

APPENDIX C

ENVIRONMENTAL OVERVIEW

Northern KY Outer Loop

Environmental Overview

August 12, 2019

1. Study Background

Northern Kentucky is one of the fastest growing regions in the Commonwealth. Significant commercial and residential development is occurring in the three northernmost counties of Boone, Kenton, and Campbell. The region has excellent interstate access through I-71, I-75, I-471, and I-275. Major north-south routes such as US 127, US 25, US 27, and the AA Highway (KY 9) are also present.

Missing, though, is adequate east-west access south of I-275—a deficiency that hampers future economic growth outside the three northern counties. At the same time, nearby Gallatin, Grant, and Pendleton counties are experiencing little or no growth; however, their low land prices make future growth inevitable. Access from the AA Highway to I-75 and I-71 is essential to this growth. The KYTC initiated this study to look at concepts for new transportation connections in the very southern portions of Boone, Kenton, and Campbell counties as well as northern portions of Gallatin, Owen, Grant, Pendleton, and Bracken counties. The costs, impacts, and benefits of a potential new east-west connection are being evaluated to determine whether such a concept merits advancement.

To facilitate the evaluation, a two-tier screening process has been developed:

- First, Level 1 alternatives were developed. These are represented as 2,000-foot wide corridors, illustrated in **Figure 1**, and were shared with local officials, stakeholders, and the public during December 2018.
- After compiling comments from the stakeholder meetings and website, the alternatives were revised to include seven total options as shown in **Figure 2**.
- Next, planning-level data was compiled to provide an approximate comparison between the seven corridors. This effort included per-mile construction costs, environmental red flags, traffic forecasts, and more.
- Using criteria such as how a concept addresses given needs; its performance, costs, and impacts; and input from local officials and stakeholders, a screening process was completed to identify three alternatives for Level 2 evaluation.
- Three Level 2 alternatives were examined in greater detail. Preliminary designs were prepared; a more detailed inventory of environmental features was compiled; additional traffic forecasts were completed; and more detailed cost estimates were prepared.

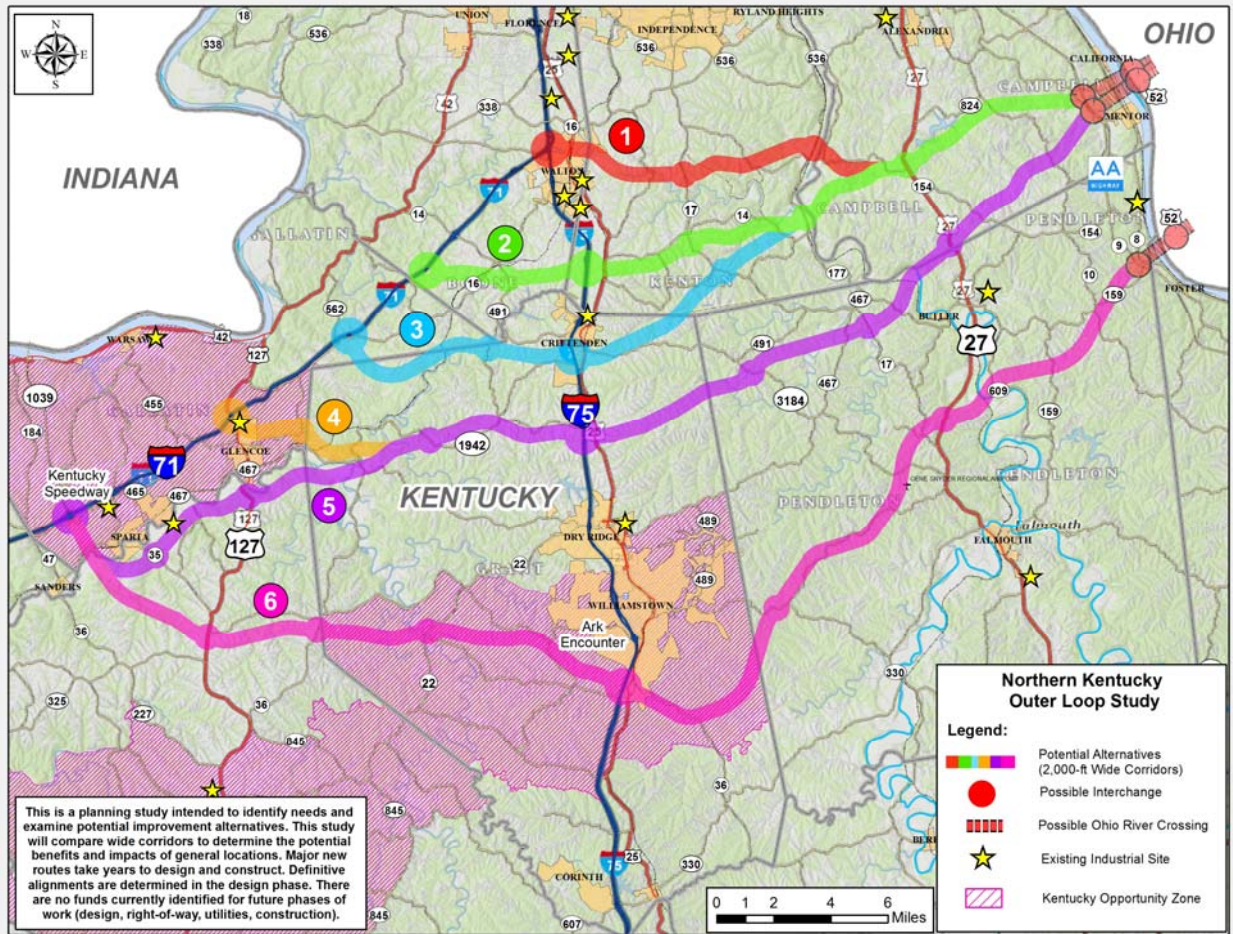


Figure 1: Initial Level 1 Alternatives

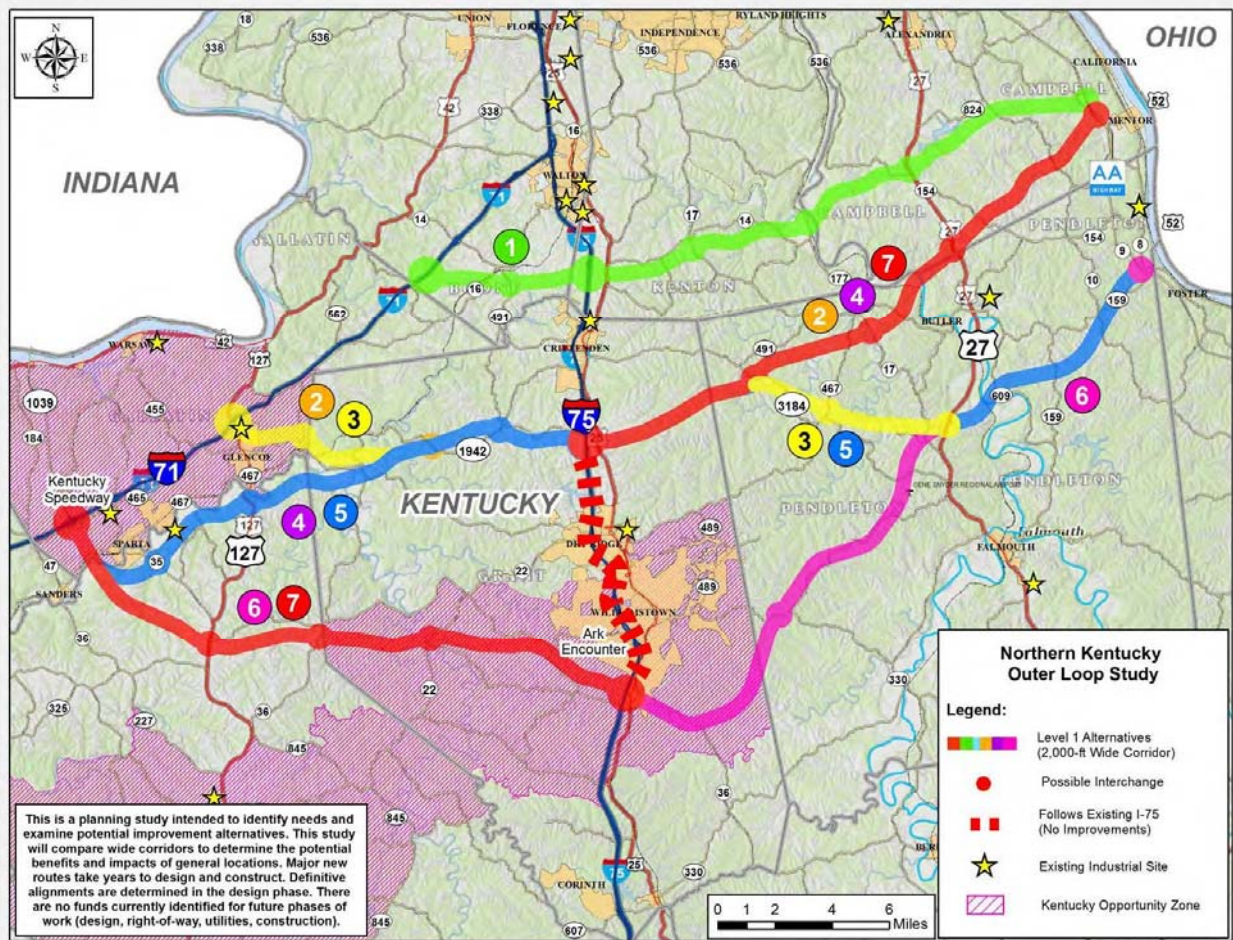


Figure 2: Refined Level 1 Alternatives for Screening

The purpose of this *Environmental Overview* report is to present the findings of the planning-level environmental inventory. **Chapter 3** compares the GIS-based features within 2,000-foot corridors for six Level 1 alternatives. **Chapter 4** describes the three Level 2 alternatives in greater detail and supplemental information collected to provide a more informed assessment of potential impacts. **Chapter 5** summarizes the main environmental considerations that should be taken into account should a build alternative be recommended for additional project development actions. **Chapter 6** includes a concise, side-by-side comparison of likely environmental impacts for Level 2 Alternatives.

2. Conceptual Alternatives

Seven Level 1 alternatives, illustrated above, have been developed to initiate the study. For comparison purposes, each is assumed to be a high-speed, four-lane divided facility with interchanges at interstates and major state routes intersecting the path. The eastern terminus options along the AA Highway were selected to allow a feasible future extension into Ohio; however, such a connection is beyond the scope of this effort.

- **Alternative 1** runs from I-71 near the Boone/Gallatin county line, north of Crittenden, to the AA Highway between California and Mentor, a distance of 25 miles.
- **Alternative 2** runs from I-71 near the US 127 interchange, south of Crittenden, to the AA Highway between California and Mentor, a distance of 35 miles.
- **Alternative 3** runs from I-71 near the US 127 interchange, south of Crittenden, to the AA Highway near the Pendleton/Bracken county line, a distance of 35 miles. The western half of Alternative 3 matches Alternative 2.
- **Alternative 4** begins at I-71 west of Sparta then passes south of Sparta, Glencoe, and Crittenden before connecting to the AA Highway between California and Mentor, a distance of 43 miles. The eastern two thirds of the corridor match Alternative 2.
- **Alternative 5** begins at I-71 west of Sparta then passes south of Sparta, Glencoe, and Crittenden before connecting to the AA Highway near the Pendleton/Bracken county line, a distance of 43 miles. The western portion of Alternative 5 matches Alternative 4; the eastern portion matches Alternative 3.
- **Alternative 6** stretches from I-71 west of Sparta, dipping south of Williamstown then north of Falmouth, to the AA Highway near where it crosses the Pendleton/Bracken county line. The corridor is about 48 miles long.
- **Alternative 7** stretches from I-71 west of Sparta, dipping south of Williamstown to I-75. It runs concurrent with existing I-75 through Williamstown and Dry Ridge then continues east on new alignment to the AA Highway between California and Mentor. The eastern half of Alternative 7 matches Alternative 6; the western half matches Alternatives 2 and 4. The total length is 44 miles, excluding the 9-mile section that follows existing I-75.

