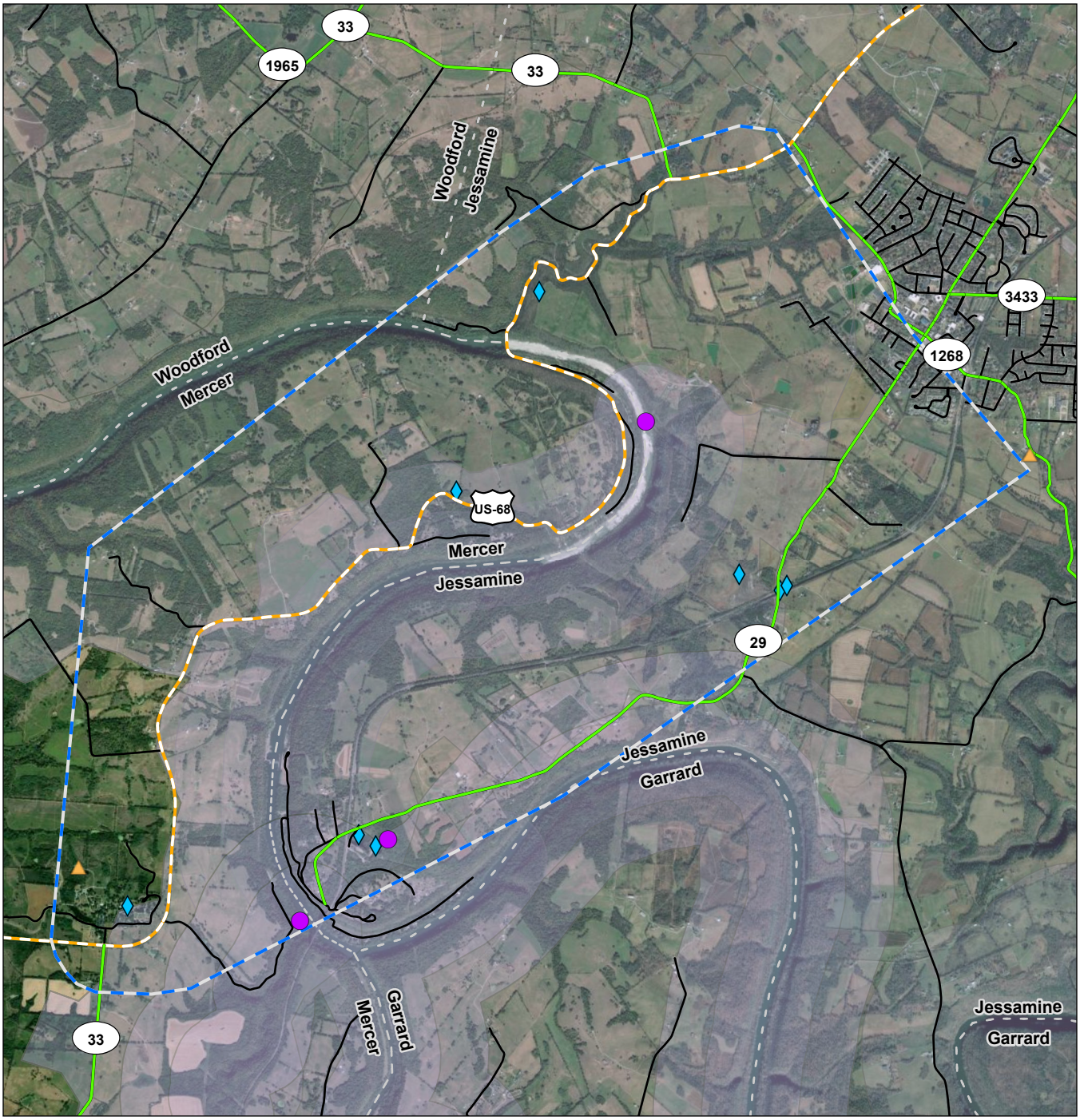

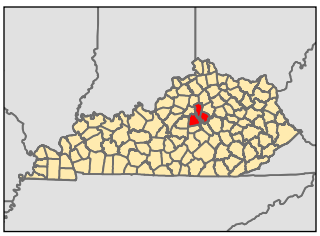

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2. Data Sources: KYTC, Stantec, KGS, KDOW, USGS, USFWS, FEMA
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Legend
- Study Area
- US Highway
- Interstate*
- State Route
- Local Road
- Railroad
- WWTP Outfall
- Domestic Water Supply Intake
- Spring
- KDOW Source Water Protection Area

*No Features Within Data Frame

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Project Location
Mercer, Jessamine,
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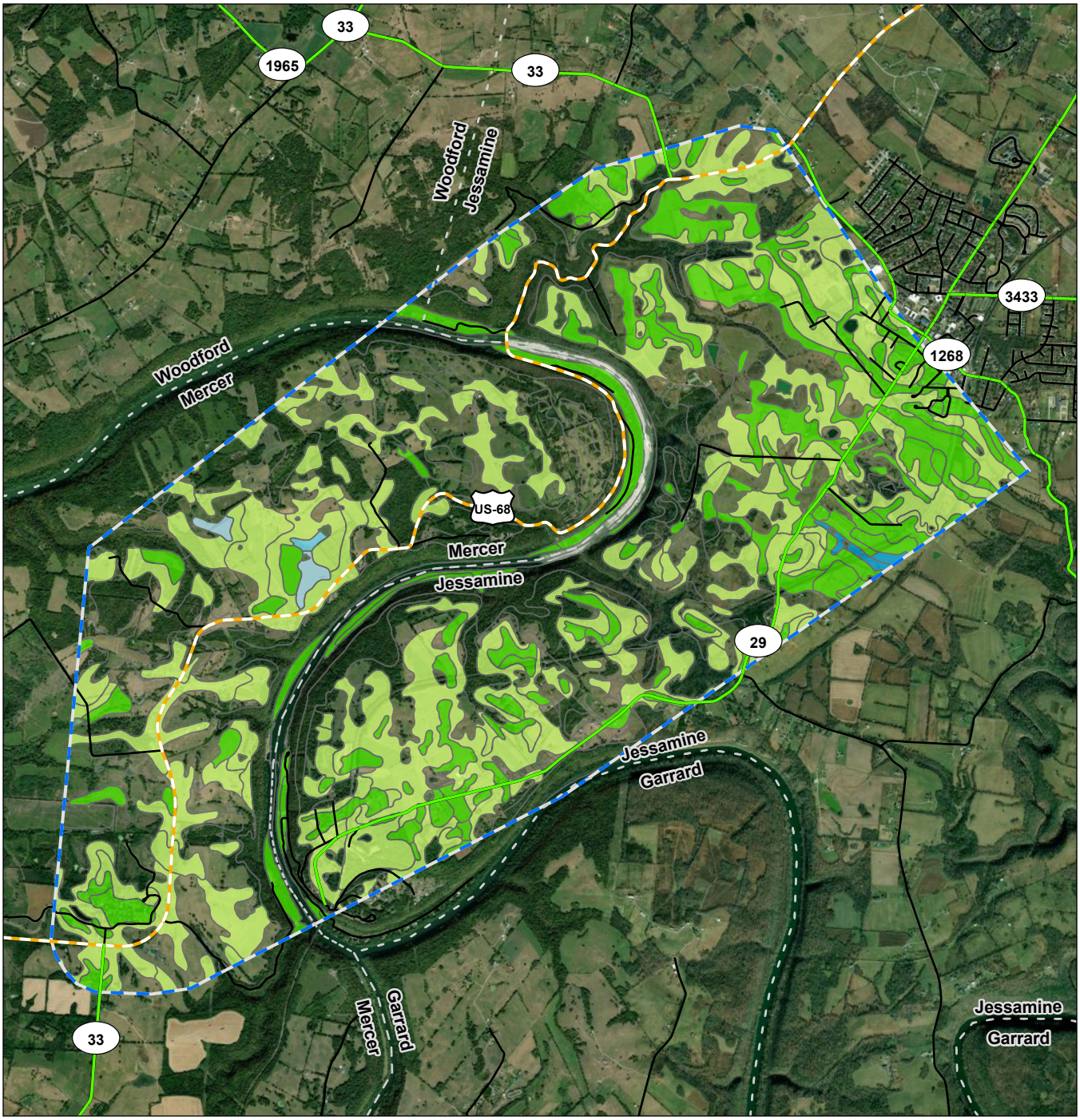
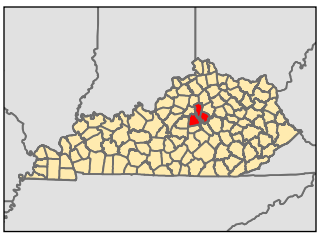
Environmental Overview

Figure No.
3

Title
Groundwater





Notes
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2. Data Sources: KYTC, Stantec, NRCS
3. Background: ESRI World Hybrid Imagery Layer

Legend
- Study Area
- US Highway
- Interstate*
- State Route
- Local Road
- Railroad

NRCS Soil Classification
Farmland Indicator
- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Not prime farmland

*No Features Within Data Frame

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Stantec

Project Location
Mercer, Jessamine,
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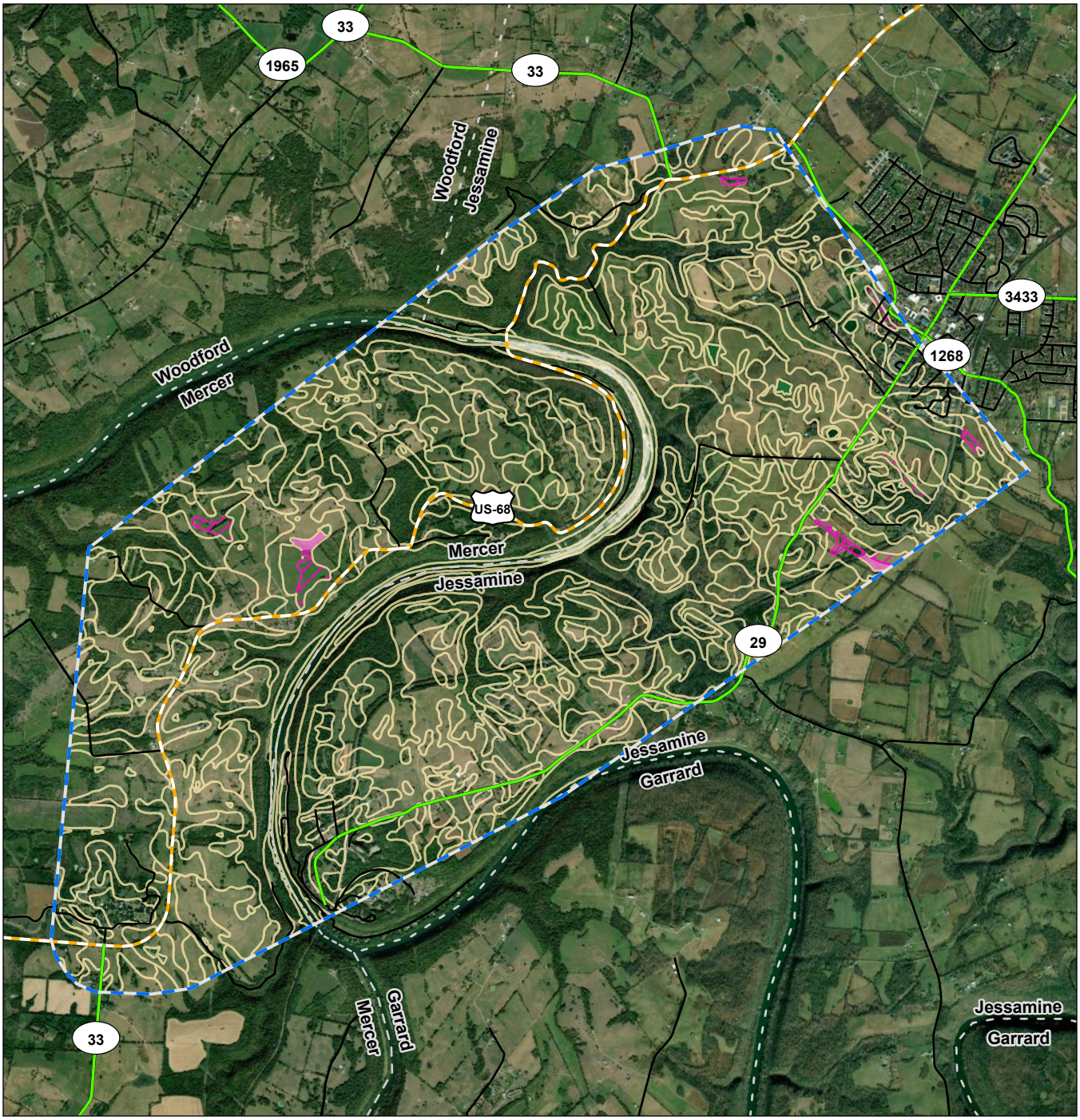
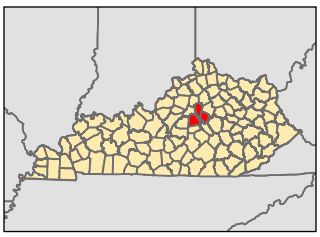
Environmental Overview

Figure No.
4

Title
Farmland Classification





Notes
1. Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
2. Data Sources: KYTC, Stantec, NRCS
3. Background: ESRI World Hybrid Imagery Layer

Legend
- Study Area
- US Highway
- Interstate*
- State Route
- Local Road
- Railroad

NRCS Soil Classification
- Predominantly Hydric
- Predominantly Non-Hydric
- Non-Hydric

*No Features Within Data Frame

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Stantec

Project Location
Mercer, Jessamine,
and Woodford County, Kentucky

Prepared by TCN on 2024-07-16
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178568101
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Item No. 7-80251: US 68 Corridor Study
Environmental Overview

Figure No.
5

Title
Hydric Soil Classification

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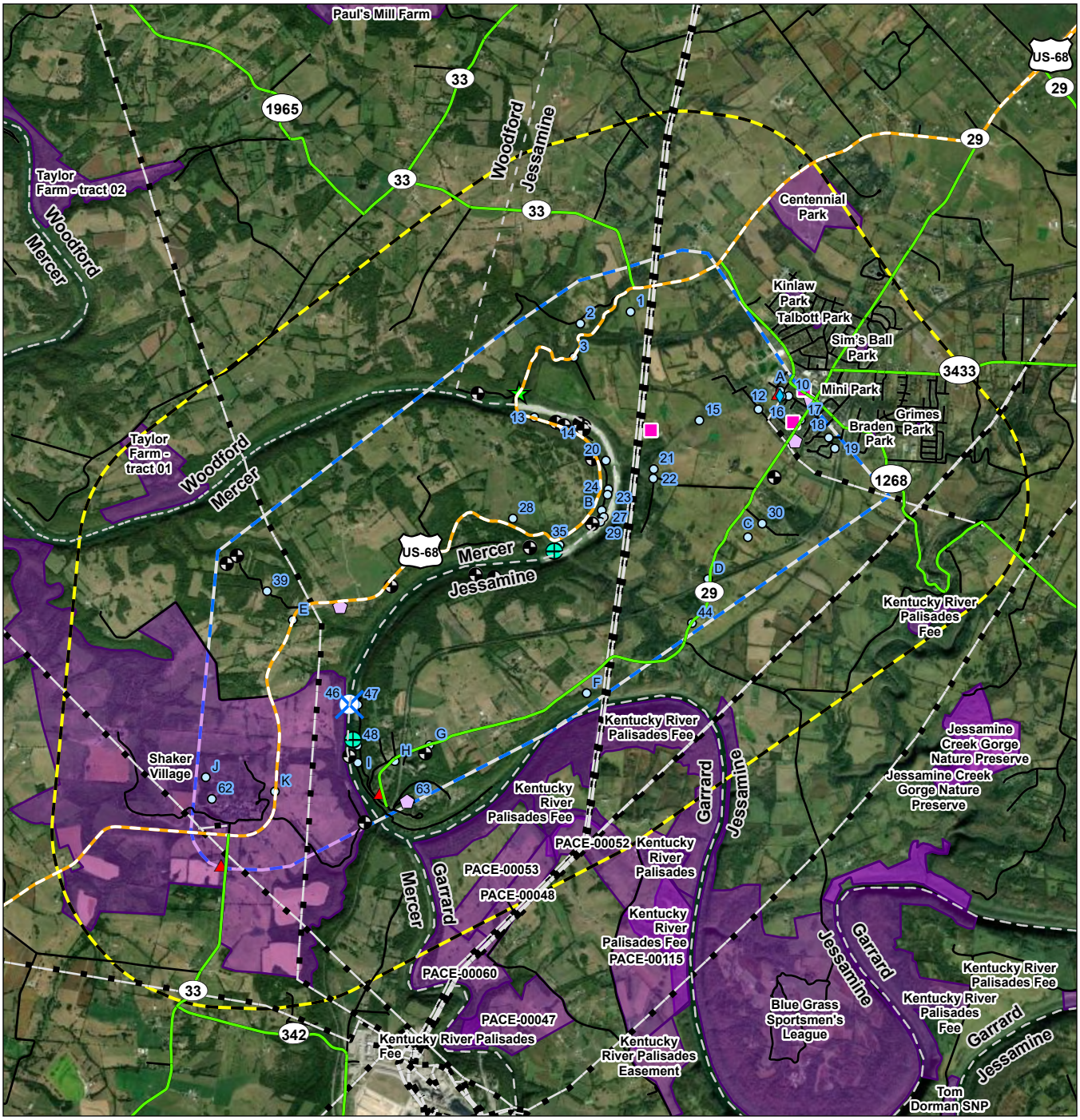