3. Level 1 Environmental Inventory

For the Level 1 screening, a database was compiled from publicly available secondary source materials and published GIS files. A detailed bibliography is in **Chapter 7. Exhibit 1** maps at the end of this chapter illustrate environmental features within the 2,000-foot corridors for Level 1 alternatives. **Table 1** below provides a side-by-side comparison of each alternative.

Table 1: Level 1 Comparison of Environmental Features within 2,000-Foot Corridor

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
Community Features							
Schools	1	0	0	0	0	1	0
Civic Buildings (Fire, Police, EMS, etc.)	0	1	1	1	1	0	0
Churches	0	1	0	1	1	2	2
Cemeteries	2	0	0	0	0	1	1
NRHP-Listed Historic Resources	1	1	1	2	2	0	1
National/State Parks	0	0	0	0	0	0	0
City/County Parks (acreage)	158	>1	>1	>1	>1	0	0
Private Recreation Areas (acreage)	0	2	0	2	0	0	2
Natural Resources							
Outstanding State Resource Waters	1	3	3	2	2	1	2
Length of Streams (1,000s feet)	160	235	239	276	280	286	298
Other Waterbodies (acreage)	49	23	32	34	43	46	37
Priority Watersheds (acreage) ¹	0	230	230	2,888	2,888	1,665	1,665
NWI Wetlands (acreage)	141	178	187	249	258	260	256
100-Year Floodzones (acreage)	375	323	275	622	575	455	538
Water Wells	17	32	37	1	6	2	2
Sinkholes	1	0	0	0	0	7	7
Wildlife Management Area (acreage)	21	0	0	0	0	0	0
Critical Habitats for T&E Species	0	0	0	0	0	0	0
Forested Areas (acreage)	3,009	5,152	5,201	6,031	6,080	6,425	5,903
Agricultural Districts (acreage)	904	1,309	1,023	1,584	1,299	359	773
Other							
Oil/Gas Wells	0	18	18	6	6	3	3
USTs	8	24	29	14	19	13	8
EPA-monitored hazmat sites	28	28	26	28	28	15	13

Abbreviations: EMS = Emergency Management System NRHP = National Register of Historic Places

T&E = Threatened and Endangered Species USTs = Underground Storage Tanks USEPA = US Environmental Protection Agency

¹ Subsequently eliminated from KDOW records

It should be noted that additional analyses undertaken for Level 2 investigations are likely to adjust totals shown above.

3.1 Red Flag Issues Identified in Level 1 Analysis

Regarding environmental effects, potential red flag issues include:

Section 4(f) Resources includes federal, state, or locally owned parks open to the public; all wildlife/waterfowl refuges; and any historic resources meeting National Register of Historic Places (NRHP) eligibility criteria – whether they are listed or not. Each of these sites are protected from transportation use by federal law. While some of these resources are small or lie along the outer edge of corridor, others are large and would be difficult to avoid. Specifically, Mullins Wildlife Management Area (WMA) in southwestern Kenton County and AJ Jolly Park in southern Campbell County cover roughly half the corridor width for Alternative 1.

Historic Resources are also protected by Section 106 of the *National Historic Preservation Act*. While no large historic districts or sites currently listed on the NRHP have been identified within the 2,000-foot corridors during the Level 1 analysis, additional investigations in Level 2 are likely to reveal additional constraints. NRHP-eligible resources merit the same level of protection but were not evaluated in Level 1.

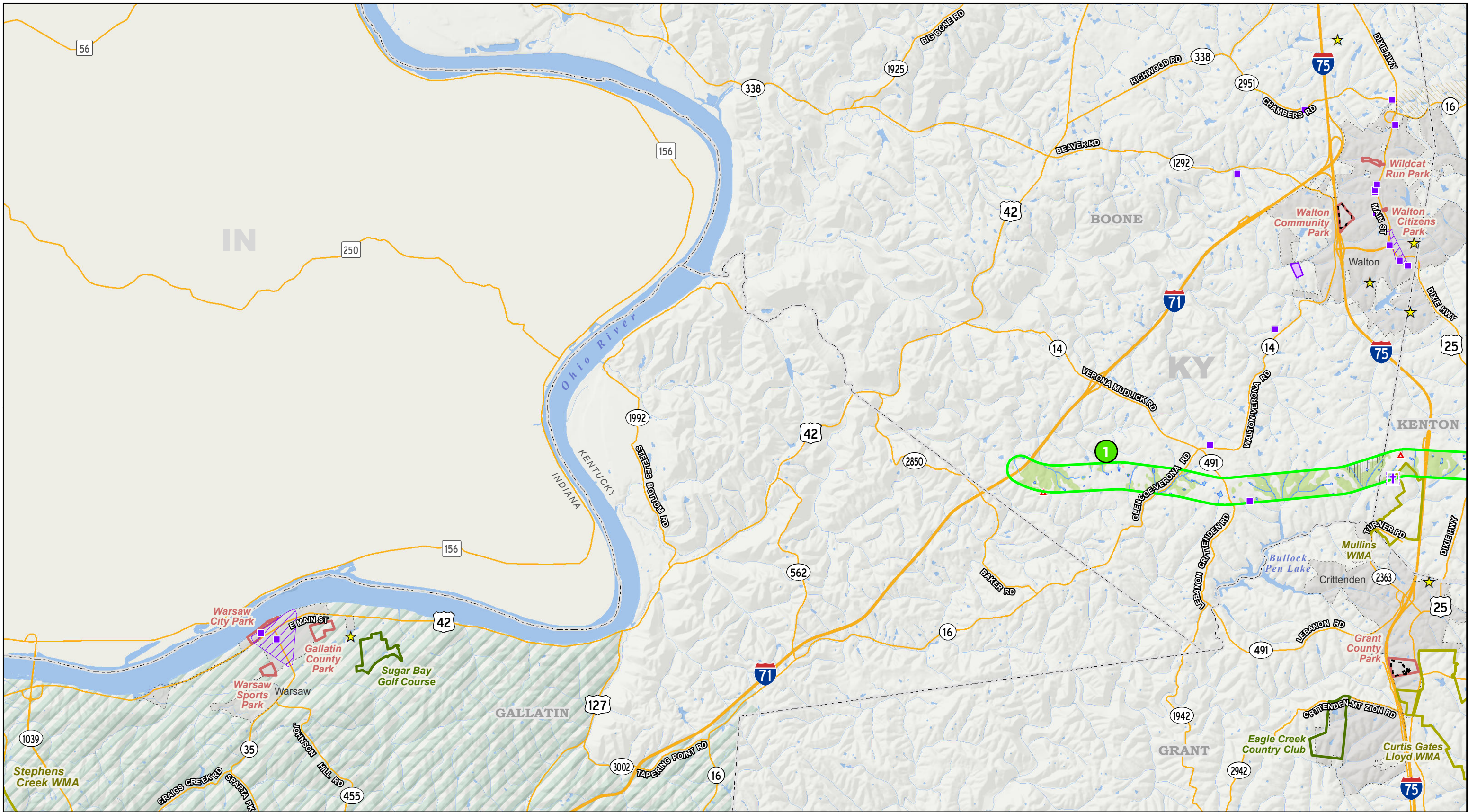
Outstanding State Resources Waters (OSRW), associated with the Licking River and its tributaries, would likely be impacted by any of the Level 1 alternatives. Numerous streams, floodplains, and wetlands exist throughout the study area as well.

Community Resources—neighborhoods, businesses, low-income or minority “environmental justice” (EJ) populations, a school, churches, and a fire station—would likely be impacted by any of the Level 1 alternatives. More detailed investigations as part of the Level 2 analysis will provide more information about potential impacts.

Threatened and Endangered Species Habitats for federally protected species in northern Kentucky counties cover a wide range of ecological settings. Forests, streams, and caves provide habitat for listed bats; healthy rivers and streams provide habitat for a variety of mussel species. Running Buffalo clover thrives in a variety of habitats potentially occurring within the corridors – cemeteries, floodplains, forests, fencerows, etc. Braun’s rock-cress prefers steep slopes with limestone outcrops. Extensive surveys and coordination with US Fish and Wildlife Service (USFWS) will be required to identify and resolve potential impacts associated with any build alternative.

Large **Agricultural Districts** exist along each Level 1 Alternative. Alternatives 6 and 7 through the southern section of the study area would have the fewest impacts on agricultural districts. Future detailed assessments of soil type and land use, in coordination with the Natural Resource Conservation Service (NRCS), may identify the need for additional farmland mitigation measures.

US Environmental Protection Agency (USEPA)-monitored **hazmat sites** shown range from National Pollutant Discharge Elimination System (NPDES) construction permits to registered facilities producing hazardous chemicals.



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Notes:
1. Coordinate System: NAD 1983 State PlaneKentucky FIPS 1600 US Feet
2. Hillshade and Transportation Network: KY Division of Geographic Information

- Alternative 1
- Alternative 2
- Alternative 3
- Alternative 4
- Alternative 5
- Alternative 6
- Alternative 7
- County Boundary
- Corporate Limits

- Industrial Sites
- Cemetery
- Civil Services
- Place of Worship
- School
- Outstanding State Resource Waters (DOW)
- Streams (NHD)

- Waterbody (NHD)
- NWI Wetland (USFWS)
- 100-Yr Flood Zone (FEMA)
- Sinkhole
- Domestic Water Well
- Monitoring Well
- Other Water Well
- Public Well

- Hazardous Materials Site (USEPA)
- Underground Storage Tank (UST)
- Oil/Gas Well (KGS)
- Listed Historic Structure (NRHP)
- Listed Historic Site (NRHP)
- Listed Historic District (NRHP)
- Agricultural Districts
- Opportunity Zones

- Recreational Trails (Public)
- Park/Recreational Area (Public)
- Recreational Area (Private)
- Priority Watershed (DOW)
- Forested Area (USDA)
- Wildlife Management Area (KDFWR)

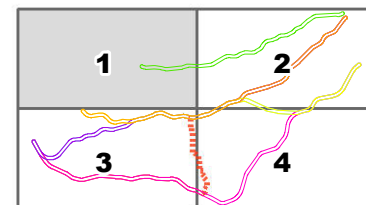
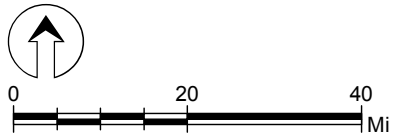
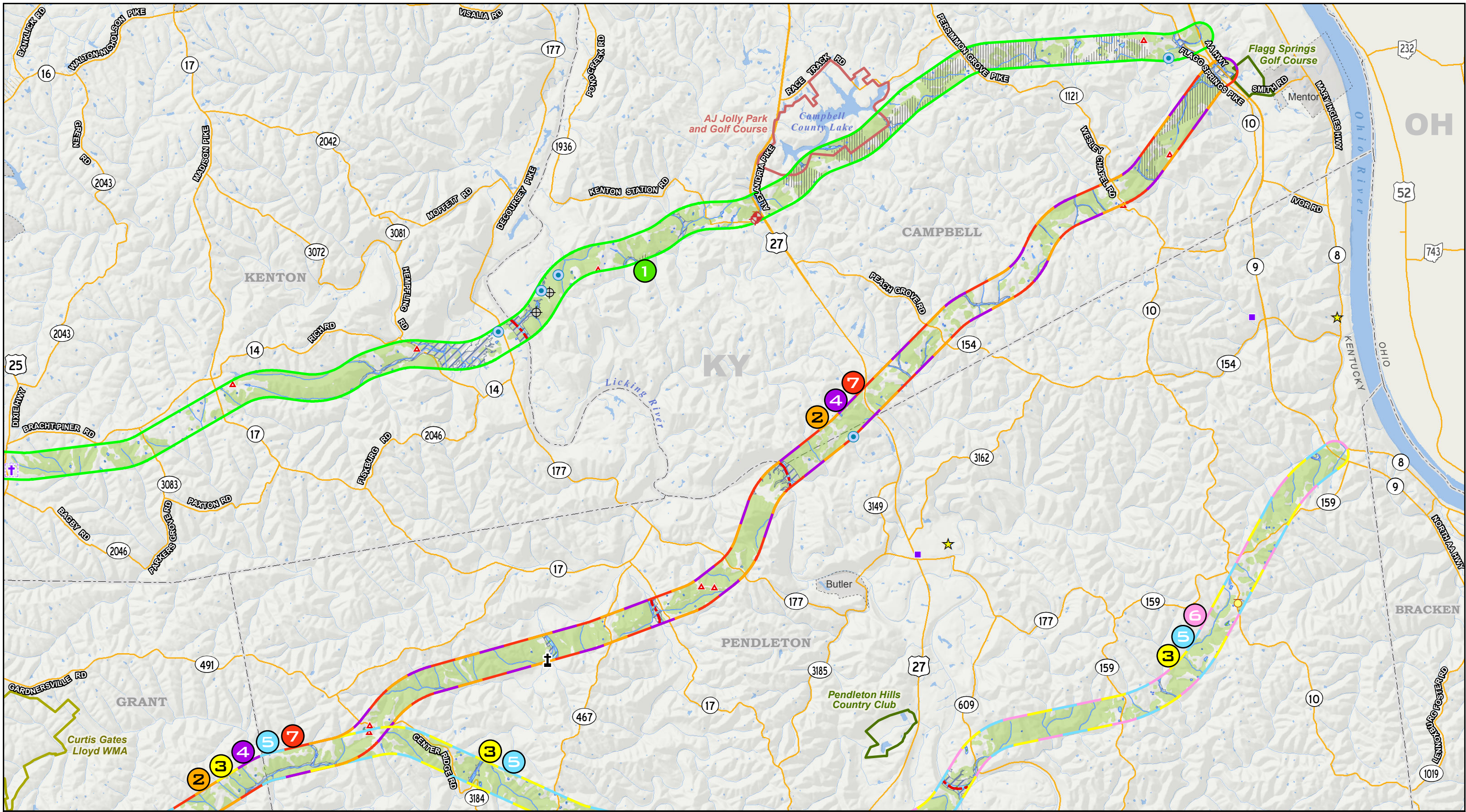


Exhibit 1 - Sheet 1 of 4 Level 1 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



Notes:
1. Coordinate System: NAD 1983 State Plane Kentucky FIPS 1600 US Feet
2. Hillshade and Transportation Network: KY Division of Geographic Information

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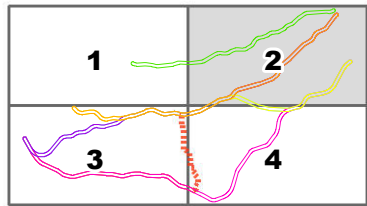
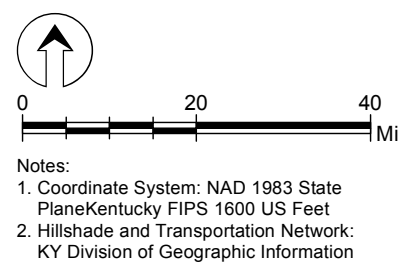
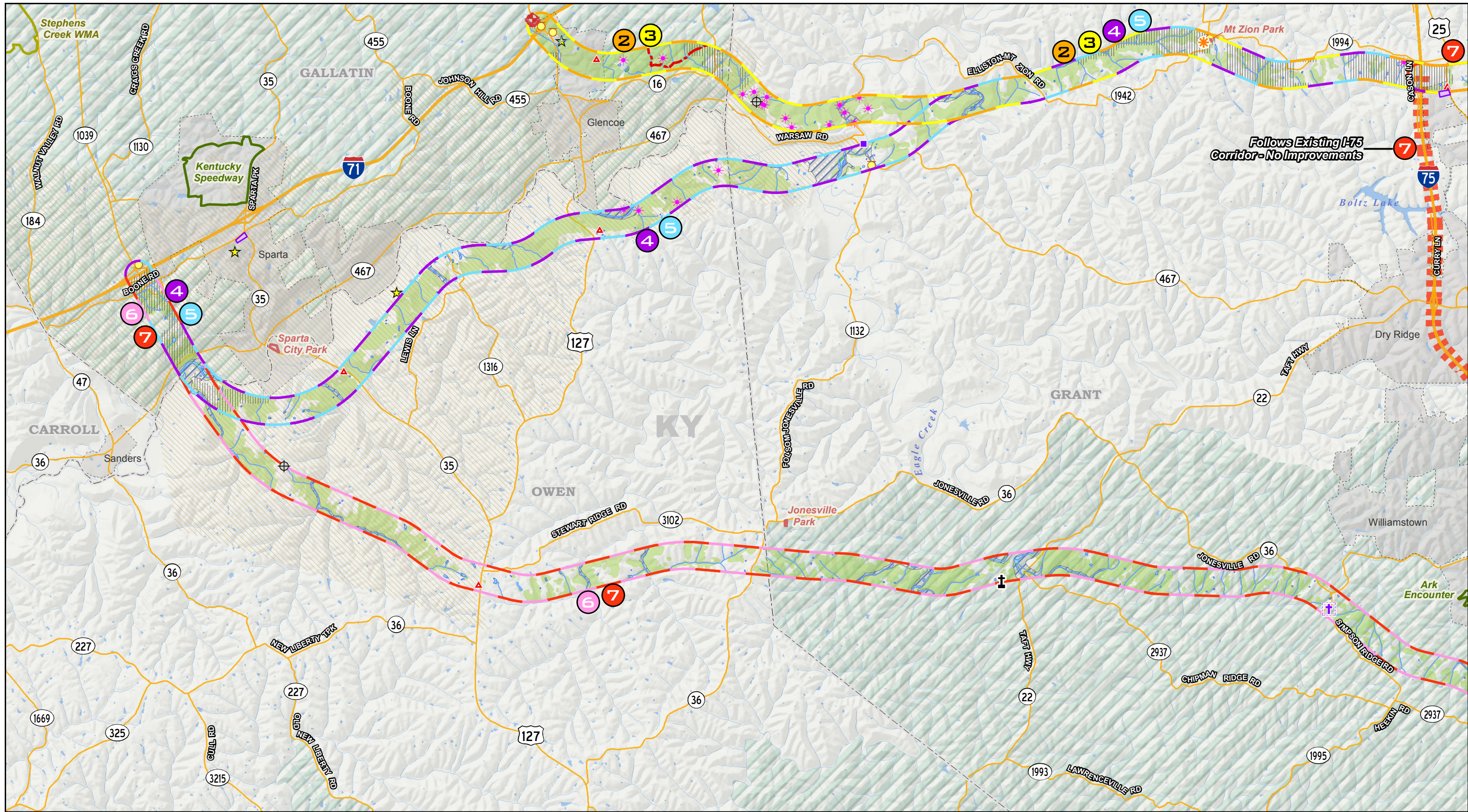


Exhibit 1 - Sheet 2 of 4 Level 1 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton, Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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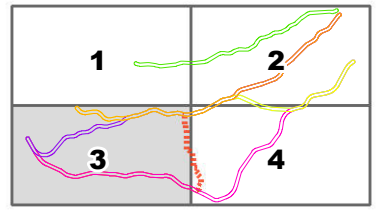
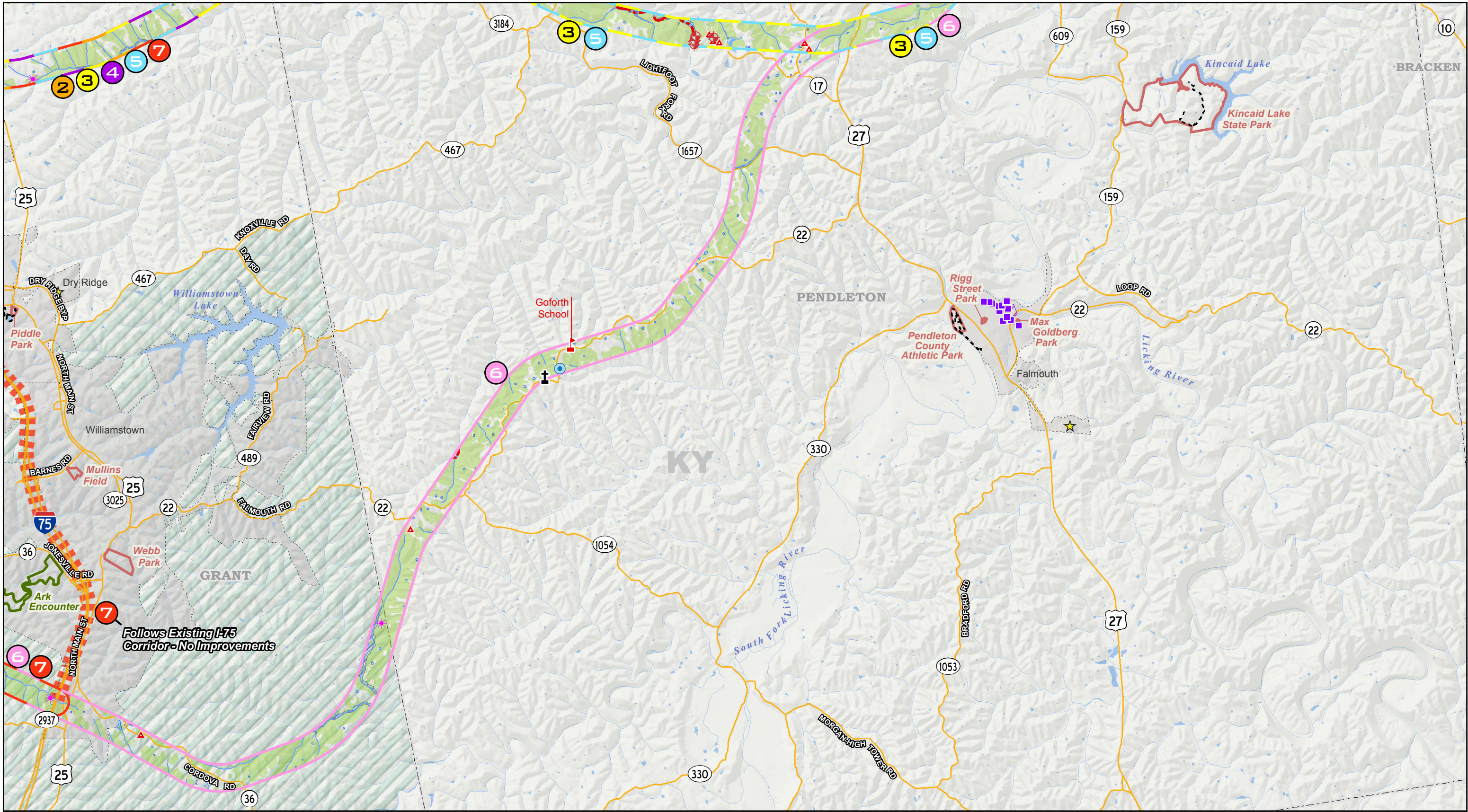


Exhibit 1 - Sheet 3 of 4 Level 1 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton, Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458





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Notes:

1. Coordinate System: NAD 1983 State Plane/Kentucky FIPS 1600 US Feet

2. Hillshade and Transportation Network: KY Division of Geographic Information

Alternative 1

Alternative 2

Alternative 3

Alternative 4

Alternative 5

Alternative 6

Alternative 7

County Boundary

Corporate Limits


 Industrial Sites

 Cemetery

 Civil Services

 Place of Worship

 School


 Outstanding State Resource Waters (DOW)


 Streams (NHD)


 Waterbody (NHD)

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 Agricultural Districts

 Opportunity Zones


 Recreational Trails (Public)

 Park/Recreational Area (Public)

 Recreational Area (Private)

 Priority Watershed (DOW)

 Forested Area (USDA)

 Wildlife Management Area (KDFWR)

1

2

3

4

Exhibit 1 - Sheet 4 of 4

Level 1 Environmental Screening

Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton, Owen, and Pendleton Counties, Kentucky

KYTC Item No.: 6-458

4. Level 2 Alternatives and Environmental Inventory

During Spring 2019, a subset of alternatives were selected to advance for detailed Level 2 screening, shown in **Figure 3**. Level 2 corridors were renamed Alternatives A through D, still representing 2,000-foot wide corridors.