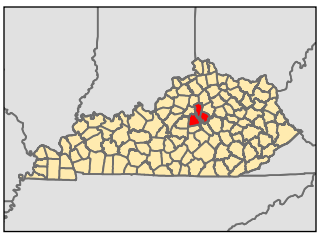

Notes
1. Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
2. Data Sources: KYTC, Stantec, Google, EDR, HIFLD, PADUS
3. Background: ESRI World Hybrid Imagery Layer

Legend
- Study Area
- 1-Mile Buffer
- US Highway
- Interstate*
- State Route
- Local Road
- Railroad
- Educational Facility
- Boone Tunnel
- Boat Ramp
- KY River L&D #7 / Mother Ann Lee Hydroelectric Station
- Water Treatment Plant
- Fire Department
- Protected Area
- Well
- Church
- EDR Site
- Electric Transmission Line

*No Features Within Data Frame

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(At original document size of 8.5x11)
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N

Stantec

Project Location
Mercer, Jessamine, and Woodford County, Kentucky

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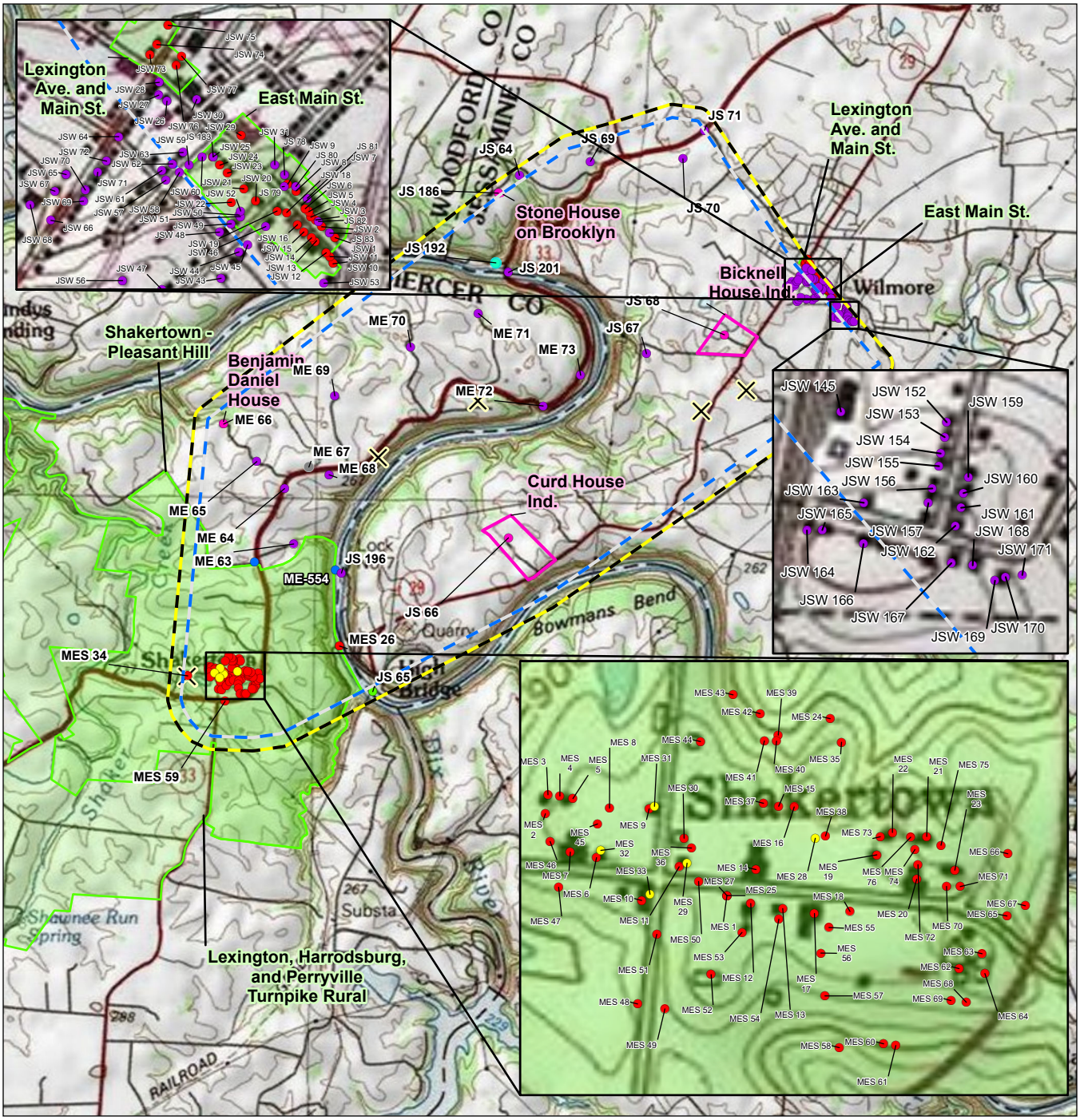
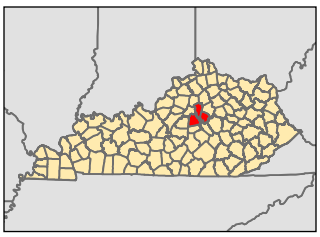
Client/Project 178568101
Kentucky Transportation Cabinet (KYTC)
Item No. 7-80251: US 68 Corridor Study
Environmental Overview

Figure No.
7

Title
Human Environment





Notes
1. Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
2. Data Sources: KYTC, Stantec, KHC
3. Background: USGS Topographic Map

Legend
- Study Area
- 500-Foot Buffer
- Cemetery
- NRHP Listed Property
- NRHP Listed Historic District
- Preliminary Resources

Status
- Demolished
- Determined Eligible
- N/R District Contrl. Site
- National Register
- Retired Number
- Undetermined

0 2,000 4,000 Feet
(At original document size of 8.5x11)
1:70,000

N

Stantec

Project Location
Mercer, Jessamine, and Woodford County, Kentucky

Prepared by TCN on 2024-07-16
TR by KC on 2024-07-18
IR by EM on 2024-07-18

Client/Project 178568101
Kentucky Transportation Cabinet (KYTC)
Item No. 7-80251: US 68 Corridor Study
Environmental Overview

Figure No.
9

Title
Historic Architecture Resources

C:\Users\tnewman\OneDrive - Stantec\GIS\Projects\KYTC\US68\US68.aprx Revised: 2024-08-26 By: tnewman

ATTACHMENTS

1. **Threatened and Endangered Species**
2. **Areas of Air Quality Concern in Kentucky**
3. **Kentucky Karst Potential Map**
4. **USDA Soil Resource Report**
5. **USGS Topographic Map**
6. **EDR Report** **(Provided in separate digital format due to size)**
7. **The Trails at Shaker Village, and Asbury Equine Center Trail Maps**

ATTACHMENT 1

Threatened and Endangered Species

a. USFWS IPaC Trust Resource Report
b. USFWS Map of Known Northern Long-eared Bat Habitat
c. USFWS Map of Known Indiana Bat Habitat
d. KDFWR Federal-Listed Species, Jessamine and Mercer Counties
e. KDFWR State-Listed Species, Jessamine and Mercer Counties
f. OKNP Natural Heritage Database Response (For Internal Use Only. Not for Public Release.)
g. KSS database response (For Internal Use Only. Not for Public Release.)
h. Blue Water Trail Map, Kentucky River Pool 6

Attachment 1a.
USFWS IPaC Trust Resource Report

IPaC **U.S. Fish & Wildlife Service**

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

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 species[1] 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 Fisheries[2]).

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.

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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 *Myotis grisescens* 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 *Myotis sodalis* Wherever found This species only needs to be considered if any of the following conditions apply: • The project area includes known 'summer 2' habitat. • 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 *Myotis septentrionalis* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Clams

NAME	STATUS
Clubshell *Pleurobema clava* No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3789	Endangered

Fanshell Cyprogenia stegaria — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4822

Longsolid Fusconaia subrotunda — Threatened
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

Salamander Mussel Simpsonaias ambigua — Proposed Endangered
Wherever found
There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6208

Sheepnose Mussel Plethobasus cyphyus — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6903

Insects

NAME	STATUS

Monarch Butterfly Danaus plexippus — Candidate
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Flowering Plants

NAME	STATUS

Short's Bladderpod Physaria globosa — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/7206

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[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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 conservation 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

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

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.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

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 year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

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

1. 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.
2. 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.
3. 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.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

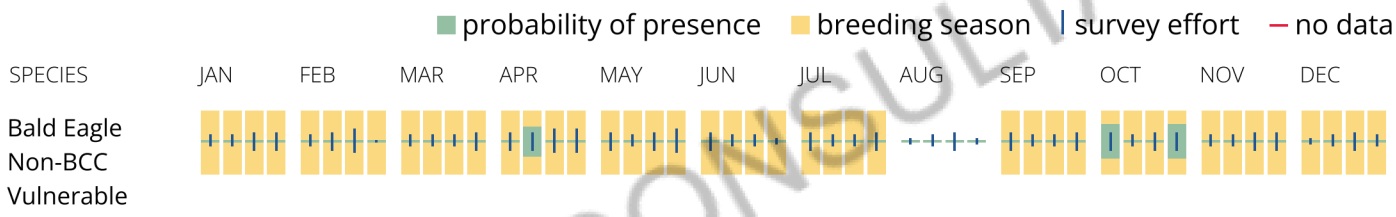
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

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.



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 a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

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

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

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) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle 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, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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 conservation 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

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your

list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

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.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Black-billed Cuckoo *Coccyzus erythropthalmus* 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 *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Cerulean Warbler *Setophaga cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 23 to Jul 20
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Field Sparrow *Spizella pusilla* 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

Grasshopper Sparrow Ammodramus savannarum perpallidus — Breeds Jun 1 to Aug 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8329

Henslow's Sparrow Centronyx henslowii — Breeds May 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3941

Kentucky Warbler Geothlypis formosa — Breeds Apr 20 to Aug 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Prairie Warbler Setophaga discolor — Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prothonotary Warbler Protonotaria citrea — Breeds Apr 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird Euphagus carolinus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Semipalmated Sandpiper Calidris pusilla — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

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 year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

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

1. 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.
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3. 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.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

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. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

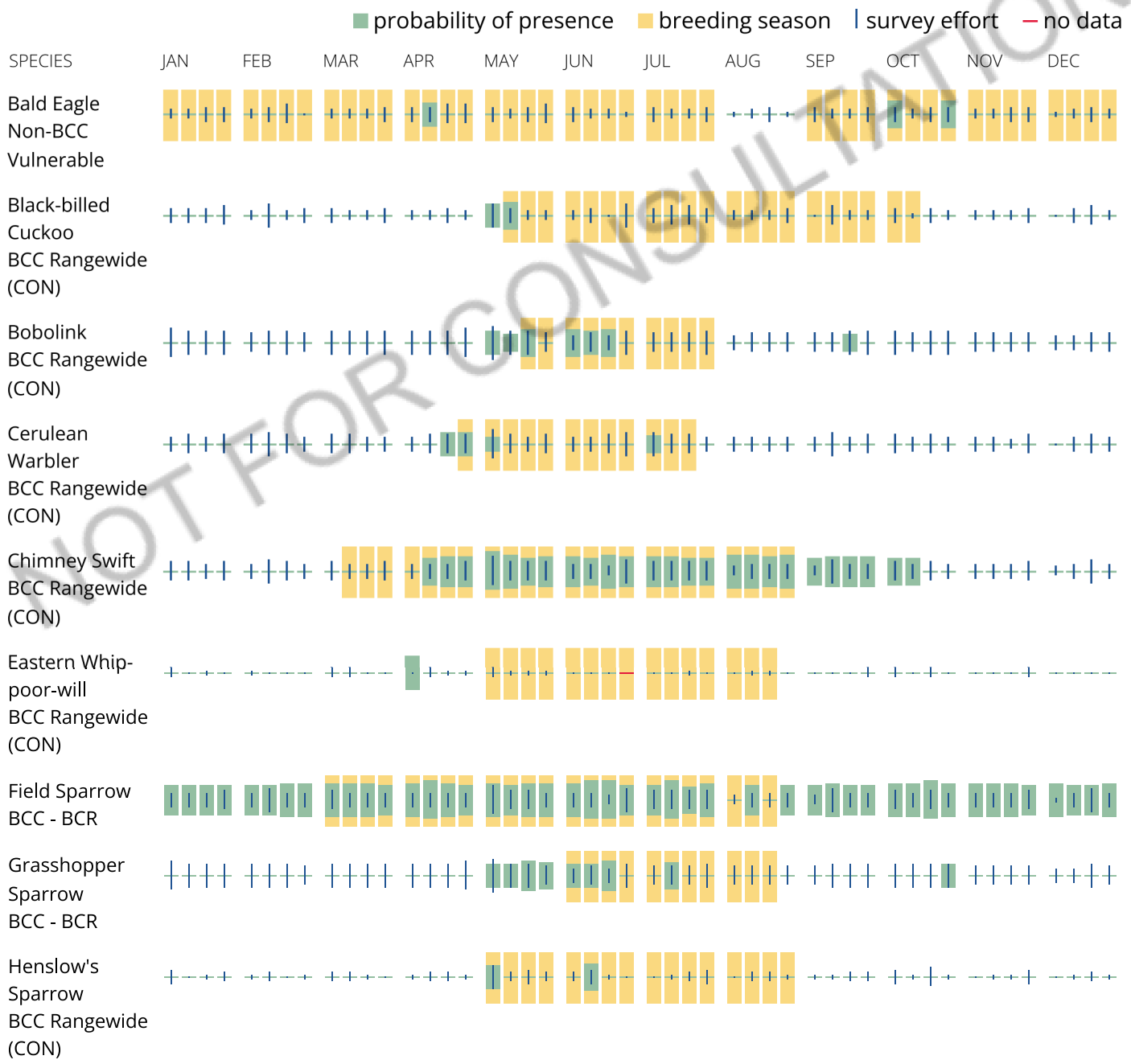
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

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.



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

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding 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 USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

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) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle 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, please visit the Rapid Avian Information Locator (RAIL) Tool.

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 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 year-round), you may query your location using the RAIL Tool and look at 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 migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, 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);
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 Eagle 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 try 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 eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

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.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

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 also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). 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 is not perfect; 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 helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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.