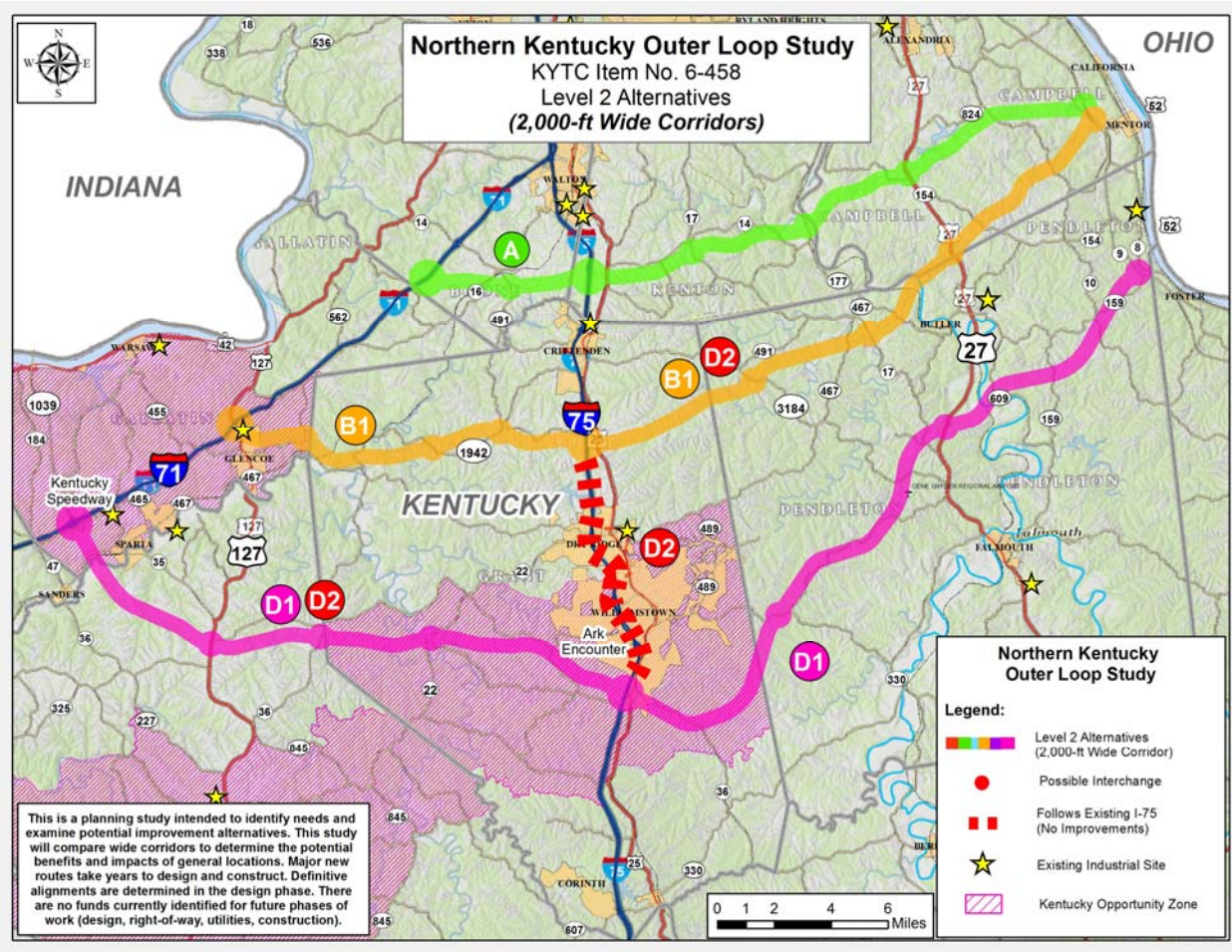


Figure 3: Level 2 Alternatives for Screening

Alternative A passes through southern Boone, Kenton, and Campbell counties. It runs from I-71 near the Boone/Gallatin county line, north of Crittenden, to the AA Highway between California and Mentor, a distance of about 25 miles.

Alternative B1 passes through Gallatin, Grant, Pendleton, and Campbell counties. It runs from I-71 near the US 127 interchange, south of Crittenden, to the AA Highway between California and Mentor, a distance of 35 miles.

Southernmost, **Alternative D** has two options east of I-75. Common to both Alternative D1 and D2, the western section of Alternative D passes through Gallatin, Owen, and Grant counties. It stretches from I-71 west of Sparta, dipping south of Williamstown at I-75.

- East of I-75, **Alternative D1** continues through Grant and Pendleton counties. From south of Williamstown, it curves north to the north side of Falmouth then to the AA Highway near where it crosses the Pendleton/Bracken county line. From I-71 to the AA Highway, Alternative D1 is about 48 miles long.
- Continuing from the east, **Alternative D2** run concurrent with existing I-75 through Williamstown and Dry Ridge then continues east on new alignment to the AA Highway between California and Mentor. The eastern section of Alternative D2 matches Alternative B; the total length is 44 miles, excluding the 9-mile section that follows existing I-75.

For Level 2 assessments, Level 1 environmental data were supplemented with additional information gathered from:

- Coordination with the Kentucky Heritage Council (KHC) and the Office of State Archaeology (OSA) to identify known historic and prehistoric sites previously inventoried.
- Windshield surveys to identify potential NRHP-eligible structures, districts, and likely environments to contain archaeological deposits.
- Collection of demographic data from the Census Bureau to identify potential EJ populations: low-income and/or minority population clusters.
- Reviews of county comprehensive planning documents to understand how the proposed corridor(s) fit within regional transportation and land use visions.
- Windshield surveys to identify additional community resources or other environmentally sensitive features.

Level 2 supplemental data are detailed in the following subsections. **Appendix A** contains detailed Level 2 corridor maps. Site-specific archaeological data are not mapped in this publication as dictated by federal regulation.

4.1 NRHP Historic Resources

Level 2 historic resources assessment activities conducted for Alternatives A, B and D included May 2019 windshield surveys and KHC inventory reviews. These activities identified a number of sites potentially eligible for the NRHP, in addition to those identified in Level 1.

KHC show 21 previously inventoried resources within or immediately adjacent to the Level 2 Alternatives, including two previously listed resources. Properties include 13 single dwellings, four agricultural complexes, and four other civic/commercial buildings. Most records list “undetermined” status, indicating a formal NRHP evaluation has not yet been undertaken. Depending on the date of original KHC survey, some sites may no longer exist or the record may contain imprecise coordinate references. All data points are mapped for reference.

The windshield survey identified 43 resources that may also meet NRHP eligibility criteria. Properties included 13 rural communities, 12 former schools, 8 commercial buildings including stores and mills, four churches, and six other types (e.g., floodplains and infrastructure).

Should a project be selected for implementation, intensive surveys and coordination with KHC would become necessary to satisfy Section 106 requirements. In collaboration with KHC and other stakeholders, the Section 106 evaluation process follows four basic steps:

- identifying the area of potential effect,
- assessing the NRHP eligibility of resources at least 50 years in age,
- determining project effects,
- and developing measures to avoid, minimize, or mitigate any adverse effects.

4.2 Known Archaeological Sites

Few archaeological investigations have been conducted within the corridors. OSA records identify six known sites; all located in the western portion of the Level 2 Alternative corridors.

Four sites do not meet NRHP eligibility criteria; therefore do not merit preservation in place or qualify as a Section 4(f) resource:

- 15Ke143, a historic farmstead, lies in Kenton County within the Alternative A corridor.
- 15Ga88, a historic farmstead, lies in Gallatin County within the Alternative D corridor.
- 15Ga85, an open habitation site without mounds dating to an indeterminate prehistoric era, is located in Gallatin County within the Alternative D corridor.
- 15Ga50, an open habitation site without mounds dating to an indeterminate prehistoric era, is located in Gallatin County within the Alternative D corridor.

Two sites have not been evaluated against NRHP eligibility criteria and warrant further study:

- 15Ga51, a historic cemetery, lies in Gallatin County within the Alternative D corridor.
- 15Gr8, an open habitation site without mounds dating to the Archaic period, is located in Grant County within the Alternative D corridor.

Several floodplains identified during windshield surveys have high potential for buried archaeological deposits, shown as potential historic resources on mapping. Should a project be selected for implementation, intensive surveys and coordination with KHC would be required to assess the potential for effects to any buried archaeological deposits.

4.3 Demographics

Federal EJ guidance requires federal agencies to “identify and address disproportionately high and adverse human health or environmental effects of their policies, programs and activities on minority populations or low-income populations.” American Community Survey (ACS) 5-year estimates of race and income populations in Level 2 corridors were collected for planning-level evaluation. **Figure 4** shows block groups in Alternatives B and D with minority or low-income population concentrations exceeding average state and/or county rates (**Table 2**).

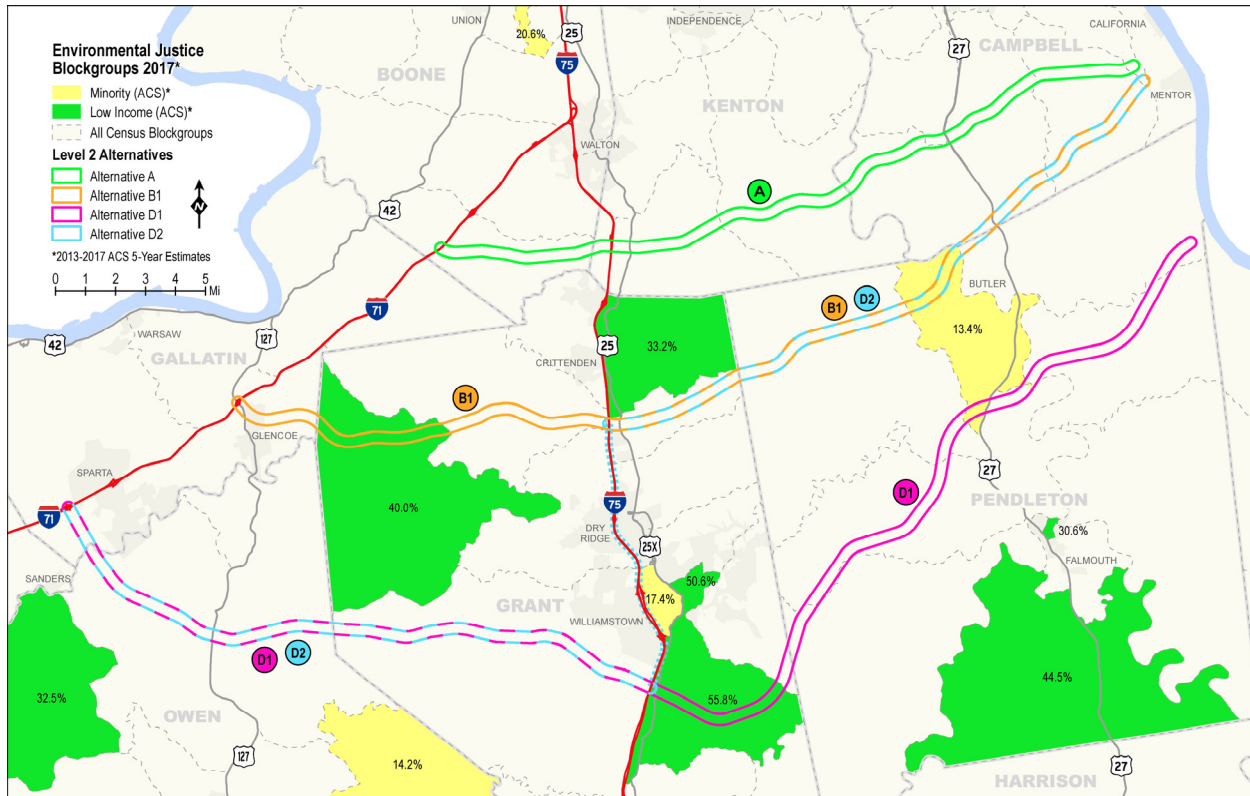


Figure 4: Census Block Group Geographies with Potential EJ Population Concentrations

Table 2: Key Demographic Indicators

Geography	Total Population	% Minority Population	% Low-Income Population
Kentucky	4,424,376	12.7%	18.3%
Boone County	127,682	8.6%	7.6%
Campbell County	91,804	6.2%	14.2%
Gallatin County	8,652	5.9%	13.4%
Grant County	24,800	5.1%	21.5%
Kenton County	163,987	9.6%	12.9%
Owen County	10,686	4.2%	16.7%
Pendleton County	14,530	2.9%	15.1%

Source: 2017 ACS 5-year estimates

It should be noted that a separate document prepared for this study addresses likely right-of-way and relocation impacts in greater detail. Such community impacts are an important environmental consideration though they are not specifically addressed herein.

4.4 County Comprehensive Plans

Northern Kentucky Area Development District (NKADD) is comprised of Boone, Kenton, Campbell, Gallatin, Owen, Grant, and Pendleton counties, with Boone, Kenton, and Campbell counties also included in the Ohio Kentucky Indiana Regional Council of Governments Metropolitan Planning Organization

(OKI MPO). NKADD and OKI MPO regional transportation goals include improving infrastructure to support and sustain a viable economy and environment. NKADD maintains an inventory of transportation assets within their jurisdiction but largely relies on KYTC statewide efforts to identify priority project needs. OKI published its 2040 Long Range Plan in 2016, identifying 176 programmed road and bridge projects in addition to 132 other recommended projects, all located in congested areas north of the Level 2 Alternatives.

Comprehensive plans and other documents for counties in the project area were reviewed. The lack of sufficient east-west routes is noted in several of the counties' plans as well as the desire to preserve existing farmland.

Individual county plans are summarized below:

- 2010 *Boone County Comprehensive Plan*: Planning for the year 2035 states that Boone County has outgrown its current road system due to population and business growth. Future land use in the area will continue to focus on rural residential and commercial agriculture use. Roadway improvements in rural areas should be designed to accommodate wide farm machinery.
- *Direction 2030* (2019 Comprehensive Plan for Kenton County) identifies reliable north to south mobility, but challenging east to west connectivity. I-275 is used for east-west movements in northern sections of the county but only winding, two-lane roads fraught with numerous stop signs and crashes are available in the southern sections. Support exists to preserve farmland but better infrastructure—wider and safer roadways—is continually requested by county residents.
- Campbell County's *Comprehensive Plan Update* from 2008 indicates nearly two-thirds of the workforce who live in Campbell County work outside of the county. The plan identifies shorter travel trips and integration of transportation modes to meet needs of various segments of the population. Preserving the rural character and agricultural use of the southern portion of the county are emphasized as county goals.
- Limited comprehensive planning data is publicly available for Gallatin County. Its Agriculture Development Council confirms that Gallatin County has established planning and zoning regulations and is generally very sympathetic to agriculture interests.
- The June 2015 *Update of Owen County Comprehensive Plan* identifies the lack of good transportation infrastructure as a challenge for local marketing and transportation of agriculture commodities.
- Grant County has a Planning Commission to oversee zoning issues. Limited planning documents are publicly available.
- Pendleton County's 2017 *Comprehensive Plan Update* identifies the existing county transportation network as poor and encourages study of an east-west highway connection across the county. Two of the most important land use issues cited by county residents were improving infrastructure and preserving farms.

5. Environmental Challenges by Alternative

Each of the Level 2 corridors presents environmental challenges. Overall, the rugged terrain (**Figure 5** and **Figure 6**) limits development and accessibility, contributing to the large swaths of forested habitat throughout much of the rural area. Forests are likely habitat for threatened/endangered bat and plant

species, requiring further coordination with USFWS should a project be selected for implementation.. Streams, wetlands, and small ponds are scattered throughout low-lying areas between ridges.

Though not strictly an environmental issue, utility infrastructure including large transmission lines and oil and gas pipelines cross each corridor.



Figure 5: Representative View of Terrain, from Eagle Tunnel Road in Northwest Grant County



Figure 6: Representative View of Terrain, from Mount Pisgah Road in Grant County

5.1 Alternative A

Appendix A maps 1 through 7 illustrate the following constraints identified within the 2,000-foot corridor of Alternative A, generally moving west to east. Alternative A contains the most ongoing development, with over a dozen single-family homes under construction as of May 2019.

- The Porter Plantations and Amber Estates subdivisions (**Figure 7**), accessed off Porter Road, include two dozen single-family homes, starting at \$500,000, with additional houses under construction. The neighborhood covers approximately 65% of the corridor width.



Figure 7: Porter Plantations/Amber Estates

- The Florence House/Jones Farm (15381 Porter Road West), the farm at 15348 Porter Road East, and the adjacent Jimmy Waller House/Farm (15433 Glencoe Verona Road) are noted in KHC files as potentially historic.
- The potentially historic James Breeden House/Farm (15487 Lebanon-Crittenden Road) and the NRHP-listed Ransom House (1842 Messner Road) lie along the southern boundary of the corridor near KY 491.
- Historic records show a small cemetery off Courtney Road at the southern corridor boundary. Courtney Road also forms the northern limits of Mullins WMA. Alternative A contains 21 acres of the WMA in the southern half of the corridor.
- Historic records show a small burial ground east of US 25 near the center of the corridor.
- Piner Baptist Church and a potentially historic house at 10539 Madison Pike are accessed along US 17 near the community of Piner.
- Extensive floodplains surround Little Cruises Creek approaching the Kenton/Campbell county line, a tributary of the Licking River. The Licking River forms the boundary between counties and is an OSRW.
- Homes just west of the Licking River along Fontana Road likely represent an EJ community (**Figure 8**), adjacent to the CSX Railroad tracks. Another potential EJ community was identified along Bakerfield Road in the northern section of the corridor near the community of Abbott in Campbell County.
- A collection of resources were noted at the Grants Lick community, located off US 27 in Campbell County, including a cluster of potentially historic homes and an active gas station likely containing hazmat/USTs.
- East of US 27, approximately 50% of the corridor is designated as agricultural districts.
- AJ Jolly Park covers 1,000 acres around Campbell County Lake with 158 acres overlapping the Alternative A corridor. Surrounding the lake, the county park offers a variety of recreational opportunities: a golf course, an environmental education center, equestrian facilities, outdoor pavilion, picnic shelters, playgrounds, sports fields, campgrounds, a boat ramp, fishing piers, horse trails, and miles of walking/bicycle trails.

- KHC files show the M. Huck House near Picnic Road as potentially historic for its mid-19th century Victorian architecture.



Figure 8: Representative homes along Fontana Road

5.2 Alternative B1

Appendix A maps 8 through 11 illustrate constraints identified west of I-75 within the 2,000-foot corridor of Alternative B1, generally moving west to east.

- Active gas stations are located on both sides of the US 127 interchange with I-71.
- Historic records show a small burial ground along Wilson Road in the center of the corridor.
- An unnamed tributary to Big Sugar Creek is designated as an OSRW between I-71 and KY 16.
- A potential EJ community exists along KY 16 approaching the county line.
- Records show a collection of 16 oil/gas wells in the western section of the corridor, near and west of KY 1942/Eagle Creek.
- The floodplain associated with Arnolds Creek likely contains potential historic/prehistoric resources.
- Mount Zion lies just north of the Alternative B corridor; however, a church, city park, water tower, and country store along KY 1942 are located within the corridor.
- Much of the area west of Mount Zion to US 25, is designated as agricultural districts.

Appendix A maps 12 through 17 illustrate constraints identified east of I-75 where Alternative B1 and Alternative D2 share the same footprint.

- The Norfolk-Southern Railroad tracks run north-south, just east of US 25.
- Sherman Elementary School, with approximately 500 students, lies along the southern boundary of the corridor, adjacent to the NRHP-listed Sherman Tavern which dates to the first half of the 19th century. Historic records also identify a cemetery nearby. All three are shown in **Figure 9**.



Figure 9: Sherman Elementary School (orange), cemetery (blue), and historic tavern (green)

- No existing roadways provide access to the corridor in the remainder of Grant County. The area is covered in streams and woods. Eastern Pendleton County is sparsely developed with a former school and former church noted in historic records.
- In north-central Pendleton County, South Fork Grassy Creek is an OSRW. Less than two miles east, the Licking River is also an OSRW.
- The remainder of the corridor in Campbell County is sparsely developed, with large forested swaths and stream channels between ridges.
- Historic records show a collection of potential historic resources along KY 10 at the east limit of the corridor: a saw/grist mill, a store, and federal-style house.
- The recently closed Flagg Springs Golf Course is located immediately east of the corridor along KY 9.

5.3 Alternatives D1 and D2

Appendix A maps 18 through 24 illustrate constraints identified west of I-75 within the 2,000-foot corridor of Alternatives D1 and D2, generally moving west to east.

- A large gas station/truck stop to the north of the I-71/KY 1039 interchange contains hazmat/USTs. Records show a historic cemetery located to the southwest of the interchange.
- Designated agricultural districts make up most of the first two miles of the corridor.
- A large floodplain follows Eagle Creek, the boundary between Gallatin and Owen counties, representing a likely site to contain potential historic/prehistoric resources.
- Mount Pisgah United Methodist Church and cemetery located along Mount Pisgah Road, lie at the southern limit of the corridor. A potential EJ community exists north of the church, along Stevens Lane.
- The Twin Bridges community lies at the conflux of Rattlesnake and Eagle creeks, surrounded by floodplains likely containing potential historic/prehistoric resources.
- Historic records note a cemetery along KY 1995 near the middle of the corridor.

Appendix A maps 25 through 32 illustrate constraints identified east of I-75 within the 2,000-foot corridor of Alternative D1, generally moving west to east. Constraints associated with the east portion of Alternative D2 are presented in **Section 5.2** above.

- Mason Corinth Elementary School, with approximately 350 students, lies immediately adjacent to the south edge of the corridor along US 25.
- Cherry Grove Pentecostal Church of God (**Figure 10**) lies in the center of the corridor off Cherry Grove Road.
- Just over the Pendleton County line, the community of Locust Grove is home to a cluster of resources: a cemetery, former hazmat site, and collection of potential historic resources.
- A short segment of Brushy Fork, an OSRW, runs along the northern edge of the corridor.
- The community of Goforth is also home to a cluster of resources, including a Short Creek Baptist Church, a cemetery, and several potentially historic structures.
- Along KY 22 near Dahms Road, the Ida Lovelace House (3161 Highway 22 W) is potentially NRHP eligible for its Victorian architecture (**Figure 11**).
- A small airport, Gene Snyder Airport K62, with a 4,000-foot paved runway, is adjacent to the southern limits of the corridor east of US 27. Air traffic is controlled by Cincinnati/Northern Kentucky International Airport (CVG) in Covington.
- Along KY 17, an electrical substation lies near the center of the corridor, with a transmission line running to the northeast. Across the street is a potentially historic house (1041 Highway 17 N). Two potential hazmat sites are also noted in the vicinity.
- The corridor crosses the Licking River (an OSRW) and its floodplains, noted as a likely site to contain potential historic/prehistoric resources.
- Along KY 159 near the northern limit of the corridor, the potentially historic Pleasant Hill School lies on the east side of the roadway at 6952 Highway 159 N.