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 tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

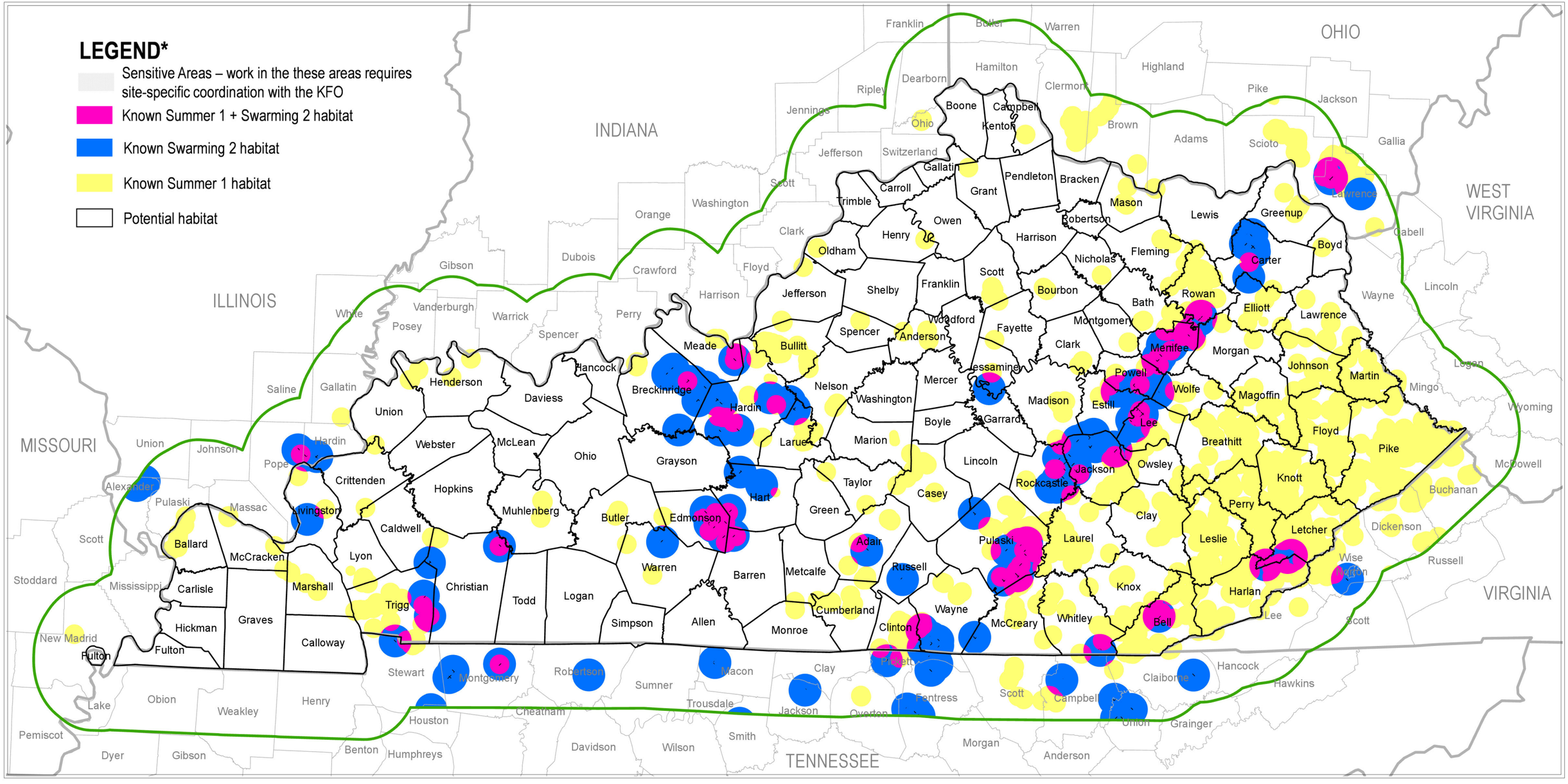
Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, 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.

Attachment 1b.

USFWS Map of Known Northern Long-eared Bat Habitat

U.S. Fish & Wildlife Service

Known northern long-eared bat habitat in Kentucky and within 20 miles (August 2019)



NOTE: This map is based on species occurrence information and is subject to change as new data become available. Please contact our office at 502/695-0468 to ensure you are working with the most current version.
*For an explanation of terms, please see the Conservation Strategy for Forest-Dwelling Bats in the Commonwealth of Kentucky.

0 10 20 40 60 80 100 Miles

The USFWS makes no warranty for use of this map and cannot be held liable for actions or decisions based on map content. This map was produced as an appendix to the Conservation Strategy for Forest-Dwelling Bats in the Commonwealth of Kentucky and should only be used in the context of this Strategy.

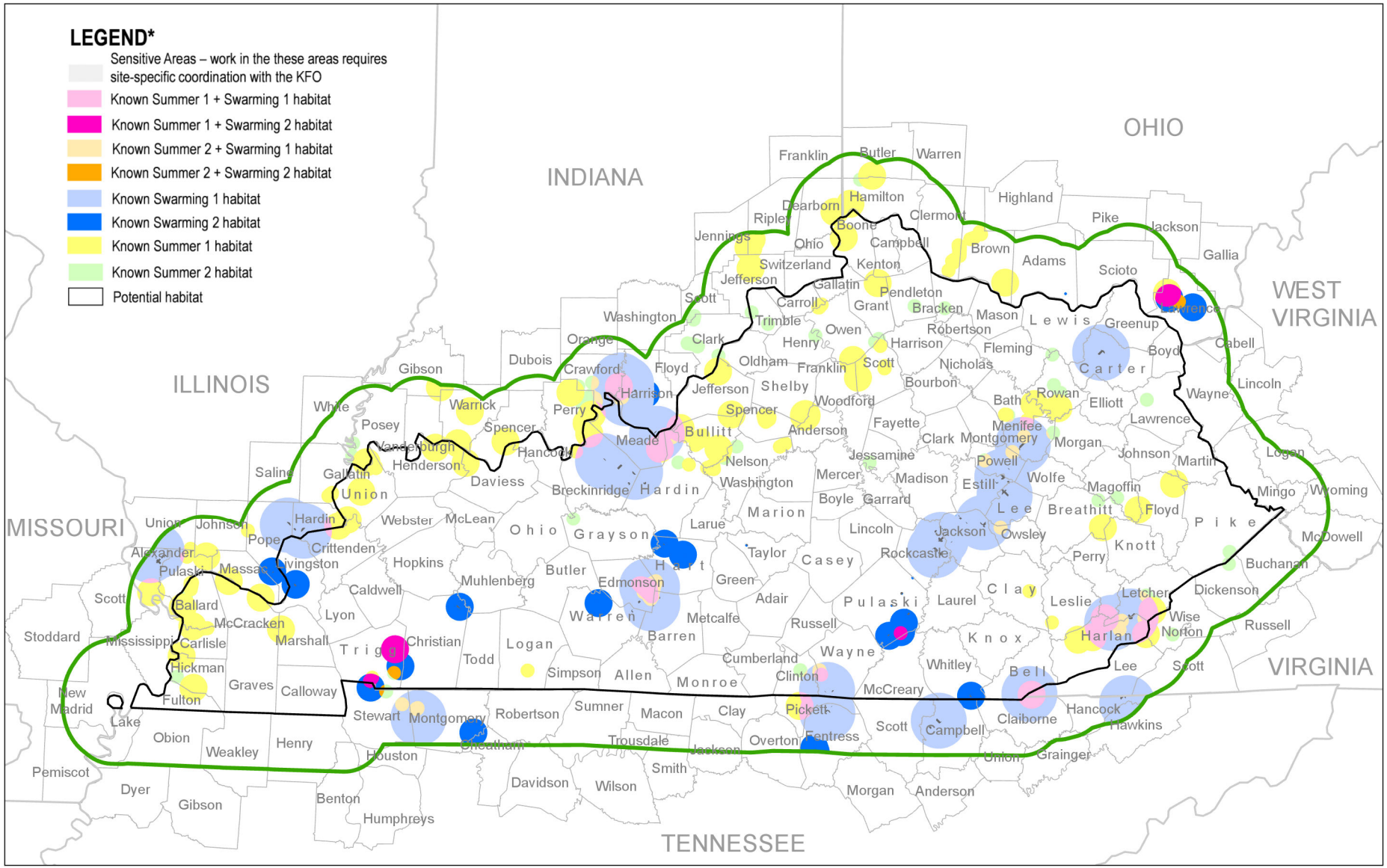
N

Attachment 1c.

USFWS Map of Known Indiana Bat Habitat

U.S. Fish & Wildlife Service

Known Indiana bat habitat in Kentucky and within 20 miles (August 2019)



NOTE: This map is based on species occurrence information and is subject to change as new data becomes available. Please contact our office at 502-695-0468 to ensure you are working with the most current version.

*For an explanation of terms, please see the Conservation Strategy for Forest-Dwelling Bats in the Commonwealth of Kentucky.

0 100 Miles

0 100 Kilometers

The USFWS makes no warranty for use of this map and cannot be held liable for actions or decisions based on map content. This map was produced as an appendix to the Conservation Strategy for Forest-Dwelling Bats in the Commonwealth of Kentucky and should only be used in the context of this Strategy.

Datum: NAD 83

Attachment 1d.

KDFWR Federal-Listed Species, Jessamine and Mercer Counties

Species Information

Federal Threatened, Endangered, and Candidate Species observations for selected counties

Linked life history provided courtesy of NatureServe Explorer .
Records may include both recent and historical observations.
US Status Definitions Kentucky Status Definitions

List Federal Threatened, Endangered, and Candidate Species observations in 2 selected counties.
Selected counties are: Jessamine, Mercer.

Scientific Name and Life History	Common Name and Pictures	Class	County	US Status	KY Status	WAP	Reference
Cyprogenia stegaria	Fanshell	Bivalvia	Jessamine	E	E	Yes	Reference
Danaus plexippus plexippus	Monarch	Insecta	Jessamine	C	N	Yes	Reference
Danaus plexippus plexippus	Monarch	Insecta	Mercer	C	N	Yes	Reference
Myotis grisescens	Gray Myotis	Mammalia	Mercer	E	T	Yes	Reference
Myotis grisescens	Gray Myotis	Mammalia	Jessamine	E	T	Yes	Reference
Myotis septentrionalis	Northern Long-Eared Bat	Mammalia	Jessamine	E	E	Yes	Reference
Myotis sodalis	Indiana Bat	Mammalia	Jessamine	E	E	Yes	Reference
Perimyotis subflavus	Tricolored Bat	Mammalia	Jessamine	PE	T	Yes	Reference
Perimyotis subflavus	Tricolored Bat	Mammalia	Mercer	PE	T	Yes	Reference
Theliderma cylindrica	Rabbitsfoot	Bivalvia	Jessamine	T	E	Yes	Reference

10 species are listed

Attachment 1e.

KDFWR State-Listed Species, Jessamine and Mercer Counties

Species Information

State Threatened, Endangered, and Special Concern Species observations for selected counties

Linked life history provided courtesy of NatureServe Explorer .
Records may include both recent and historical observations.
US Status Definitions Kentucky Status Definitions

List State Threatened, Endangered, and Special Concern Species observations in 2 selected counties.
Selected counties are: Jessamine, Mercer.

Scientific Name and Life History	Common Name and Pictures	Class	County	US Status	KY Status	WAP	Reference
Accipiter striatus	Sharp-shinned Hawk	Aves	Jessamine	N	S	Yes	Reference
Accipiter striatus	Sharp-shinned Hawk	Aves	Mercer	N	S	Yes	Reference
Actitis macularius	Spotted Sandpiper	Aves	Mercer	N	E	Yes	Reference
Actitis macularius	Spotted Sandpiper	Aves	Jessamine	N	E	Yes	Reference
Alasmidonta viridis	Slippershell Mussel	Bivalvia	Jessamine	N	S	Yes	Reference
Alasmidonta viridis	Slippershell Mussel	Bivalvia	Mercer	N	S	Yes	Reference
Anodontoides ferussacianus	Cylindrical Papershell	Bivalvia	Mercer	N	S	Yes	Reference
Ardea alba	Great Egret	Aves	Mercer	N	T	Yes	Reference
Ardea alba	Great Egret	Aves	Jessamine	N	T	Yes	Reference
Asio flammeus	Short-eared Owl	Aves	Jessamine	N	E	Yes	Reference
Bartramia longicauda	Upland Sandpiper	Aves	Mercer	N	H	Yes	Reference
Callophrys irus	Frosted Elfin	Insecta	Mercer	N	E	Yes	Reference

Centronyx henslowii	Henslow's Sparrow	Aves	Jessamine	N	S	Yes	Reference
Centronyx henslowii	Henslow's Sparrow	Aves	Mercer	N	S	Yes	Reference
Certhia americana	Brown Creeper	Aves	Jessamine	N	T		Reference
Certhia americana	Brown Creeper	Aves	Mercer	N	T		Reference
Chondestes grammacus	Lark Sparrow	Aves	Mercer	N	S		Reference
Chondestes grammacus	Lark Sparrow	Aves	Jessamine	N	S		Reference
Circus hudsonius	Northern Harrier	Aves	Jessamine	N	T	Yes	Reference
Circus hudsonius	Northern Harrier	Aves	Mercer	N	T	Yes	Reference
Cistothorus stellaris	Sedge Wren	Aves	Jessamine	N	S	Yes	Reference
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	Mammalia	Jessamine	N	S	Yes	Reference
Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender	Amphibia	Jessamine	N	S	Yes	Reference
Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender	Amphibia	Mercer	N	S	Yes	Reference
Cyprogenia stegaria	Fanshell	Bivalvia	Jessamine	E	E	Yes	Reference
Dolichonyx oryzivorus	Bobolink	Aves	Jessamine	N	S	Yes	Reference
Dolichonyx oryzivorus	Bobolink	Aves	Mercer	N	S	Yes	Reference
Egretta caerulea	Little Blue Heron	Aves	Mercer	N	E		Reference
Elliptio crassidens	Elephantear	Bivalvia	Jessamine	N	S	Yes	Reference
Empidonax minimus	Least Flycatcher	Aves	Mercer	N	E	Yes	Reference
Empidonax minimus	Least Flycatcher	Aves	Jessamine	N	E	Yes	Reference
Falco peregrinus	Peregrine Falcon	Aves	Jessamine	N	E	Yes	Reference

Fulica americana	American Coot	Aves	Mercer	N	E		Reference
Fulica americana	American Coot	Aves	Jessamine	N	E		Reference
Haliaeetus leucocephalus	Bald Eagle	Aves	Jessamine	N	S	Yes	Reference
Haliaeetus leucocephalus	Bald Eagle	Aves	Mercer	N	S	Yes	Reference
Ictiobus niger	Black Buffalo	Actinopterygii	Mercer	N	S	Yes	Reference
Junco hyemalis	Dark-eyed Junco	Aves	Mercer	N	S		Reference
Junco hyemalis	Dark-eyed Junco	Aves	Jessamine	N	S		Reference
Lanius ludovicianus	Loggerhead Shrike	Aves	Jessamine	N	S	Yes	Reference
Lanius ludovicianus	Loggerhead Shrike	Aves	Mercer	N	S	Yes	Reference
Lithobates pipiens	Northern Leopard Frog	Amphibia	Mercer	N	S	Yes	Reference
Lithobates pipiens	Northern Leopard Frog	Amphibia	Jessamine	N	S	Yes	Reference
Lophodytes cucullatus	Hooded Merganser	Aves	Jessamine	N	T	Yes	Reference
Lophodytes cucullatus	Hooded Merganser	Aves	Mercer	N	T	Yes	Reference
Mustela nivalis	Least Weasel	Mammalia	Jessamine	N	S	Yes	Reference
Mustela nivalis	Least Weasel	Mammalia	Mercer	N	S	Yes	Reference
Myotis grisescens	Gray Myotis	Mammalia	Mercer	E	T	Yes	Reference
Myotis grisescens	Gray Myotis	Mammalia	Jessamine	E	T	Yes	Reference
Myotis leibii	Eastern Small-footed Myotis	Mammalia	Jessamine	N	T	Yes	Reference
Myotis leibii	Eastern Small-footed Myotis	Mammalia	Mercer	N	T	Yes	Reference

Myotis septentrionalis	Northern Long-Eared Bat	Mammalia	Jessamine	E	E	Yes	Reference
Myotis sodalis	Indiana Bat	Mammalia	Jessamine	E	E	Yes	Reference
Nycticorax nycticorax	Black-crowned Night-heron	Aves	Jessamine	N	T	Yes	Reference
Pandion haliaetus	Osprey	Aves	Mercer	N	S	Yes	Reference
Passerculus sandwichensis	Savannah Sparrow	Aves	Mercer	N	S	Yes	Reference
Passerculus sandwichensis	Savannah Sparrow	Aves	Jessamine	N	S	Yes	Reference
Perimyotis subflavus	Tricolored Bat	Mammalia	Jessamine	PE	T	Yes	Reference
Perimyotis subflavus	Tricolored Bat	Mammalia	Mercer	PE	T	Yes	Reference
Phalacrocorax auritus	Double-crested Cormorant	Aves	Jessamine	N	S		Reference
Phalacrocorax auritus	Double-crested Cormorant	Aves	Mercer	N	S		Reference
Pheucticus ludovicianus	Rose-breasted Grosbeak	Aves	Mercer	N	S		Reference
Pheucticus ludovicianus	Rose-breasted Grosbeak	Aves	Jessamine	N	S		Reference
Podilymbus podiceps	Pied-billed Grebe	Aves	Jessamine	N	E	Yes	Reference
Podilymbus podiceps	Pied-billed Grebe	Aves	Mercer	N	E	Yes	Reference
Pooecetes gramineus	Vesper Sparrow	Aves	Mercer	N	E		Reference
Pseudanophthalmus abditus	Concealed Cave Beetle	Insecta	Jessamine	N	H		Reference
Pseudanophthalmus elongatus	A Cave Obligate Beetle	Insecta	Mercer	N	H		Reference
Pseudanophthalmus puteanus	Old Well Cave Beetle	Insecta	Mercer	N	T	Yes	Reference

Riparia riparia	Bank Swallow	Aves	Mercer	N	S	Yes	Reference
Setophaga fusca	Blackburnian Warbler	Aves	Mercer	N	T		Reference
Setophaga fusca	Blackburnian Warbler	Aves	Jessamine	N	T		Reference
Sitta canadensis	Red-breasted Nuthatch	Aves	Jessamine	N	E		Reference
Sitta canadensis	Red-breasted Nuthatch	Aves	Mercer	N	E		Reference
Spatula clypeata	Northern Shoveler	Aves	Mercer	N	E		Reference
Spatula clypeata	Northern Shoveler	Aves	Jessamine	N	E		Reference
Spatula discors	Blue-winged Teal	Aves	Jessamine	N	T		Reference
Spatula discors	Blue-winged Teal	Aves	Mercer	N	T		Reference
Sternula antillarum athalassos	Interior Least Tern	Aves	Mercer	N	E	Yes	Reference
Theliderma cylindrica	Rabbitsfoot	Bivalvia	Jessamine	T	E	Yes	Reference
Thryomanes bewickii	Bewick's Wren	Aves	Mercer	N	H	Yes	Reference
Thryomanes bewickii	Bewick's Wren	Aves	Jessamine	N	H	Yes	Reference
Tyto alba	Barn Owl	Aves	Jessamine	N	S	Yes	Reference
Tyto alba	Barn Owl	Aves	Mercer	N	S	Yes	Reference
Vermivora chrysoptera	Golden-winged Warbler	Aves	Mercer	N	E	Yes	Reference

90 species are listed

Attachment 1f.