Figure 10: Cherry Grove Church



Figure 11: Ida Lovelace House

6. Conclusions & Next Steps

The purpose of this *Environmental Overview* report is to present the findings of a planning-level environmental inventory based on 2,000-foot corridors for a selection of conceptual alternatives between I-71 and the AA Highway. Based on readily accessible environmental datasets, key constraints in the region will include:

- Section 4(f) properties—i.e., public parks, wildlife/waterfowl refuges, and historic resources;
- Natural habitats for Threatened and Endangered species, including forests and streams;
- Community resources—i.e., schools, churches, civic buildings, businesses, and homes; and
- Agricultural districts/farm impacts.

Additionally, community impacts—including home and business relocations—are important environmental considerations but are not addressed in this document. General information about potential EJ population clusters is presented; however, to fully understand the extent of likely impacts, in-depth analysis and coordination with affected property owners is necessary.

If any projects are selected for implementation using any projects are selected for implementation using federal funds, detailed environmental studies and public and stakeholder involvement will be required, documented in an Environmental Impact Statement (EIS) to satisfy the National Environmental Policy Act (NEPA) and other environmental legislation.

Table 3 compares potential impacts of Level 2 Alternatives within the 2,000-foot corridors.

Table 3: Level 2 Comparison of Environmental Features within 2,000-Foot Corridor

	Alt. A	Alt. B1	Alt. D1	Alt. D2
Community Features				
Schools	None	Sherman Elem.	None	Sherman Elem.
Civic Buildings	None	Mt. Zion	None	None
Churches	Piner Baptist	Mt. Zion Bapt.; Grassy Creek Bapt.	Pisgah UMC; Cherry Grove Pen; Short Creek Bapt.	Pisgah UMC; Grassy Creek Bapt.
Known Cemeteries	2	2	3	2
Potential EJ Clusters	2	1	1	1
Historic Resources				
-NRHP-Listed	1	1	None	1
-Potential/Eligible	17	8	18	11
Known Archaeological Sites	1	None	5	5
Parks & Recreational Sites	AJ Jolly, 158 ac	Mt. Zion Park, >1 ac	None	None
Natural Resources				
OSRW	Licking River	UT Big Sugar Cr; S Fork Grassy Cr; Licking River	Brushy Fork; Licking River	S Fork Grassy Cr; Licking River
Length of Streams (1,000s feet)	160	235	286	298
NWI Wetlands (acreage)	141	178	260	256
100-Year Floodzones (acreage)	375	323	455	538
Wildlife Management Areas	Mullins, 21 ac	None	None	None
Forested Areas (acreage)	3,009	5,151	6,425	5,903
Agricultural Districts (acreage) ¹	905	1,248	352	763
Other				
Oil/Gas Wells	None	18	3	3

	Alt. A	Alt. B1	Alt. D1	Alt. D2
Known USTs & potential hazmat sites	37	53	28	22
Large Utilities Infrastructure			Substation	
-Transmission Lines	5	7	9	7
-Oil/Gas Pipelines	3	None	1	1

¹ District limits updated since Level 1 analysis; Grant County limits not yet digitized so footprints estimated

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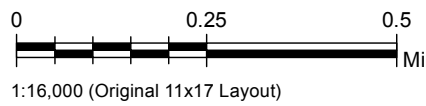
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Appendix A

Level 2 Alternative Maps



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Notes:
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2. Imagery and Transportation Network: KY
Division of Geographic Information

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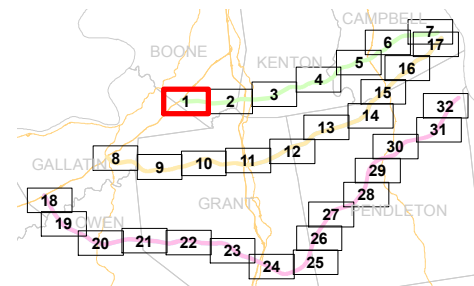


Exhibit 1 - Sheet 1 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
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Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

- Alternative A
- Alternative B1
- Alternative D1
- Alternative D2
- Populated Place
- Corporate Limits
- County Boundary
- Industrial Sites
- Civil Services
- Cemetery

- Place of Worship
- School
- Domestic Water Well
- Monitoring Well
- Other Water Well
- Public Well
- Outstanding State Resource Waters (DOW)
- Streams (NHD)
- Waterbody (NHD)

- NWI Wetland (USFWS)
- 100-Yr Flood Zone (FEMA)
- Sinkhole
- Hazardous Materials Site (USEPA)
- Underground Storage Tank (UST)
- Oil/Gas Well (KGS)
- Electric Transmission Line (USEIA)
- Listed Historic Structure (NRHP)
- Potentially NRHP Historic (KHC Records)

- Potentially NRHP Historic
- Listed Historic Site (NRHP)
- Potential EJ Cluster
- Agricultural Districts
- Park/Recreational Area (Public)
- Recreational Area (Private)
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- Wildlife Management Area (KDFWR)

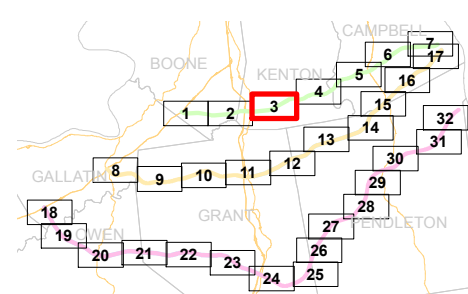
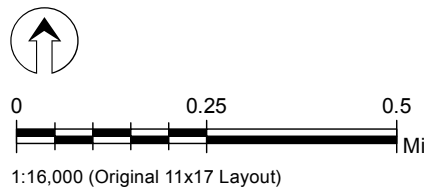
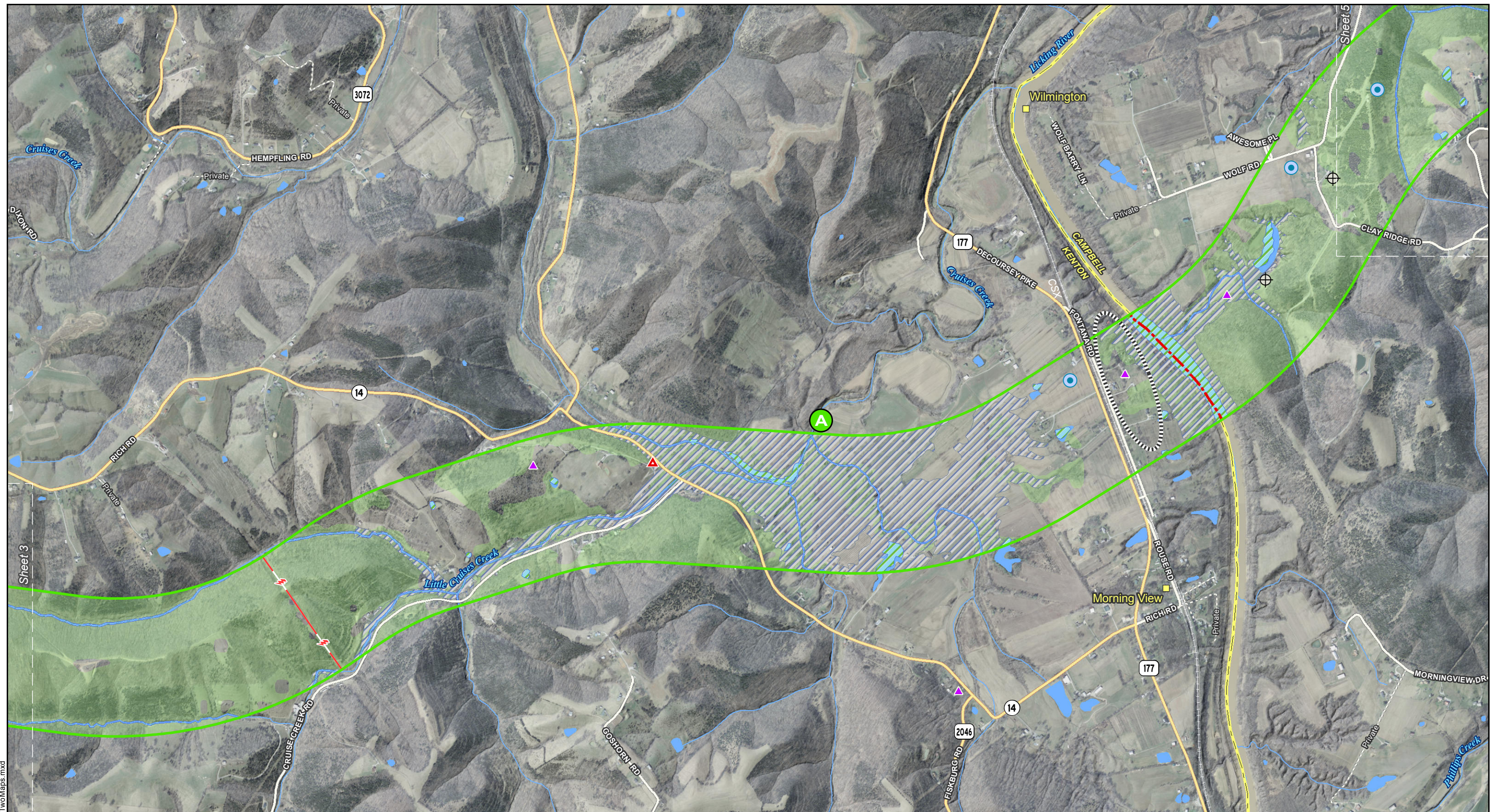






































Exhibit 1 - Sheet 3 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
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- Notes:
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|  | Alternative B1 |  | School |  | 100-Yr Flood Zone (FEMA) |  | Listed Historic Site (NRHP) |
|  | Alternative D1 |  | Domestic Water Well |  | Sinkhole |  | Potential EJ Cluster |
|  | Alternative D2 |  | Monitoring Well |  | Hazardous Materials Site (USEPA) |  | Agricultural Districts |
|  | Populated Place |  | Other Water Well |  | Underground Storage Tank (UST) |  | Park/Recreational Area (Public) |
|  | Corporate Limits |  | Public Well |  | Oil/Gas Well (KGS) |  | Recreational Area (Private) |
|  | County Boundary |  | Outstanding State Resource Waters (DOW) |  | Electric Transmission Line (USEIA) |  | Forested Area (USDA) |
|  | Industrial Sites |  | Streams (NHD) |  | Listed Historic Structure (NRHP) |  | Wildlife Management Area (KDFWR) |
|  | Civil Services |  | Waterbody (NHD) |  | Potentially NRHP Historic (KHC Records) | | |
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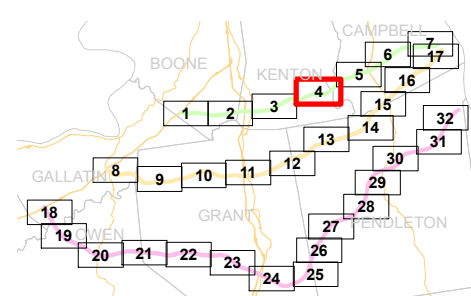