OKNP Natural Heritage Database Response
(For Internal Use Only. Not for Public Release.)

Attachment 1g.

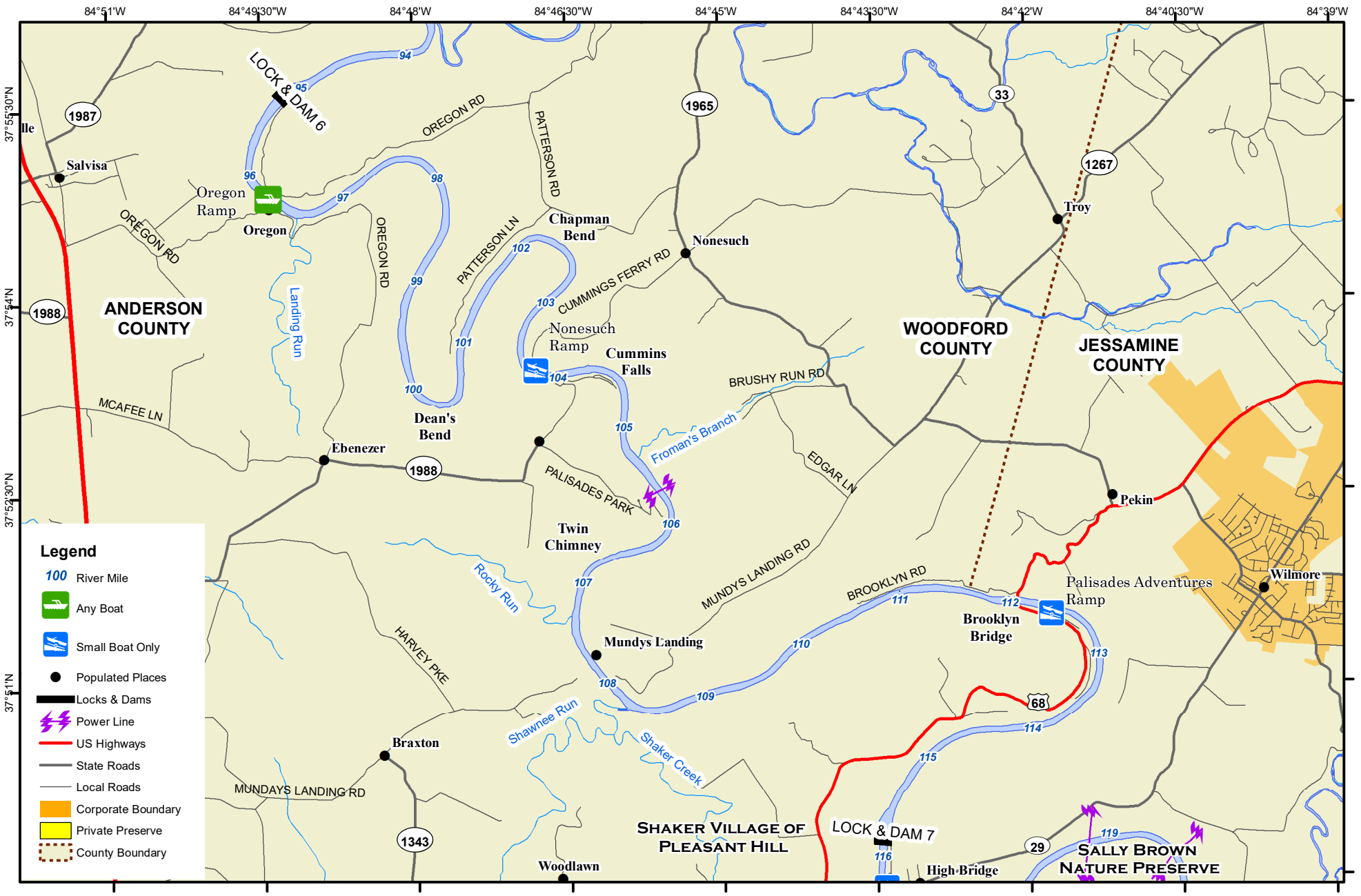
KSS database response

(For Internal Use Only. Not for Public Release.)

Attachment 1h.

Blue Water Trail Map, Kentucky River Pool 6

Blue Water Trails: Kentucky River Pool 6



Legend

- 100 River Mile
- Any Boat
- Small Boat Only
- Populated Places
- Locks & Dams
- Power Line
- US Highways
- State Roads
- Local Roads
- Corporate Boundary
- Private Preserve
- County Boundary

Ramp to Ramp Distances

Nonesuch Ramp to Oregon Ramp = 7.5 m
Palisade's Adventures to Nonesuch Ramp = 9 m

0 0.5 1 2 Miles

Map prepared by Kentucky Department of Fish & Wildlife Resources
Publication Date: May 8, 2018

NOTICE TO BOATERS:

Public access to Kentucky River Pool 6 is at the following locations: Palisades Adventures Ramp, Nonesuch Ramp, and Oregon Ramp

ATTACHMENT 2

Areas of Air Quality Concern in Kentucky

Areas of Air Quality Concern in KY

2015 8-hour ozone:**

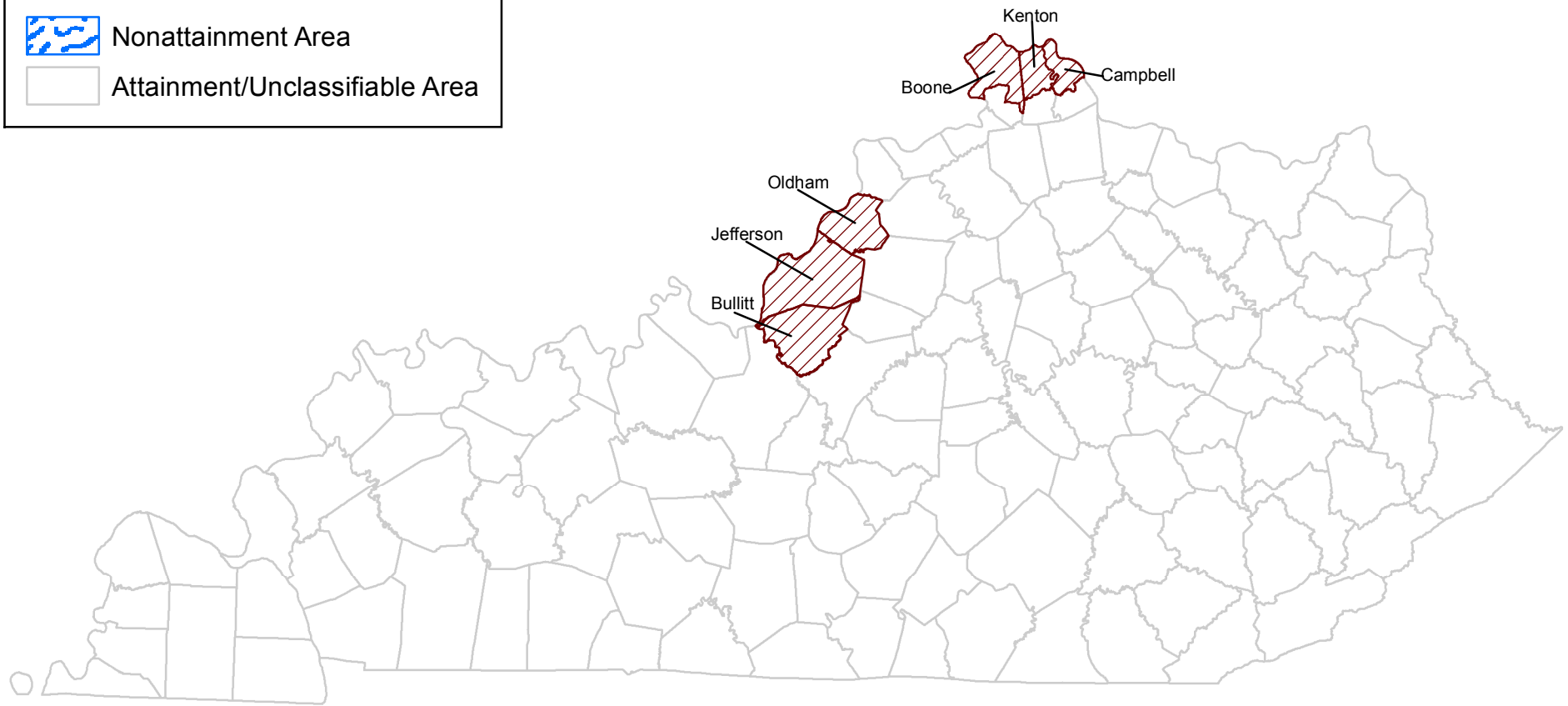
Nonattainment Area

Attainment/Unclassifiable Area

2012 PM2.5:

Nonattainment Area

Attainment/Unclassifiable Area



**The 2015 8-hour ozone NAAQS includes the counties of Jefferson, Oldham, Bullitt, and partial counties of Boone, Kenton, and Campbell .

As of March 2019

KENTUCKY'S AIR QUALITY DESIGNATIONS FOR TRANSPORTATION CONFORMITY PURPOSES (Updated 03/15/2019)						
AIRSHEDS	**1-Hour Ozone Vacated (1979 NAAQS)**	**8-Hour Ozone Vacated (1997 NAAQS)**	**8-Hour Ozone Implemented (2008 NAAQS)**	**8-Hour Ozone Implemented (2015 NAAQS)**	**$PM_{2.5}$ Annual Vacated (1997 NAAQS)**	**$PM_{2.5}$ Annual Implemented (2012 NAAQS)**
Cincinnati - Hamilton (OH, KY, IN)						
Boone Co, KY*	Vacated	Vacated	Maintenance (P)	Nonattainment (P)	Vacated	Attainment/Unclassifiable
Campbell Co, KY*	Vacated	Vacated	Maintenance (P)	Nonattainment (P)	Vacated	Attainment/Unclassifiable
Kenton Co, KY*	Vacated	Vacated	Maintenance (P)	Nonattainment (P)	Vacated	Attainment/Unclassifiable
Louisville (KY, IN)						
Bullitt Co, KY*	Vacated (P)	Vacated	Attainment/Unclassifiable	Nonattainment	Vacated	Attainment/Unclassifiable
Jefferson Co, KY*	Vacated	Vacated	Attainment/Unclassifiable	Nonattainment	Vacated	Attainment/Unclassifiable
Oldham Co, KY*	Vacated (P)	Vacated	Attainment/Unclassifiable	Nonattainment	Vacated	Attainment/Unclassifiable
Huntington - Ashland (WV, KY)						
Boyd Co, KY*	N/A	Vacated	Attainment/Unclassifiable	Attainment/Unclassifiable	Vacated	Attainment/Unclassifiable
Greenup Co, KY**	Vacated (P)	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	Vacated	Attainment/Unclassifiable
Lawrence Co, KY**	N/A	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	Vacated (P)	Attainment/Unclassifiable
Clarksville - Hopkinsville (TN, KY)						
Christian Co, KY*	N/A	Vacated	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Muhlenberg, TN (P)	N/A	Vacated	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Lexington						
Fayette Co, KY*	Vacated	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Scott Co, KY*	Vacated	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Owensboro						
Daviess Co, KY*	Vacated	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Hancock Co, KY**	Vacated (P)	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Paducah						
Livingston Co, KY**	Vacated (P)	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Marshall Co, KY*	Vacated	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Other						
Edmondson, Co, KY*	Vacated	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
National Ambient Air Quality Standards (NAAQS), Particulate Matter (PM), Partial (P)						
(*) indicates entire counties eligible for CMAQ. (**) indicates partial counties eligible for CMAQ						

ATTACHMENT 3

Kentucky Karst Potential Map

KENTUCKY GEOLOGICAL SURVEY
James C. Cobb, State Geologist and Director
UNIVERSITY OF KENTUCKY, LEXINGTON

MAP AND CHART 33
Series XII, 2001

KARST OCCURRENCE IN KENTUCKY

Randall L. Paylor and
James C. Currens

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.

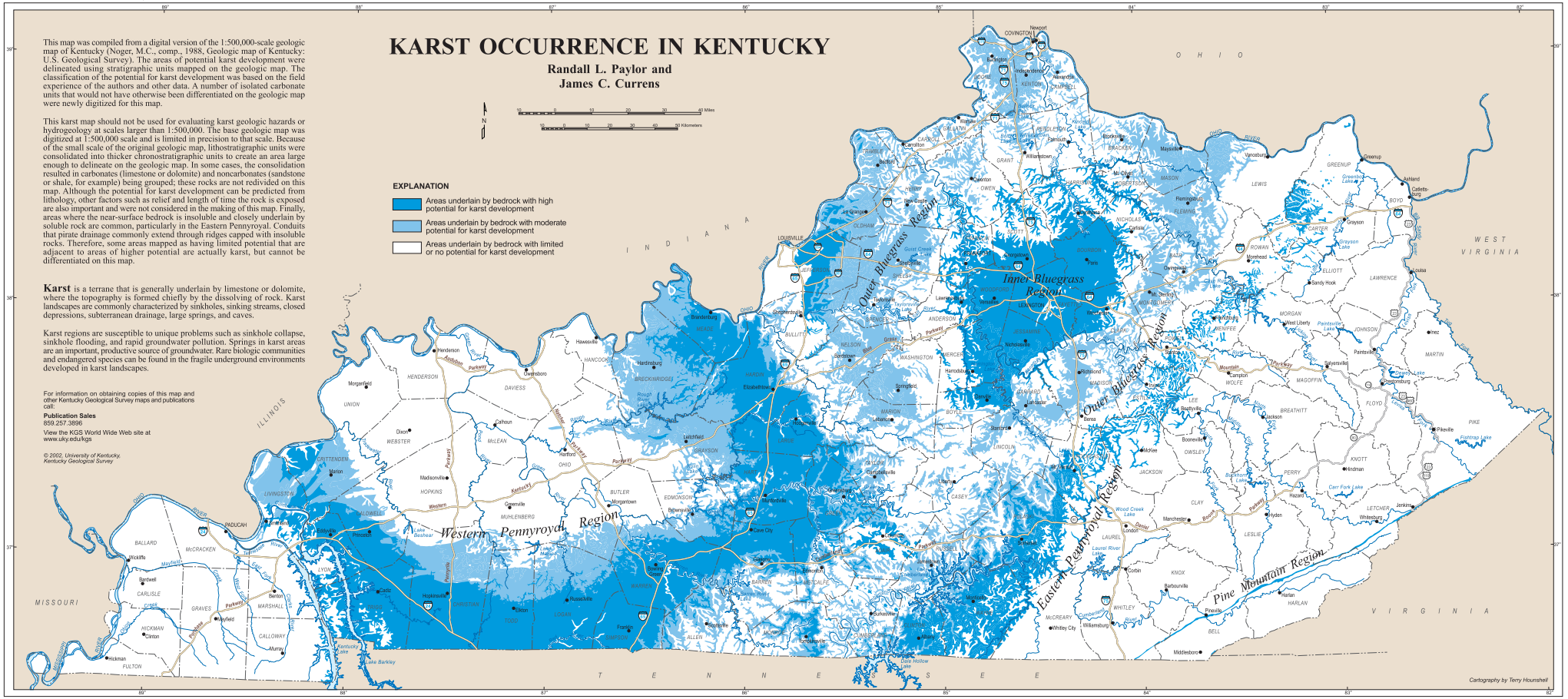
For information on obtaining copies of this map and other Kentucky Geological Survey maps and publications call:

Publication Sales
859.257.3896

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

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 4

USDA Soil Resource Report

United States Department of Agriculture

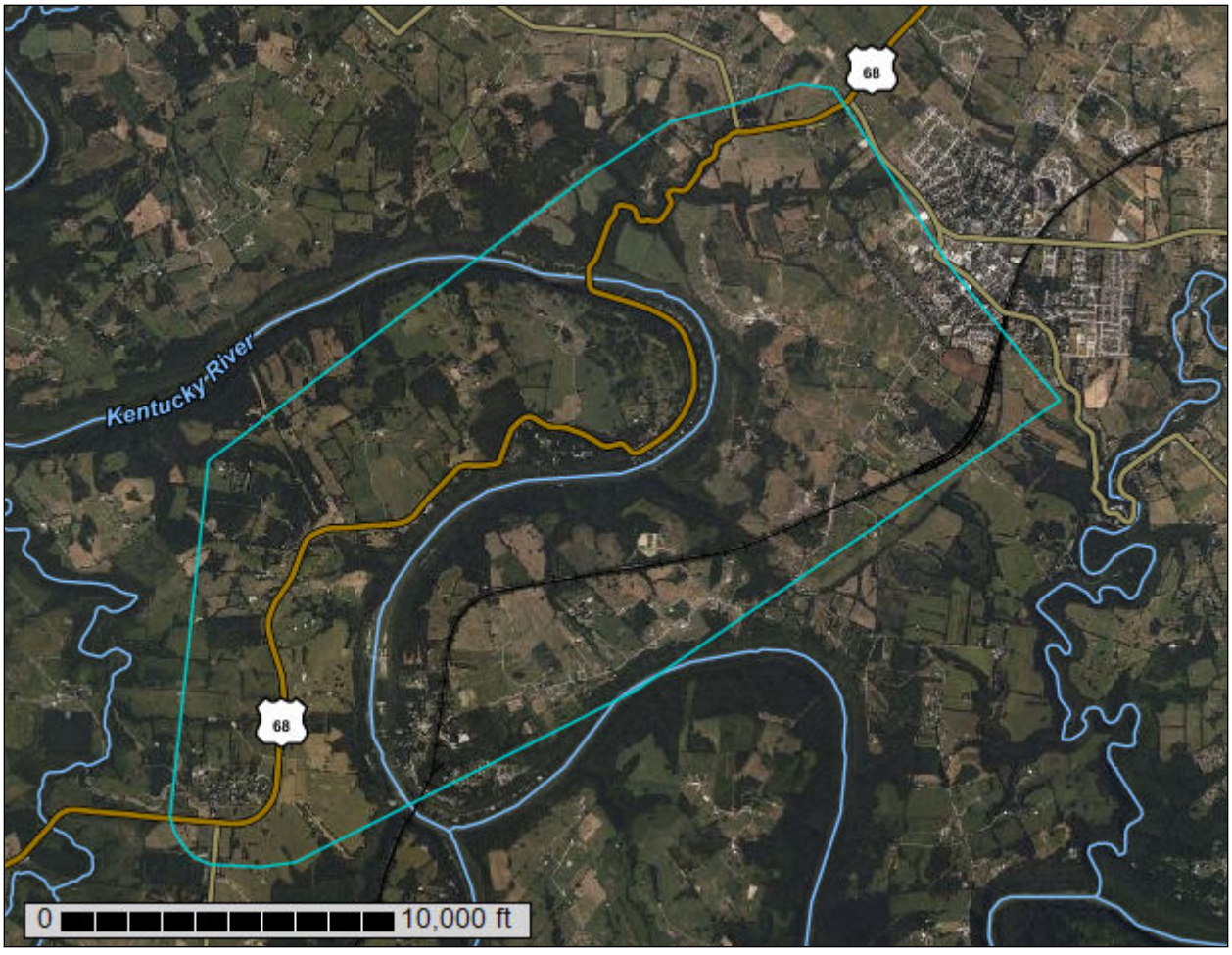
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Boyle and Mercer Counties, Kentucky, Garrard and Lincoln Counties, Kentucky, and Jessamine and Woodford Counties, Kentucky

US 68 Corridor Study; KYTC #7-80251



June 19, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

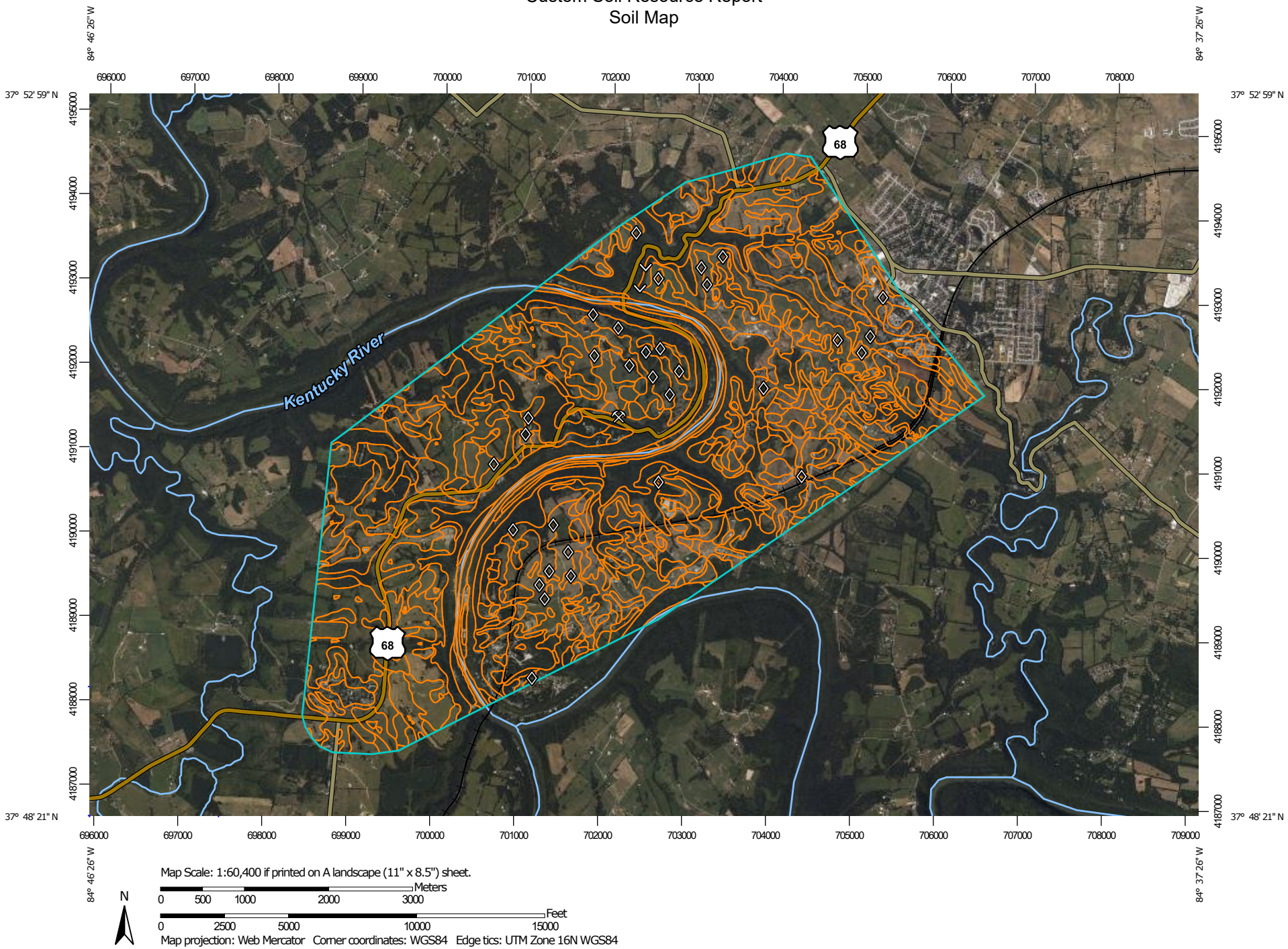
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Boyle and Mercer Counties, Kentucky
Survey Area Data: Version 19, Sep 10, 2023

Soil Survey Area: Garrard and Lincoln Counties, Kentucky
Survey Area Data: Version 18, Sep 10, 2023

Soil Survey Area: Jessamine and Woodford Counties, Kentucky
Survey Area Data: Version 19, Sep 10, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 8, 2019—Aug 11, 2019

MAP LEGEND

MAP INFORMATION

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CaB	Caleast silt loam, 2 to 6 percent slopes	8.5	0.1%
CaC	Caleast silt loam, 6 to 12 percent slopes	200.8	2.6%
CmB	Chenault gravelly silt loam, 2 to 6 percent slopes	4.6	0.1%
CmC	Chenault gravelly silt loam, 6 to 12 percent slopes	127.3	1.7%
CnD	Chenault-Caleast complex, 12 to 20 percent slopes	41.4	0.5%
Du	Dunning silty clay loam, 0 to 2 percent slopes, frequently flooded	5.9	0.1%
ErB	Elk silt loam, 2 to 6 percent slopes, rarely flooded	36.0	0.5%
FaC	Fairmount-Rock outcrop complex, 6 to 12 percent slopes	183.9	2.4%
FaD	Fairmount-Rock outcrop complex, 12 to 30 percent slopes	1,008.0	13.1%
FaF	Fairmount-Rock outcrop complex, 30 to 60 percent slopes	405.2	5.3%
McB	McAfee silt loam, 2 to 6 percent slopes	18.6	0.2%
McC	McAfee silt loam, 6 to 12 percent slopes	428.9	5.6%
McD	McAfee silt loam, 12 to 20 percent slopes	148.3	1.9%
MeD	McAfee-Rock outcrop complex, 12 to 20 percent slopes	99.6	1.3%
NhB	Nicholson silt loam, 2 to 6 percent slopes	61.5	0.8%
No	Nolin silt loam, 0 to 2 percent slopes, frequently flooded	23.7	0.3%
uBlmB	Bluegrass-Maury silt loams, 2 to 6 percent slopes	100.4	1.3%
uLfD	Lowell-Faywood silt loams, 12 to 20 percent slopes	69.2	0.9%
uMlmC	Maury-Bluegrass silt loams, 6 to 12 percent slopes	121.6	1.6%
W	Water	101.7	1.3%
Subtotals for Soil Survey Area		**3,195.1**	**41.7%**
Totals for Area of Interest		**7,669.3**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
W	Water	0.1	0.0%
Subtotals for Soil Survey Area		**0.1**	**0.0%**
Totals for Area of Interest		**7,669.3**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DoB	Donerail silt loam, 2 to 6 percent slopes	40.7	0.5%
EkB	Elk silt loam, 2 to 6 percent slopes	9.4	0.1%
EvB	Elk variant silt loam, 2 to 6 percent slopes	72.9	1.0%
FaC	Fairmount flaggy silty clay, 6 to 12 percent slopes	250.5	3.3%
FcE	Fairmount-Rock outcrop complex, 12 to 30 percent slopes	389.5	5.1%
FcF	Fairmount-Rock outcrop complex, 30 to 60 percent slopes	549.9	7.2%
FdB	Faywood silt loam, 2 to 6 percent slopes	69.4	0.9%
FdC	Faywood silt loam, 6 to 12 percent slopes	265.1	3.5%
FdE	Faywood silt loam, 12 to 30 percent slopes	162.6	2.1%
Hu	Huntington silt loam, 0 to 4 percent slopes, occasionally flooded	102.9	1.3%
Lc	Lawrence silt loam, 0 to 2 percent slopes	4.9	0.1%
Ld	Lindside silt loam, 0 to 2 percent slopes, occasionally flooded	17.4	0.2%
MnB	McAfee silt loam, 2 to 6 percent slopes	376.5	4.9%
MnC	McAfee silt loam, 6 to 12 percent slopes	1,038.2	13.5%
MnD	McAfee silt loam, 12 to 20 percent slopes	413.4	5.4%
MoC3	McAfee silty clay, 6 to 12 percent slopes, severely eroded	55.5	0.7%
MrD	McAfee-Rock outcrop complex, 6 to 20 percent slopes	60.9	0.8%
Mt	Melvin silt loam, 0 to 2 percent slopes, occasionally flooded	4.2	0.1%
Ne	Newark silt loam, 0 to 2 percent slopes, occasionally flooded	6.4	0.1%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
uAsB	Ashton silt loam, 2 to 6 percent slopes	2.6	0.0%
uAsrA	Ashton silt loam, 0 to 2 percent slopes, rarely flooded	1.1	0.0%
uAsrB	Ashton silt loam, 2 to 6 percent slopes, rarely flooded	18.5	0.2%
uBlmB	Bluegrass-Maury silt loams, 2 to 6 percent slopes	170.7	2.2%
uLbiB	Lowell-Bluegrass silt loams, 2 to 6 percent slopes	135.4	1.8%
uLfC	Lowell-Faywood silt loams, 6 to 12 percent slopes	96.9	1.3%
uMlmC	Maury-Bluegrass silt loams, 6 to 12 percent slopes	36.9	0.5%
W	Water	121.6	1.6%
Subtotals for Soil Survey Area		**4,473.8**	**58.3%**
Totals for Area of Interest		**7,669.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Boyle and Mercer Counties, Kentucky

CaB—Caleast silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: lhwz
Elevation: 480 to 1,360 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F
Frost-free period: 175 to 208 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Caleast and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Caleast

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 48 inches: clay
H3 - 48 to 53 inches: clay
R - 53 to 63 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Minor Components

Maury

Percent of map unit: 4 percent

Hydric soil rating: No

Sandview

Percent of map unit: 3 percent
Hydric soil rating: No

Mcafee

Percent of map unit: 3 percent
Hydric soil rating: No

Mcgary

Percent of map unit: 2 percent
Hydric soil rating: No

Chenault

Percent of map unit: 2 percent
Hydric soil rating: No

Fairmount

Percent of map unit: 1 percent
Hydric soil rating: No

CaC—Caleast silt loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: lhx0
Elevation: 480 to 1,360 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F
Frost-free period: 175 to 208 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Caleast and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Caleast

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 48 inches: clay
H3 - 48 to 53 inches: clay
R - 53 to 63 inches: unweathered bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Minor Components

Maury

Percent of map unit: 4 percent
Hydric soil rating: No

Mcafee

Percent of map unit: 3 percent
Hydric soil rating: No

Sandview

Percent of map unit: 3 percent
Hydric soil rating: No

Chenault

Percent of map unit: 2 percent
Hydric soil rating: No

Mcgary

Percent of map unit: 2 percent
Hydric soil rating: No

Fairmount

Percent of map unit: 1 percent
Hydric soil rating: No

CmB—Chenault gravelly silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: lhx6
Elevation: 480 to 1,360 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F

Frost-free period: 175 to 208 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chenault and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenault

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Old fine-loamy alluvium over clayey residuum weathered from limestone

Typical profile

H1 - 0 to 11 inches: gravelly silt loam
H2 - 11 to 41 inches: gravelly silty clay loam
H3 - 41 to 49 inches: gravelly clay
R - 49 to 59 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Minor Components

Mcafee

Percent of map unit: 3 percent
Hydric soil rating: No

Caleast

Percent of map unit: 3 percent
Hydric soil rating: No

Elk

Percent of map unit: 2 percent
Hydric soil rating: No

Woolper

Percent of map unit: 2 percent
Hydric soil rating: No

CmC—Chenault gravelly silt loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: lhx7
Elevation: 480 to 1,360 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F
Frost-free period: 175 to 208 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Chenault and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenault

Setting

Landform: Stream terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Old fine-loamy alluvium over clayey residuum weathered from limestone

Typical profile

H1 - 0 to 11 inches: gravelly silt loam
H2 - 11 to 41 inches: gravelly silty clay loam
H3 - 41 to 49 inches: gravelly clay
R - 49 to 59 inches: unweathered bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Minor Components

Caleast
Percent of map unit: 3 percent
Hydric soil rating: No

Chenault, grv-subsoil
Percent of map unit: 3 percent
Hydric soil rating: No

Mcafee
Percent of map unit: 2 percent
Hydric soil rating: No

Woolper
Percent of map unit: 1 percent
Hydric soil rating: No

Elk
Percent of map unit: 1 percent
Hydric soil rating: No

CnD—Chenault-Caleast complex, 12 to 20 percent slopes

Map Unit Setting
National map unit symbol: lhx8
Elevation: 480 to 1,360 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F
Frost-free period: 175 to 208 days
Farmland classification: Not prime farmland

Map Unit Composition
Chenault and similar soils: 65 percent
Caleast and similar soils: 30 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenault

Setting
Landform: Stream terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Old fine-loamy alluvium over clayey residuum weathered from limestone

Typical profile

H1 - 0 to 11 inches: gravelly silt loam
H2 - 11 to 41 inches: gravelly silty clay loam
H3 - 41 to 49 inches: gravelly clay
R - 49 to 59 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Description of Caleast

Setting

Landform: Stream terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 48 inches: clay
H3 - 48 to 53 inches: clay
R - 53 to 63 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F121XY006KY - Ordovician Limestone Upland

Hydric soil rating: No

Minor Components

Mcafee
Percent of map unit: 2 percent
Hydric soil rating: No

Woolper
Percent of map unit: 1 percent
Hydric soil rating: No

Elk
Percent of map unit: 1 percent
Hydric soil rating: No

Fairmount
Percent of map unit: 1 percent
Hydric soil rating: No

Du—Dunning silty clay loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting
National map unit symbol: 2wltb
Elevation: 510 to 1,040 feet
Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 41 to 68 degrees F
Frost-free period: 144 to 208 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition
Dunning, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunning, Frequently Flooded

Setting
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Clayey alluvium derived from limestone

Typical profile
Ap - 0 to 9 inches: silty clay loam
A - 9 to 15 inches: silty clay loam
Bg - 15 to 48 inches: silty clay
Cg - 48 to 96 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F121XY030KY - Poorly Drained & Very Poorly Drained Floodplain
Hydric soil rating: Yes

Minor Components

Melvin, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Newark, frequently flooded

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Nolin, frequently flooded

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

ErB—Elk silt loam, 2 to 6 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2slf3
Elevation: 380 to 1,110 feet

Mean annual precipitation: 36 to 66 inches
Mean annual air temperature: 40 to 68 degrees F
Frost-free period: 135 to 218 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Elk, rarely flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elk, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed fine-silty alluvium over mixed loamy alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
BA - 8 to 15 inches: silt loam
Bt - 15 to 46 inches: silty clay loam
2C - 46 to 80 inches: silty clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Minor Components

Otwood, rarely flooded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Lawrence, rarely flooded

Percent of map unit: 3 percent
Landform: Stream terraces

Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Nolin, occasionally flooded
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: No

FaC—Fairmount-Rock outcrop complex, 6 to 12 percent slopes

Map Unit Setting
National map unit symbol: lhxj
Elevation: 480 to 1,360 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F
Frost-free period: 175 to 208 days
Farmland classification: Not prime farmland

Map Unit Composition
Fairmount and similar soils: 75 percent
Rock outcrop: 10 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairmount

Setting
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile
H1 - 0 to 6 inches: flaggy silty clay loam
H2 - 6 to 14 inches: flaggy silty clay
R - 14 to 24 inches: unweathered bedrock

Properties and qualities
Slope: 6 to 12 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F121XY001KY - Shallow Limestone Residuum Backslopes
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Ridges
Landform position (three-dimensional): Free face
Parent material: Limestone

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Caleast

Percent of map unit: 3 percent
Hydric soil rating: No

Mcafee

Percent of map unit: 3 percent
Hydric soil rating: No

Faywood

Percent of map unit: 3 percent
Hydric soil rating: No

Lowell

Percent of map unit: 2 percent
Hydric soil rating: No

Chenault

Percent of map unit: 2 percent
Hydric soil rating: No

Eden

Percent of map unit: 2 percent
Hydric soil rating: No

FaD—Fairmount-Rock outcrop complex, 12 to 30 percent slopes

Map Unit Setting

National map unit symbol: lhxk
Elevation: 480 to 1,360 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F
Frost-free period: 175 to 208 days
Farmland classification: Not prime farmland

Map Unit Composition

Fairmount and similar soils: 65 percent
Rock outcrop: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairmount

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 6 inches: flaggy silty clay loam
H2 - 6 to 14 inches: flaggy silty clay
R - 14 to 24 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 30 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F121XY001KY - Shallow Limestone Residuum Backslopes
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills
Landform position (three-dimensional): Free face
Parent material: Limestone

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 3 percent
Hydric soil rating: No

Caleast

Percent of map unit: 3 percent
Hydric soil rating: No

Mcafee

Percent of map unit: 3 percent
Hydric soil rating: No

Faywood

Percent of map unit: 3 percent
Hydric soil rating: No

Eden

Percent of map unit: 2 percent
Hydric soil rating: No

Chenault

Percent of map unit: 1 percent
Hydric soil rating: No

FaF—Fairmount-Rock outcrop complex, 30 to 60 percent slopes

Map Unit Setting

National map unit symbol: 2vp3c
Elevation: 430 to 1,410 feet
Mean annual precipitation: 37 to 53 inches
Mean annual air temperature: 41 to 67 degrees F
Frost-free period: 144 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Fairmount and similar soils: 60 percent
Rock outcrop: 25 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairmount

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

A - 0 to 11 inches: flaggy silty clay
Bw - 11 to 17 inches: flaggy clay
R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F121XY001KY - Shallow Limestone Residuum Backslopes
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Free face
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Limestone

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 5 percent
Landform: Hills

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Cynthiana

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Eden

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

McB—McAfee silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2qmlp
Elevation: 500 to 1,060 feet
Mean annual precipitation: 37 to 53 inches
Mean annual air temperature: 41 to 66 degrees F
Frost-free period: 144 to 211 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Mcafee and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcafee

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile

Ap - 0 to 7 inches: silt loam
Bt1 - 7 to 16 inches: silty clay loam
Bt2 - 16 to 26 inches: silty clay
Bt3 - 26 to 32 inches: clay
R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Bluegrass

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Maury

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Faywood

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Lowell

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Fairmount

Percent of map unit: 1 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

McC—McAfee silt loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: lhy0
Elevation: 480 to 1,360 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F
Frost-free period: 175 to 208 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mcafee and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcafee

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 30 inches: clay
R - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 6 to 12 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Caleast

Percent of map unit: 5 percent
Hydric soil rating: No

Maury

Percent of map unit: 4 percent
Hydric soil rating: No

Fairmount

Percent of map unit: 3 percent
Hydric soil rating: No

Chenault

Percent of map unit: 2 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: No

McD—McAfee silt loam, 12 to 20 percent slopes

Map Unit Setting

National map unit symbol: lhy1
Elevation: 480 to 1,360 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F
Frost-free period: 175 to 208 days
Farmland classification: Not prime farmland

Map Unit Composition

Mcafee and similar soils: 85 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcafee

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 30 inches: clay
R - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Caleast

Percent of map unit: 5 percent
Hydric soil rating: No

Mcafee, gravelly

Percent of map unit: 4 percent
Hydric soil rating: No

Fairmount

Percent of map unit: 4 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: No

Chenault

Percent of map unit: 1 percent
Hydric soil rating: No

MeD—McAfee-Rock outcrop complex, 12 to 20 percent slopes

Map Unit Setting

National map unit symbol: lhy2
Elevation: 480 to 1,360 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F
Frost-free period: 175 to 208 days
Farmland classification: Not prime farmland

Map Unit Composition

Mcafee and similar soils: 60 percent
Rock outcrop: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcafee

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 30 inches: clay
R - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills
Landform position (three-dimensional): Free face
Parent material: Limestone

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Caleast

Percent of map unit: 8 percent
Hydric soil rating: No

Fairmount

Percent of map unit: 7 percent
Hydric soil rating: No

Gravelly clayey soil

Percent of map unit: 3 percent
Hydric soil rating: No

Loamy soils

Percent of map unit: 2 percent
Hydric soil rating: No

NhB—Nicholson silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2s2cz
Elevation: 460 to 1,140 feet
Mean annual precipitation: 35 to 59 inches
Mean annual air temperature: 42 to 68 degrees F
Frost-free period: 135 to 218 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Nicholson and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nicholson

Setting

Landform: Ridges
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty noncalcareous loess over clayey residuum weathered from limestone

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 28 inches: silt loam
Btx - 28 to 38 inches: silty clay loam
2Bt - 38 to 50 inches: clay
2C - 50 to 80 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 16 to 30 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 13 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F121XY023KY - Well Drained & Moderately Well Drained Fragipan Upland
Hydric soil rating: No

Minor Components

Lawrence

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Lowell

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

No—Nolin silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2s2cw
Elevation: 380 to 1,120 feet
Mean annual precipitation: 36 to 66 inches
Mean annual air temperature: 41 to 68 degrees F
Frost-free period: 139 to 218 days
Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Nolin, frequently flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nolin, Frequently Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed fine-silty alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
Bw - 8 to 72 inches: silt loam
C - 72 to 85 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F121XY033KY - Well Drained & Moderately Well Drained Floodplain
Hydric soil rating: No

Minor Components

Elk, rarely flooded
Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Newark, frequently flooded
Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lindside, frequently flooded
Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Dunning, frequently flooded
Percent of map unit: 1 percent
Landform: Depressions, flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Boonesboro, frequently flooded
Percent of map unit: 1 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

uBlmB—Bluegrass-Maury silt loams, 2 to 6 percent slopes

Map Unit Setting
National map unit symbol: 2zs52
Elevation: 500 to 1,160 feet
Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 46 to 65 degrees F
Frost-free period: 163 to 192 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Bluegrass and similar soils: 50 percent
Maury and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bluegrass

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty noncalcareous loess over clayey residuum weathered from phosphatic limestone

Typical profile

Ap - 0 to 12 inches: silt loam
Bt - 12 to 35 inches: silty clay loam
2Bt - 35 to 84 inches: silty clay loam
2BC - 84 to 96 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Description of Maury

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over clayey residuum weathered from phosphatic limestone

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 16 inches: silty clay loam
2Bt2 - 16 to 53 inches: clay
2BC - 53 to 100 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Mcafee

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Faywood

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Lowell

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear

Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Maury, moderately well drained
Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

uLfD—Lowell-Faywood silt loams, 12 to 20 percent slopes

Map Unit Setting
National map unit symbol: 2s2d7
Elevation: 450 to 1,080 feet
Mean annual precipitation: 36 to 61 inches
Mean annual air temperature: 41 to 68 degrees F
Frost-free period: 142 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition
Lowell and similar soils: 70 percent
Faywood and similar soils: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lowell

Setting
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone and shale

Typical profile
Ap - 0 to 8 inches: silt loam
Bt - 8 to 41 inches: silty clay
BC - 41 to 53 inches: silty clay
R - 53 to 63 inches: bedrock

Properties and qualities
Slope: 12 to 20 percent
Depth to restrictive feature: 40 to 57 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Description of Faywood

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 29 inches: silty clay
R - 29 to 39 inches: bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Minor Components

Cynthiana

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope

Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

uMlmC—Maury-Bluegrass silt loams, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2zs53
Elevation: 480 to 1,180 feet
Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 46 to 65 degrees F
Frost-free period: 163 to 192 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Maury and similar soils: 55 percent
Bluegrass and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maury

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over clayey residuum weathered from phosphatic limestone

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 16 inches: silty clay loam
2Bt2 - 16 to 53 inches: clay
2BC - 53 to 100 inches: clay

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Description of Bluegrass

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty noncalcareous loess over clayey residuum weathered from phosphatic limestone

Typical profile

Ap - 0 to 10 inches: silt loam
Bt - 10 to 33 inches: silty clay loam
2Bt - 33 to 84 inches: silty clay loam
2BC - 84 to 96 inches: clay

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Faywood

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Lowell

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Mcafee

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: lhyh
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 44 to 66 degrees F
Frost-free period: 175 to 208 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Garrard and Lincoln Counties, Kentucky

W—Water

Map Unit Setting

National map unit symbol: lkfv
Mean annual precipitation: 46 to 58 inches
Mean annual air temperature: 45 to 66 degrees F
Frost-free period: 162 to 202 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Jessamine and Woodford Counties, Kentucky

DoB—Donerail silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: lj87
Elevation: 540 to 1,050 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Donerail and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Donerail

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Clayey residuum weathered from phosphatic limestone

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 17 inches: silty clay loam
H3 - 17 to 35 inches: silty clay
H4 - 35 to 62 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 4 percent

Hydric soil rating: No

Lowell

Percent of map unit: 3 percent
Hydric soil rating: No

Maury

Percent of map unit: 3 percent
Hydric soil rating: No

EkB—Elk silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2zs50
Elevation: 390 to 1,060 feet
Mean annual precipitation: 36 to 58 inches
Mean annual air temperature: 41 to 68 degrees F
Frost-free period: 142 to 211 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Elk and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elk

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed fine-silty alluvium over mixed loamy alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
BA - 8 to 14 inches: silt loam
Bt - 14 to 46 inches: silty clay loam
2C - 46 to 80 inches: silty clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Minor Components

Otwood

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY018KY - Moderately Well Drained Fragipan Terrace
Hydric soil rating: No

Allegheny

Percent of map unit: 3 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Nolin, occasionally flooded

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY033KY - Well Drained & Moderately Well Drained Floodplain
Hydric soil rating: No

EvB—Elk variant silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: lj8j
Elevation: 580 to 960 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Elk, (variant), and similar soils: 90 percent
Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elk, (variant)

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed fine-silty alluvium

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 48 inches: silty clay loam
H3 - 48 to 65 inches: silty clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 5 percent
Hydric soil rating: No

Maury

Percent of map unit: 5 percent
Hydric soil rating: No

FaC—Fairmount flaggy silty clay, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: lj8k
Elevation: 490 to 1,040 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F

Frost-free period: 170 to 207 days
Farmland classification: Not prime farmland

Map Unit Composition

Fairmount and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairmount

Setting

Landform: Ridges
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 11 inches: flaggy silty clay
H2 - 11 to 17 inches: flaggy clay
R - 17 to 27 inches: unweathered bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F121XY001KY - Shallow Limestone Residuum Backslopes
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 5 percent
Hydric soil rating: No

Faywood

Percent of map unit: 5 percent
Hydric soil rating: No

FcE—Fairmount-Rock outcrop complex, 12 to 30 percent slopes

Map Unit Setting

National map unit symbol: lj8l
Elevation: 490 to 1,020 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: Not prime farmland

Map Unit Composition

Fairmount and similar soils: 60 percent
Rock outcrop: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairmount

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 11 inches: flaggy silty clay
H2 - 11 to 17 inches: flaggy clay
R - 17 to 27 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 30 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F121XY001KY - Shallow Limestone Residuum Backslopes
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Free face
Down-slope shape: Convex
Across-slope shape: Convex

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 5 percent
Hydric soil rating: No

Eden

Percent of map unit: 5 percent
Hydric soil rating: No

Faywood

Percent of map unit: 5 percent
Hydric soil rating: No

FcF—Fairmount-Rock outcrop complex, 30 to 60 percent slopes

Map Unit Setting

National map unit symbol: 2vp3c
Elevation: 430 to 1,410 feet
Mean annual precipitation: 37 to 53 inches
Mean annual air temperature: 41 to 67 degrees F
Frost-free period: 144 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Fairmount and similar soils: 60 percent
Rock outcrop: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairmount

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

A - 0 to 11 inches: flaggy silty clay
Bw - 11 to 17 inches: flaggy clay
R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F121XY001KY - Shallow Limestone Residuum Backslopes
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Free face
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Limestone

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Cynthiana

Percent of map unit: 5 percent
Landform: Hills

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Eden

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

FdB—Faywood silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: lj8n
Elevation: 570 to 730 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Faywood and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Faywood

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 30 inches: silty clay
R - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 4 percent
Hydric soil rating: No

Mcafee

Percent of map unit: 4 percent
Hydric soil rating: No

Other soils

Percent of map unit: 2 percent
Hydric soil rating: No

FdC—Faywood silt loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: lj8p
Elevation: 490 to 1,050 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Faywood and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Faywood

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex

Across-slope shape: Concave
Parent material: Clayey residuum weathered from limestone and shale

Typical profile
H1 - 0 to 6 inches: silt loam
H2 - 6 to 30 inches: silty clay
R - 30 to 40 inches: unweathered bedrock

Properties and qualities
Slope: 6 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Minor Components

Fairmount
Percent of map unit: 4 percent
Hydric soil rating: No

Mcafee
Percent of map unit: 4 percent
Hydric soil rating: No

Lowell
Percent of map unit: 4 percent
Hydric soil rating: No

Other soils
Percent of map unit: 3 percent
Hydric soil rating: No

FdE—Faywood silt loam, 12 to 30 percent slopes

Map Unit Setting
National map unit symbol: lj8q
Elevation: 480 to 1,040 feet
Mean annual precipitation: 39 to 51 inches

Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: Not prime farmland

Map Unit Composition

Faywood and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Faywood

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 30 inches: silty clay
R - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 30 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Minor Components