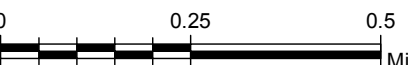


Exhibit 1 - Sheet 4 of 32
Level 2 Environmental Screening
Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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| Alternative B1 | School | 100-Yr Flood Zone (FEMA) | Listed Historic Site (NRHP) |
| Alternative D1 | Domestic Water Well | Sinkhole | Potential EJ Cluster |
| Alternative D2 | Monitoring Well | Hazardous Materials Site (USEPA) | Park/Recreational Area (Public) |
| Populated Place | Other Water Well | Underground Storage Tank (UST) | Recreational Area (Private) |
| Corporate Limits | Public Well | Oil/Gas Well (KGS) | Forested Area (USDA) |
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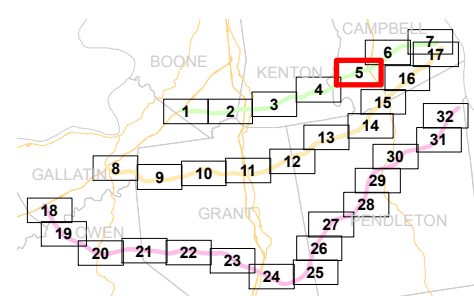
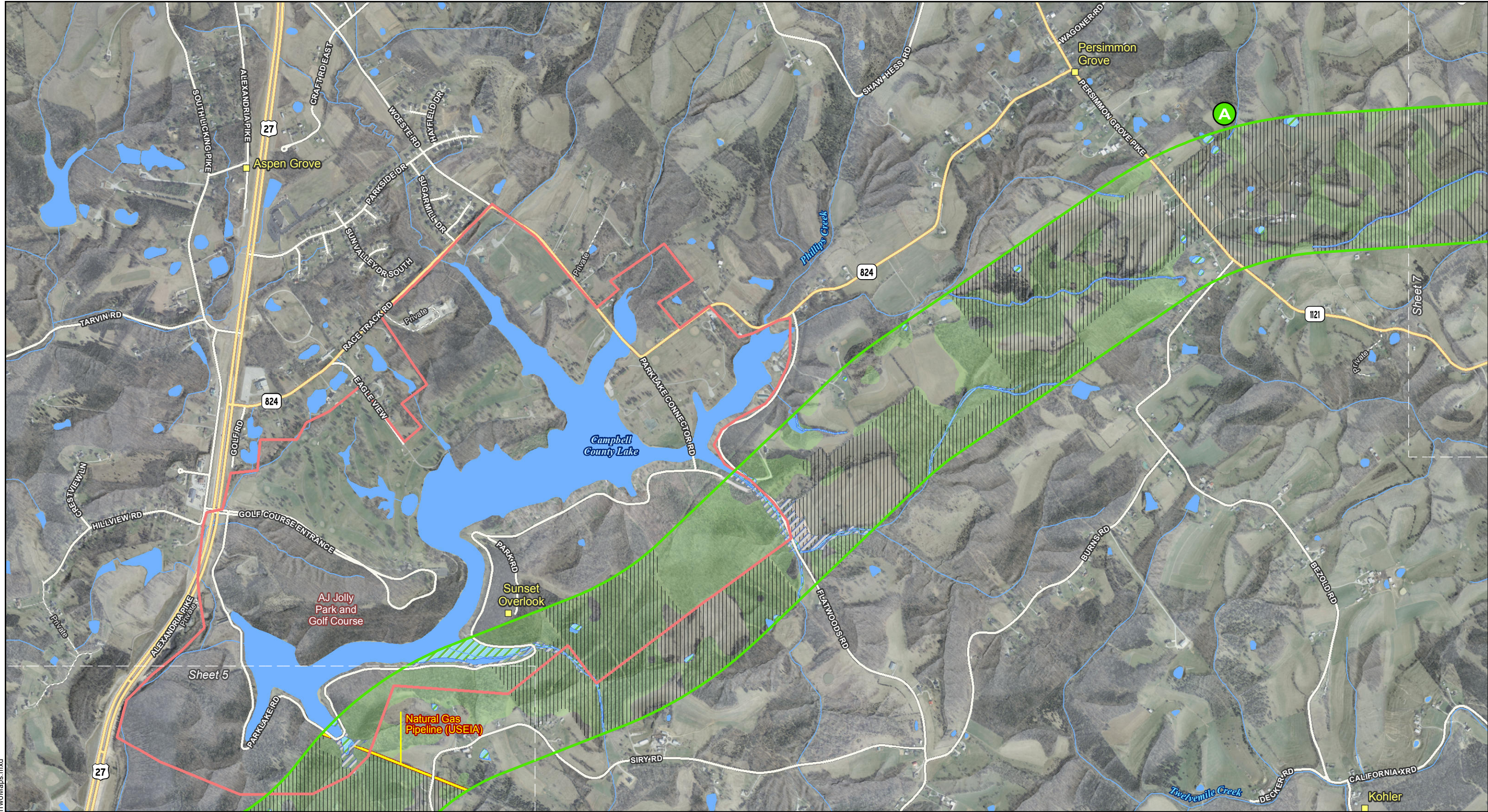


Exhibit 1 - Sheet 5 of 32
Level 2 Environmental Screening
Northern Kentucky Outer Loop
Boone, Campbell, Gallatin, Grant, Kenton, Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Kentucky FIPS 1600 US Feet

2. Imagery and Transportation Network: KY
Division of Geographic Information

Alternative A

Alternative B1

Alternative D1

Alternative D2

Populated Place

Corporate Limits

County Boundary

Industrial Sites

Civil Services

Cemetery

Place of Worship

School

Domestic Water Well

Monitoring Well

Other Water Well

Public Well

Outstanding State Resource Waters (DOW)

Streams (NHD)

Waterbody (NHD)

NWI Wetland (USFWS)

100-Yr Flood Zone (FEMA)

Sinkhole

Hazardous Materials Site (USEPA)

Underground Storage Tank (UST)

Oil/Gas Well (KGS)

Electric Transmission Line (USEIA)

Listed Historic Structure (NRHP)

Potentially NRHP Historic (KHC Records)

Potentially NRHP Historic

Listed Historic Site (NRHP)

Potential EJ Cluster

Agricultural Districts

Park/Recreational Area (Public)

Recreational Area (Private)

Forested Area (USDA)

Wildlife Management Area (KDFWR)

Exhibit 1 - Sheet 6 of 32

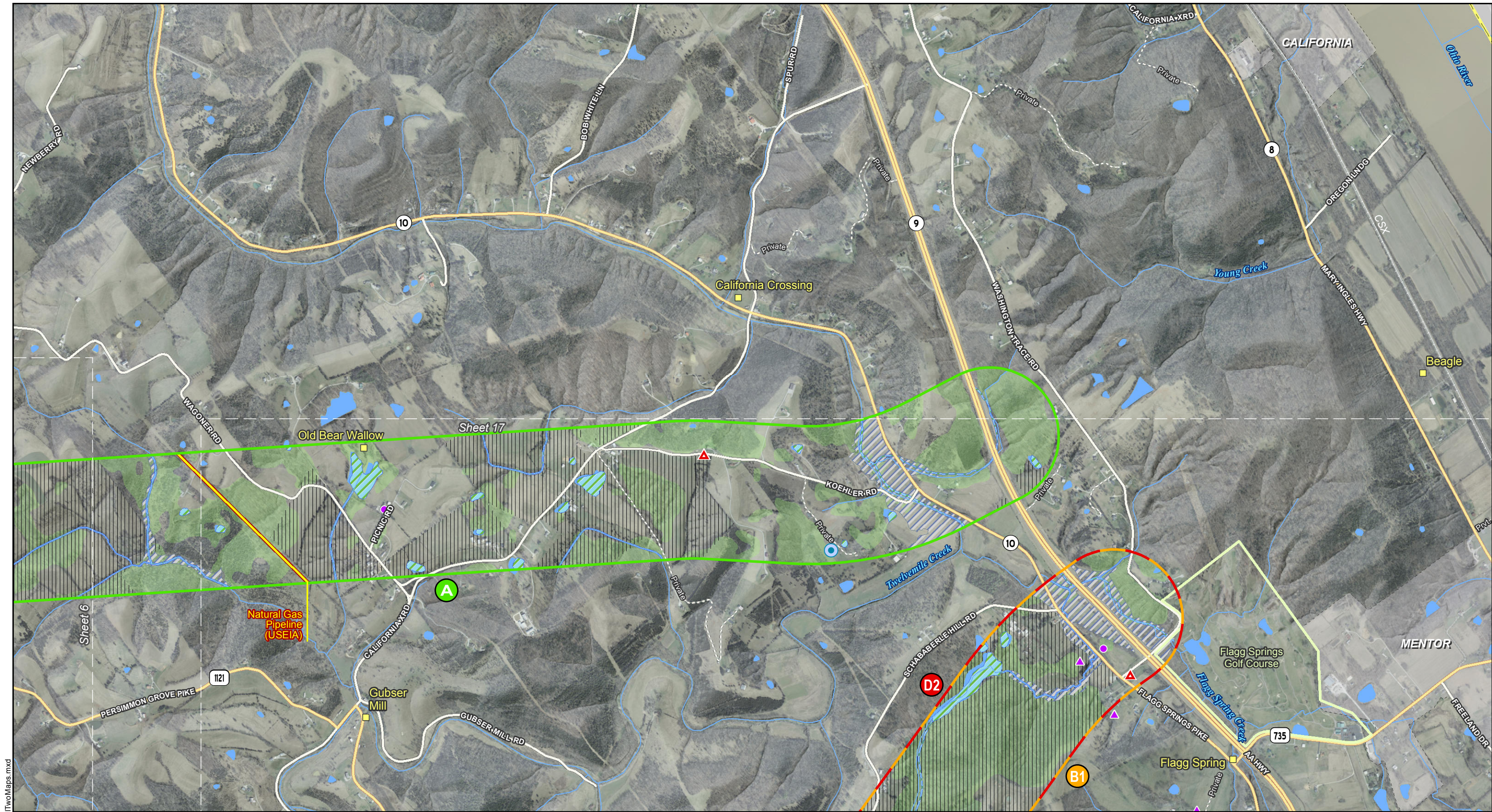
Level 2 Environmental Screening

Northern Kentucky Outer Loop

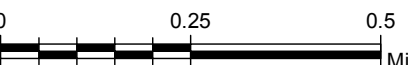

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










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|  Alternative B1 |  School |  100-Yr Flood Zone (FEMA) |  Listed Historic Site (NRHP) |
|  Alternative D1 |  Domestic Water Well |  Sinkhole |  Potential EJ Cluster |
|  Alternative D2 |  Monitoring Well |  Hazardous Materials Site (USEPA) |  Agricultural Districts |
|  Populated Place |  Other Water Well |  Underground Storage Tank (UST) |  Park/Recreational Area (Public) |
|  Corporate Limits |  Public Well |  Oil/Gas Well (KGS) |  Recreational Area (Private) |
|  County Boundary |  Outstanding State Resource Waters (DOW) |  Electric Transmission Line (USEIA) |  Forested Area (USDA) |
|  Industrial Sites |  Streams (NHD) |  Listed Historic Structure (NRHP) |  Wildlife Management Area (KDFWR) |
|  Civil Services |  Waterbody (NHD) |  Potentially NRHP Historic (KHC Records) | |
|  Cemetery | | | |