Culleoka

Percent of map unit: 3 percent
Hydric soil rating: No

Other soils

Percent of map unit: 3 percent
Hydric soil rating: No

Mcafee

Percent of map unit: 3 percent
Hydric soil rating: No

Fairmount

Percent of map unit: 3 percent
Hydric soil rating: No

Eden

Percent of map unit: 3 percent
Hydric soil rating: No

Hu—Huntington silt loam, 0 to 4 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2wltx
Elevation: 450 to 1,050 feet
Mean annual precipitation: 37 to 53 inches
Mean annual air temperature: 43 to 67 degrees F
Frost-free period: 161 to 212 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Huntington, occasionally flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Huntington, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed fine-silty alluvium

Typical profile

Ap - 0 to 9 inches: silt loam
A - 9 to 18 inches: silt loam
Bw - 18 to 46 inches: silt loam
C - 46 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.02 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F121XY033KY - Well Drained & Moderately Well Drained Floodplain
Hydric soil rating: No

Minor Components

Nolin, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Boonesboro, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lindside, occasionally flooded

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Newark, occasionally flooded

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Lc—Lawrence silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2wlvn
Elevation: 400 to 960 feet
Mean annual precipitation: 36 to 51 inches
Mean annual air temperature: 43 to 66 degrees F

Frost-free period: 147 to 218 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Lawrence and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lawrence

Setting

Landform: Flats
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty alluvium over clayey residuum weathered from limestone and dolomite

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 22 inches: silt loam
Btx - 22 to 38 inches: silt loam
2Bt - 38 to 53 inches: silty clay loam
2C - 53 to 80 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 18 to 32 inches to fragipan
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.03 to 0.20 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F121XY017KY - SWPD Fragipan Terrace
Hydric soil rating: No

Minor Components

Robertsville

Percent of map unit: 4 percent
Landform: Flats
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Nicholson

Percent of map unit: 4 percent
Landform: Ridges

Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Newark, rarely flooded

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ld—Lindside silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2wlt9
Elevation: 390 to 1,060 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 41 to 66 degrees F
Frost-free period: 144 to 214 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lindside, occasionally flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lindside, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed fine-silty alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
Bw - 7 to 27 inches: silt loam
C - 27 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.02 to 1.98 in/hr)
Depth to water table: About 19 to 36 inches

Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F121XY033KY - Well Drained & Moderately Well Drained Floodplain
Hydric soil rating: No

Minor Components

Huntington, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Newark, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Nolin, occasionally flooded

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melvin, occasionally flooded

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

MnB—McAfee silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2qmlp

Elevation: 500 to 1,060 feet
Mean annual precipitation: 37 to 53 inches
Mean annual air temperature: 41 to 66 degrees F
Frost-free period: 144 to 211 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Mcafee and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcafee

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile

Ap - 0 to 7 inches: silt loam
Bt1 - 7 to 16 inches: silty clay loam
Bt2 - 16 to 26 inches: silty clay
Bt3 - 26 to 32 inches: clay
R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Maury

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Hydric soil rating: No

Bluegrass

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Faywood

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Lowell

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Fairmount

Percent of map unit: 1 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

MnC—McAfee silt loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: lj91
Elevation: 490 to 1,070 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mcafee and similar soils: 85 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcafee

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Clayey residuum weathered from phosphatic limestone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 25 inches: silty clay
H3 - 25 to 30 inches: clay
R - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Maury

Percent of map unit: 5 percent
Hydric soil rating: No

Other soils

Percent of map unit: 5 percent
Hydric soil rating: No

Faywood

Percent of map unit: 5 percent
Hydric soil rating: No

MnD—McAfee silt loam, 12 to 20 percent slopes

Map Unit Setting

National map unit symbol: lj92
Elevation: 480 to 1,060 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: Not prime farmland

Map Unit Composition

Mcafee and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcafee

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Clayey residuum weathered from phosphatic limestone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 25 inches: silty clay
H3 - 25 to 30 inches: clay
R - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Fairmount
Percent of map unit: 7 percent
Hydric soil rating: No

Faywood
Percent of map unit: 7 percent
Hydric soil rating: No

Other soils
Percent of map unit: 6 percent
Hydric soil rating: No

MoC3—McAfee silty clay, 6 to 12 percent slopes, severely eroded

Map Unit Setting
National map unit symbol: lj93
Elevation: 610 to 1,030 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: Not prime farmland

Map Unit Composition
Mcafee, severely eroded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcafee, Severely Eroded

Setting
Landform: Ridges
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Clayey residuum weathered from phosphatic limestone

Typical profile
H1 - 0 to 6 inches: silty clay
H2 - 6 to 24 inches: silty clay
R - 24 to 34 inches: unweathered bedrock

Properties and qualities
Slope: 6 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Fairmount

Percent of map unit: 5 percent
Hydric soil rating: No

Faywood

Percent of map unit: 5 percent
Hydric soil rating: No

MrD—McAfee-Rock outcrop complex, 6 to 20 percent slopes

Map Unit Setting

National map unit symbol: lj94
Elevation: 500 to 1,040 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: Not prime farmland

Map Unit Composition

Mcafee and similar soils: 60 percent
Rock outcrop: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcafee

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Clayey residuum weathered from phosphatic limestone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 25 inches: silty clay
H3 - 25 to 30 inches: clay

R - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 6 to 20 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Free face
Down-slope shape: Convex
Across-slope shape: Concave

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Fairmount

Percent of map unit: 7 percent
Hydric soil rating: No

Faywood

Percent of map unit: 7 percent
Hydric soil rating: No

Other soils

Percent of map unit: 6 percent
Hydric soil rating: No

Mt—Melvin silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2vp3l
Elevation: 420 to 1,100 feet
Mean annual precipitation: 37 to 53 inches
Mean annual air temperature: 42 to 66 degrees F
Frost-free period: 163 to 212 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Melvin, occasionally flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Melvin, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Non-acid fine-silty alluvium

Typical profile

Ap - 0 to 9 inches: silt loam
Bg - 9 to 38 inches: silt loam
Cg - 38 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F121XY030KY - Poorly Drained & Very Poorly Drained Floodplain
Hydric soil rating: Yes

Minor Components

Lindside, occasionally flooded
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Newark, occasionally flooded
Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Dunning, occasionally flooded
Percent of map unit: 1 percent
Landform: Depressions, flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Ne—Newark silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting
National map unit symbol: 2s2cm
Elevation: 440 to 1,150 feet
Mean annual precipitation: 36 to 54 inches
Mean annual air temperature: 40 to 66 degrees F
Frost-free period: 135 to 212 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Newark, occasionally flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newark, Occasionally Flooded

Setting
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Mixed fine-silty alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
Bg - 7 to 42 inches: silt loam
Cg - 42 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 6 to 20 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F121XY031KY - Somewhat Poorly Drained Floodplain
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Lindside, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Nolin, occasionally flooded

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Melvin, ocassionally flooded

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Other vegetative classification: Trees/Timber (Woody Vegetation), Trees/Timber (Woody Vegetation)
Hydric soil rating: Yes

uAsB—Ashton silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2yq5c
Elevation: 480 to 1,000 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 41 to 66 degrees F
Frost-free period: 155 to 211 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ashton and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashton

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Fine-silty alluvium

Typical profile

Ap - 0 to 9 inches: silt loam
BA - 9 to 15 inches: silt loam
Bt - 15 to 44 inches: silty clay loam
C - 44 to 80 inches: loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Minor Components

Woolper

Percent of map unit: 5 percent
Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Elk

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

uAsrA—Ashton silt loam, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2yq5f
Elevation: 480 to 980 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 41 to 66 degrees F
Frost-free period: 155 to 211 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ashton, rarely flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashton, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Fine-silty alluvium

Typical profile

Ap - 0 to 9 inches: silt loam
BA - 9 to 15 inches: silt loam
Bt - 15 to 44 inches: silty clay loam
C - 44 to 80 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Minor Components

Huntington, occasionally flooded

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY033KY - Well Drained & Moderately Well Drained Floodplain
Hydric soil rating: No

Elk, rarely flooded

Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Woolper, rarely flooded

Percent of map unit: 2 percent
Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Wheeling, rarely flooded

Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

uAsrB—Ashton silt loam, 2 to 6 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2yq58
Elevation: 470 to 1,040 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 41 to 66 degrees F
Frost-free period: 155 to 211 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ashton, rarely flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashton, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Fine-silty alluvium

Typical profile

Ap - 0 to 9 inches: silt loam
BA - 9 to 15 inches: silt loam
Bt - 15 to 44 inches: silty clay loam
C - 44 to 80 inches: loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Minor Components

Huntington, occasionally flooded
Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY033KY - Well Drained & Moderately Well Drained Floodplain
Hydric soil rating: No

Woolper, rarely flooded
Percent of map unit: 2 percent
Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Elk, rarely flooded
Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

Wheeling, rarely flooded
Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F121XY016KY - Well Drained & Moderately Well Drained Terrace
Hydric soil rating: No

uBlmB—Bluegrass-Maury silt loams, 2 to 6 percent slopes

Map Unit Setting
National map unit symbol: 2zs52
Elevation: 500 to 1,160 feet
Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 46 to 65 degrees F
Frost-free period: 163 to 192 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Bluegrass and similar soils: 50 percent

Maury and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bluegrass

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty noncalcareous loess over clayey residuum weathered from phosphatic limestone

Typical profile

Ap - 0 to 12 inches: silt loam
Bt - 12 to 35 inches: silty clay loam
2Bt - 35 to 84 inches: silty clay loam
2BC - 84 to 96 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Description of Maury

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over clayey residuum weathered from phosphatic limestone

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 16 inches: silty clay loam
2Bt2 - 16 to 53 inches: clay
2BC - 53 to 100 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Mcafee

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Faywood

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Lowell

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Maury, moderately well drained

Percent of map unit: 2 percent
Landform: Ridges

Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

uLbiB—Lowell-Bluegrass silt loams, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2s2d5
Elevation: 770 to 1,070 feet
Mean annual precipitation: 36 to 58 inches
Mean annual air temperature: 41 to 66 degrees F
Frost-free period: 144 to 211 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lowell and similar soils: 70 percent
Bluegrass and similar soils: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lowell

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 41 inches: silty clay
BC - 41 to 53 inches: silty clay
R - 53 to 63 inches: bedrock

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 40 to 57 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent

Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Description of Bluegrass

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Thin fine-silty noncalcareous loess over clayey residuum weathered from phosphatic limestone

Typical profile

Ap - 0 to 12 inches: silt loam
Bt - 12 to 35 inches: silty clay loam
2Bt - 35 to 84 inches: silty clay loam
2BC - 84 to 96 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Faywood

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

uLfC—Lowell-Faywood silt loams, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2zs5g
Elevation: 450 to 1,130 feet
Mean annual precipitation: 36 to 66 inches
Mean annual air temperature: 40 to 68 degrees F
Frost-free period: 144 to 218 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lowell and similar soils: 70 percent
Faywood and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lowell

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 41 inches: silty clay
BCk - 41 to 53 inches: silty clay
R - 53 to 63 inches: bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 40 to 57 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Description of Faywood

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 29 inches: silty clay
R - 29 to 39 inches: bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Minor Components

Sandview

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Cynthiana

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear

Ecological site: F121XY001KY - Shallow Limestone Residuum Backslopes
Hydric soil rating: No

uMlmC—Maury-Bluegrass silt loams, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2zs53
Elevation: 480 to 1,180 feet
Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 46 to 65 degrees F
Frost-free period: 163 to 192 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Maury and similar soils: 55 percent
Bluegrass and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maury

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over clayey residuum weathered from phosphatic limestone

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 16 inches: silty clay loam
2Bt2 - 16 to 53 inches: clay
2BC - 53 to 100 inches: clay

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Description of Bluegrass

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty noncalcareous loess over clayey residuum weathered from phosphatic limestone

Typical profile

Ap - 0 to 10 inches: silt loam
Bt - 10 to 33 inches: silty clay loam
2Bt - 33 to 84 inches: silty clay loam
2BC - 84 to 96 inches: clay

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F121XY010KY - Phosphatic Limestone Upland
Hydric soil rating: No

Minor Components

Faywood

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

Lowell

Percent of map unit: 5 percent

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F121XY006KY - Ordovician Limestone Upland
Hydric soil rating: No

Mcafee

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F121XY002KY - Moderately Deep Interbedded Limestone-Shale Backslopes
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: lv55
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 45 to 65 degrees F
Frost-free period: 170 to 207 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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ATTACHMENT 5

USGS Topographic Map

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
OnDemand Topo

WILMORE QUADRANGLE
KENTUCKY
7.5-MINUTE TOPO

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 16S

Data is provided by The National Map (TNM), is the best available at the time of map generation, and includes data content from supporting themes of Elevation, Hydrography, Geographic Names, Boundaries, Transportation, Structures, Land Cover, and Orthoimagery. Refer to associated Federal Geographic Data Committee (FGDC) Metadata for additional source data information.

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands. Temporal changes may have occurred since these data were collected and some data may no longer represent actual surface conditions.

Learn About The National Map: https://nationalmap.gov

MN
GN
5°39′ 100 MILS
1°25′ 25 MILS
UTM GRID AND 2021 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
00
FG | GG
Grid Zone Designation 16S

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988
CONTOUR SMOOTHNESS = Medium

KENTUCKY

QUADRANGLE LOCATION

Salvisa	Keene	Nicholasville
Harrodsburg	Wilmore	Little Hickman
Danville	Bryantsville	Buckeye

ADJOINING QUADRANGLES

ROAD CLASSIFICATION

Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

WILMORE, KY
2024

ATTACHMENT 6

EDR Report

(Provided in separate digital format due to size)

ATTACHMENT 7

The Trails at Shaker Village, and Asbury Equine Center Trail Maps

THE TRAILS AT SHAKER VILLAGE

Great discoveries call for great explorers, and today Shaker Village of Pleasant Hill is reconnecting its vibrant campus to inspire a new community of adventurers, learners, makers, doers and supporters. The Historic Centre, the Farm and the Preserve are centers of exploration, jumping-off points for experiences built to ignite your trailblazing spirit.

The Preserve at Shaker Village actively manages, protects and shares 3,000 acres of original Shaker countryside, 2,000 of which are devoted to outdoor recreation and wildlife habitat.

For Your Saftey

- Use trails at your own risk.
- Cell signal is unavailable in certain areas.
- Do not hike alone.
- Trails pass near steep drops and cliffs. Ensure your safety by staying on marked trails.
- Use caution when crossing creeks as you may have to walk through shallow water.
- Parts of Towering Sycamore, Shawnee Run and
- Pelly Trails may be impassable due to high water after rain events.
- Hikers and cyclists yield to equestrians on trails.
- Dogs only permitted on River Road, Palisades, Village Loop and along paved roads. Dogs must remain leashed at all times.
- Horse trailers must park in the designated area at the Stable.
- Hunting and fishing on Shaker Village property is prohibited.
- Do not disturb or collect plants, animals, rocks, fossils or archaeological specimens.
- No restroom facilities, drinking water or trash receptacles are available on the trails. Portable restroom facilities are located next to the Stable and at Shaker Landing.

In Case Of Emergency
Mercer County Dispatch 859.734.3311

Should you get lost, call 859.734.5411. You will be asked to identify your location: Where did you park? What trail are you on? What was the last number you saw posted? Do you see any landmarks?

Hours and Fees

The Preserve is open daily, sunrise to sunset. Donations are encouraged to defer the cost of trail maintenance.

Accessing The Preserve

Explore the Preserve by traversing 30.5 miles of multi-use trails from three trailheads. The trails are designed for hikers, horseback riders and carriage drivers. Cyclists are welcome, but the trails are not specifically maintained for mountain biking. Parking is available at each trailhead.

Horse Friendly | 24.5 miles
Dog Friendly | 4.5 miles
Bike Friendly |27.75 miles
Accessible Friendly |1.75 miles

Equestrian Information

The Stable provides trailer parking, boarding, running water and more. Please pay the appropriate daily fees at the self-registration area.

Support Shaker Village

Shaker Village is Kentucky's largest National Historic Landmark. What started in the 1960s as an ambitious vision to preserve the legacy of the Shakers has grown into a 3,000 acre site with the largest private collection of 19th-century buildings in the U.S. As a non-profit 501(c)(3) organization we rely on charitable support, guest revenue and an endowment to sustain this crown jewel of Kentucky.

DONATE NOW

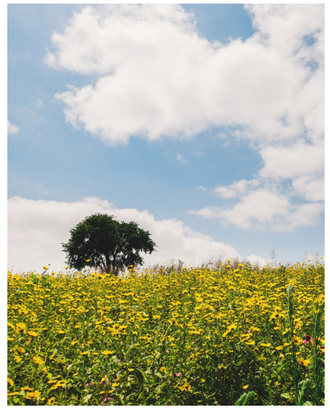
By making a tax-deducible gift to Shaker Village you will ensure that the Shaker legacy remains for future generations to discover. Your support also funds the efforts of our educators, naturalists, master craftspeople and so much more!

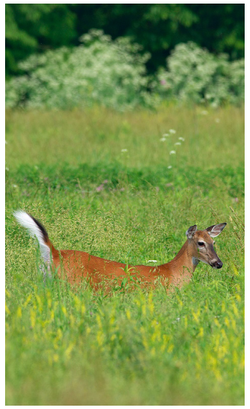
Become an Annual Passholder

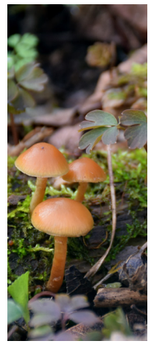
Our annual passholder program offers incredible benefits, including unlimited free admission to the Village, complimentary tickets to signature events and discounts at the Shops, The Trustees' Table and the Inn. Annual pass fees help to support new programs, educational opportunities and the preservation of our trails, Preserve and historic buildings. Annual Equestrian and Photography passes are available too.

LEARN MORE

3501 Lexington Road, Harrodsburg, Kentucky 40330
shakervillageky.org ✱ 859.734.5411 ✱ #shakervillageky



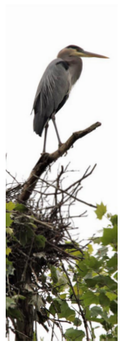


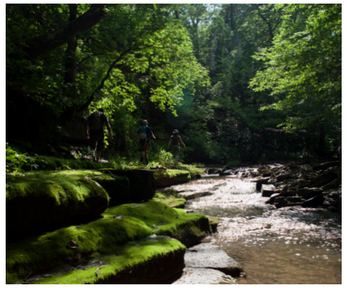


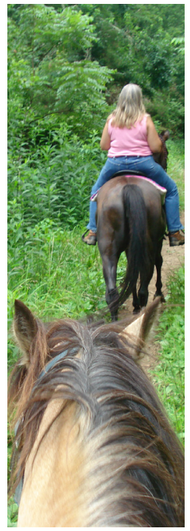
The Trails

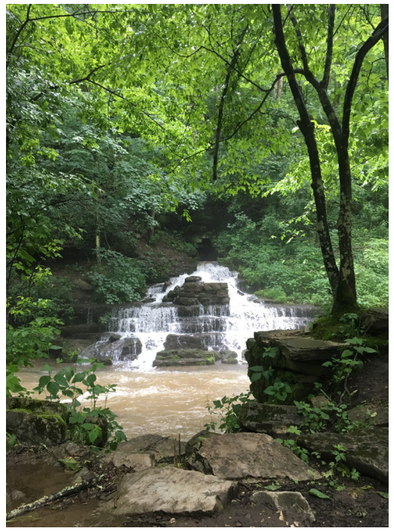
AT SHAKER VILLAGE

3,000 acres of discovery









DISCOVERY STARTS HERE...

ANDERSON

TRAIL RATING: *Easy* DISTANCE: *2.5 mile double loop* TRAILHEAD: *Centre*

Pass the remnants of a Shaker grist and linseed oil mill, millrace and dam to the north as you follow the Historic Turnpike to Kissing Bridge. Loop around fields where you can observe a mixture of modern agriculture and converted native prairie. Take a break at the overlook, then look to the south to see Shaker Village property across US 68. *Trail includes one creek crossing. (Partially accessible, .35 mile one way from trailhead to Kissing Bridge)*

CHINQUAPIN

TRAIL RATING: *Moderate* DISTANCE: *1 mile point-point* TRAILHEAD: *West*

This point-to-point, single track trail connects to Shawnee Run Trail on both ends. Meander through a young forest dominated by Chinquapin Oaks and other deciduous hardwoods while enjoying wildflowers in the spring and shade in the summer. *Terrain is uneven and can be slippery, even in dry conditions.*

HERITAGE

TRAIL RATING: *Easy* DISTANCE: *.75 mile point-point* TRAILHEAD: *Centre*

Follow Anderson Trail along the Historic Turnpike, then turn right after Kissing Bridge to enter Heritage Trail. This single-track trail meanders through the young forest down to the creek, then climbs back up through the more rugged dry woods to bring you back above the trailhead. *Trail includes one creek crossing. Terrain is uneven and can be slippery, even in dry conditions.*

LAMPTON

TRAIL RATING: *Easy* DISTANCE: *1.75 mile loop* TRAILHEAD: *Centre*

Follow historic stone fences bordering the Historic Turnpike east, then turn north alongside Meadow View Barn, a post-Shaker tobacco barn that now serves as an event venue. The last stretch of the trail goes through a converted native prairie bordered by some of the oldest stone fences on the property. *Carriage-friendly trail.*

MEADOW VIEW

TRAIL RATING: *Easy* DISTANCE: *2 mile loop* TRAILHEAD: *East*

A turf trail takes you through open prairie, wood lots and farm ponds, where a variety of wildlife viewing opportunities lie around every bend. Observe a back view of Shaker Village's historic buildings and pass by Meadow View Barn. *Trail includes two creek crossings.*

PALISADES

TRAIL RATING: *Easy* DISTANCE: *.75 mile double loop* TRAILHEAD: *East*

Follow River Road down to Shaker Landing to access the Palisades Trail. Enjoy views of the Kentucky River, the Kentucky River Palisades and High Bridge, as well as excellent spring wildflowers and wildlife views throughout the year. During winter melts and spring showers, a large waterfall cascades down the Palisades.

PELLY

TRAIL RATING: *Moderate* DISTANCE: *4.5 mile loop* TRAILHEAD: *Centre*

Follow the Historic Turnpike on Anderson Trail south. After crossing Kissing Bridge, turn left to enter Pelly Trail. Pass through the culvert under US 68 to access converted native prairie and modern agricultural fields along mostly turf trails with a short forested section. *Contains four creek crossings. Culvert and other creek crossings may be impassible during times of high water. Carriage friendly trail.*

RED OAK LOOP

TRAIL RATING: *Easy* DISTANCE: *1.5 mile loop* TRAILHEAD: *West*

Follow Shawnee Run Trail and cross a shallow creek bed to enter the Red Oak Loop. This trail goes through dry tall-grass prairie and includes a picnic area at an old homesite. *Contains one creek crossing, usually dry. Please take extra care to stay on the marked trail as private property borders most of the trail.*

RIVER ROAD

TRAIL RATING: *Strenuous* DISTANCE: *2.25 mile loop* TRAILHEAD: *East*

Starting from the East Trailhead and heading east through the parking lot, turn left by the paddocks and then carefully cross US 68. Follow the paved road and descend 400 feet to Shaker Landing. Choose to follow the more rugged single-track trail (originally built by Shakers in 1826) at the marked turn on the left or take the paved road down to the floodplain. Several seasonal waterfalls can be viewed along the road, as well as spectacular spring wildflowers.

SHAWNEE RUN

TRAIL RATING: *Strenuous* DISTANCE: *4.25 mile loop* TRAILHEAD: *West*

Traverse woodland trails and turf in the open prairie, then view the Fulling Mill site, with its spring-fed waterfall. Overlaps with West Lot Trail for one mile through prairie before pulling away and following a property line fence south to a younger woodlot. *Trail blazed in white. Shawnee Run intersects with many other trails – watch for connector trail signs. Trail contains four creek crossings.*

TANYARD

TRAIL RATING: *Strenuous* DISTANCE: *4.75 mile loop* TRAILHEAD: *East*

A turf trail that takes you through open prairie. Go past the historic Tanyard building, where the Shakers tanned leather and pumped water to the Water House located beside Centre Family Dwelling. Bordered by historic stone fences, the trail lies mostly in the open sun during the day with a shady picnic area at the mid-way point.

TOWERING SYCAMORE

TRAIL RATING: *Easy* DISTANCE: *.75 mile point-point* TRAILHEAD: *Centre*

This trail connects the Centre Trailhead area to Shawnee Run Trail near the Fulling Mill waterfall. Follow Shawnee Run Creek as it flows north and witness the large sycamore trees with their white inner bark and the skeletal look of their upper branches. *Trail contains four creek crossings that may be impassable following rainfall events.*

VILLAGE LOOP

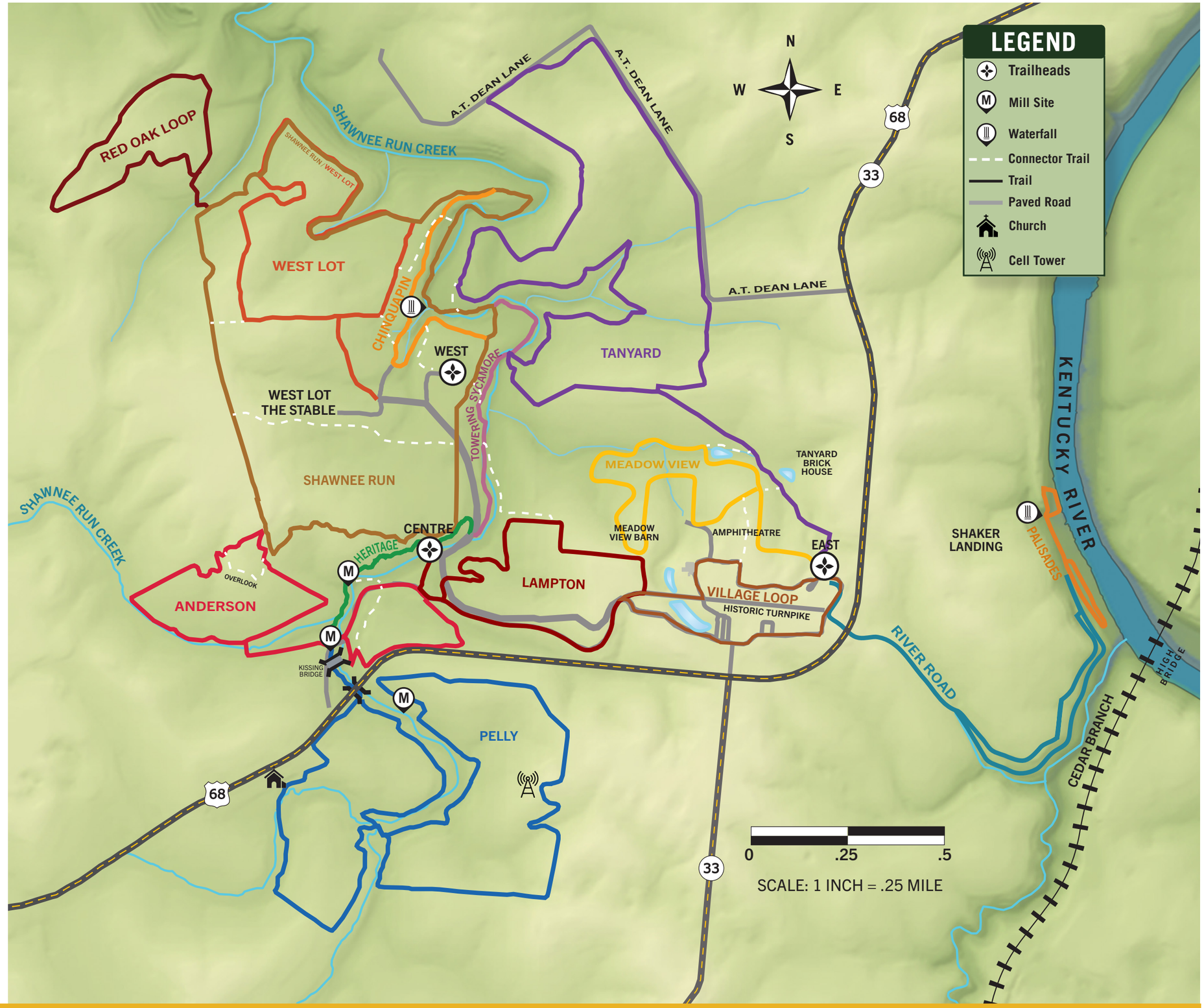
TRAIL RATING: *Easy* DISTANCE: *1.5 mile loop* TRAILHEAD: *East*

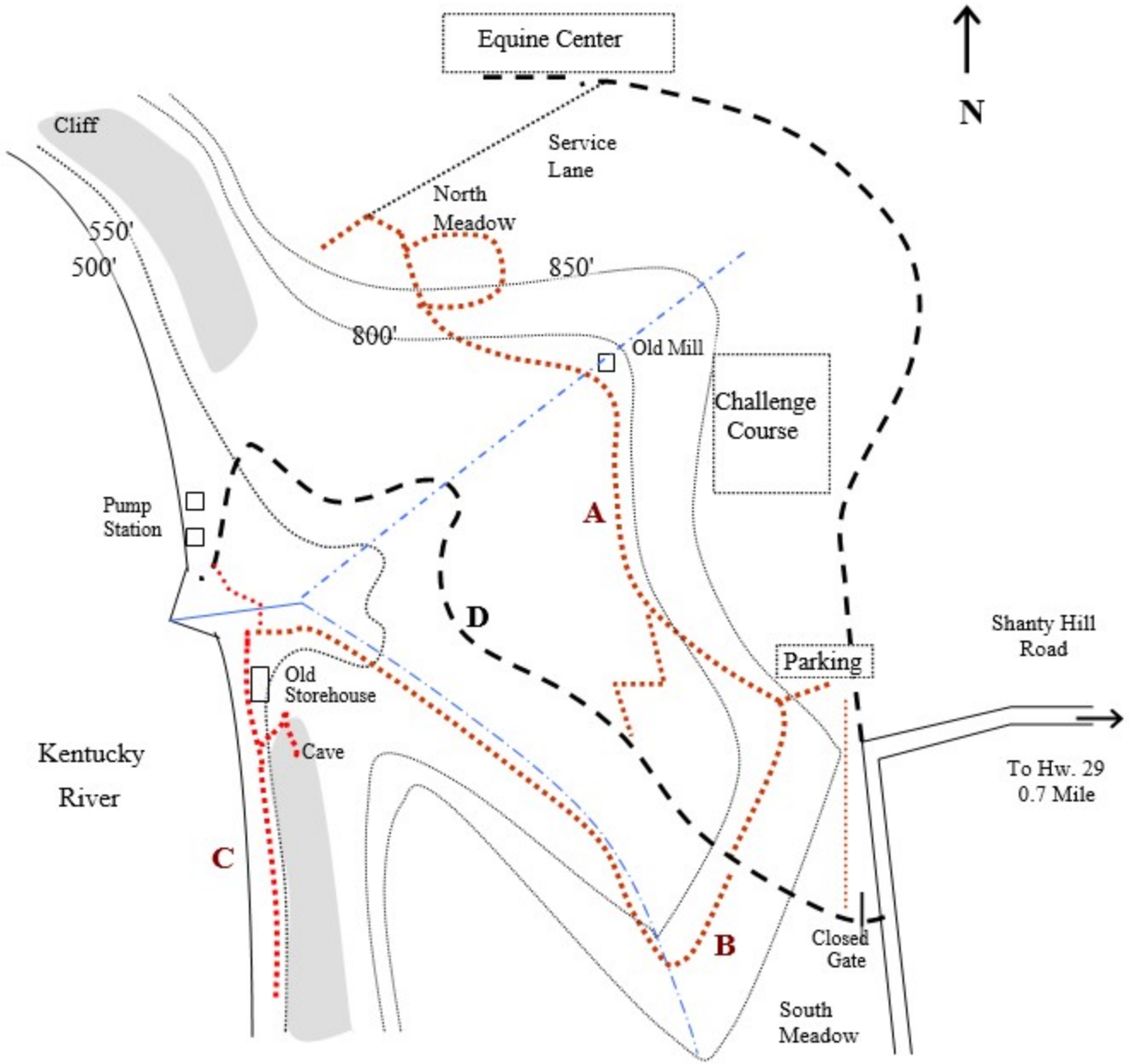
Follow the Historic Turnpike, formerly US 68, take crushed gravel paths through the center of the Village, the Farm and behind the Village. This leisurely stroll gives you an overview of everything the Historic Centre has to offer, including scenic views of the surrounding restored native prairie and hillsides.

WEST LOT

TRAIL RATING: *Moderate* DISTANCE: *2.5 mile loop* TRAILHEAD: *West*

Follow the gravel road north towards the green power line tower, then follow the turf path through native prairie and bordering woodlands. The trail coincides with Shawnee Run Trail for one mile along the wooded border to the north.




Equine Center
N
Cliff
Service
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550'
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Old Mill
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Course
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D
Shanty Hill
Road
Parking
Old
Storehouse
Cave
Kentucky
River
To Hw. 29
0.7 Mile
C
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Closed
Gate
South
Meadow