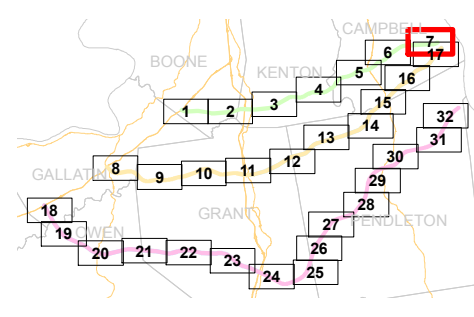
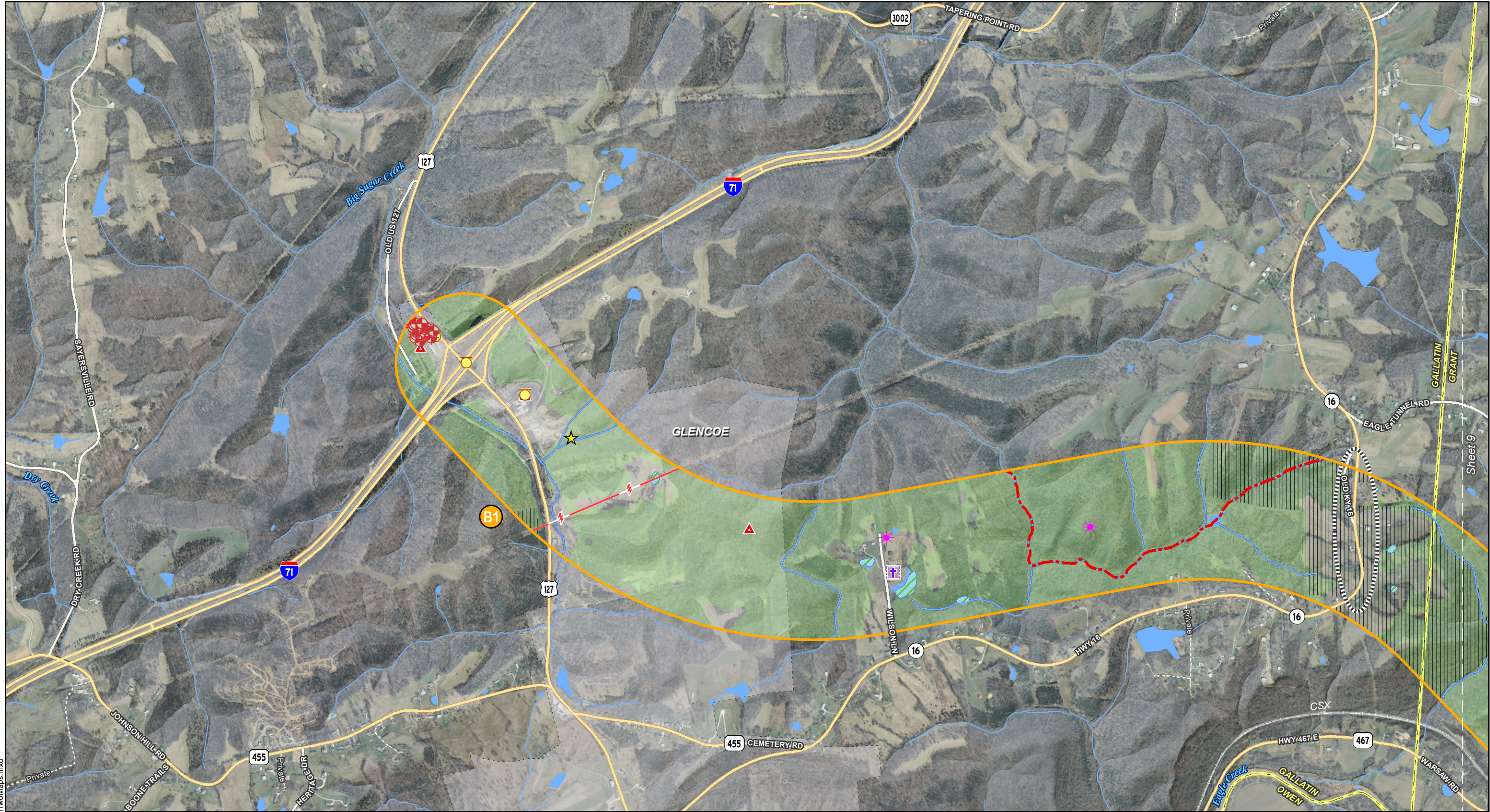
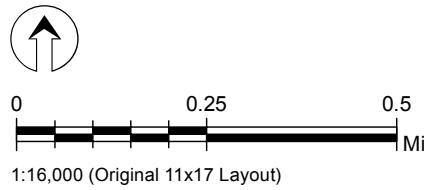


Exhibit 1 - Sheet 7 of 32
Level 2 Environmental Screening
Northern Kentucky Outer Loop

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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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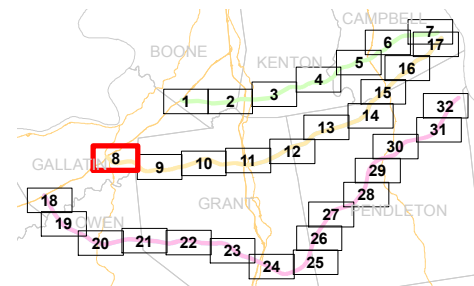
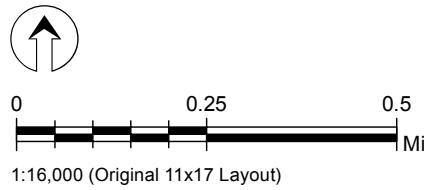


Exhibit 1 - Sheet 8 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane
Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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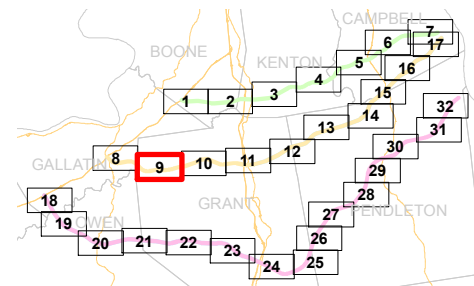
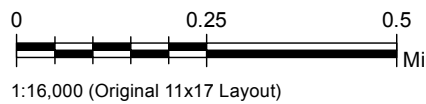


Exhibit 1 - Sheet 9 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane
Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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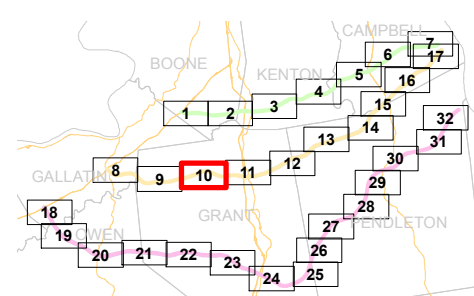
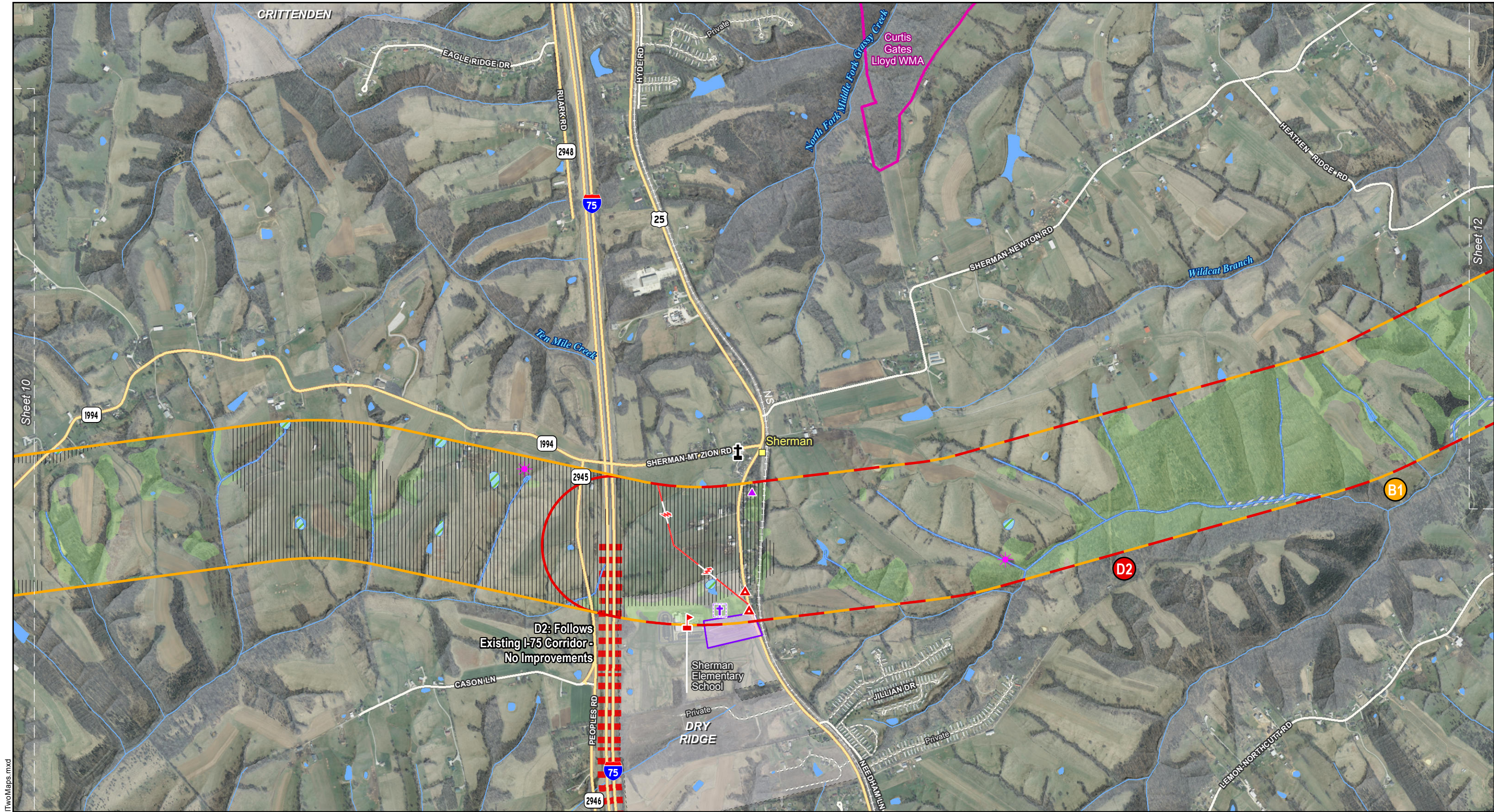


Exhibit 1 - Sheet 10 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY Division of Geographic Information

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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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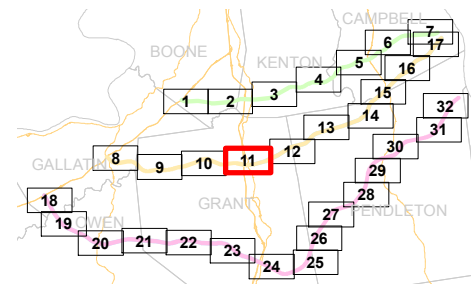
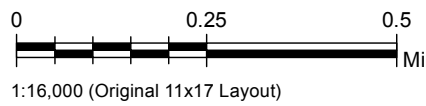


Exhibit 1 - Sheet 11 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY Division of Geographic Information

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|--|--|--|---|
| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
|--|--|--|---|

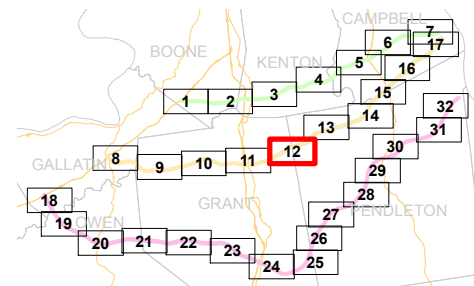
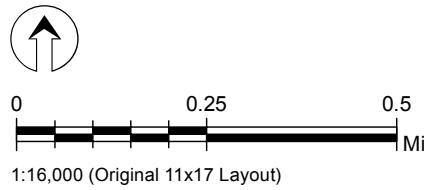


Exhibit 1 - Sheet 12 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY Division of Geographic Information

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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
|--|--|--|---|

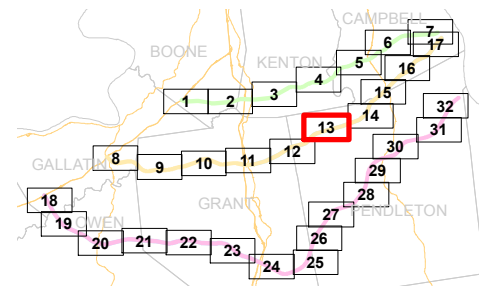


Exhibit 1 - Sheet 13 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane
Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

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|--|--|--|---|
| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
|--|--|--|---|

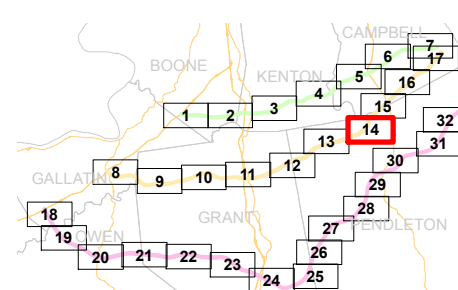
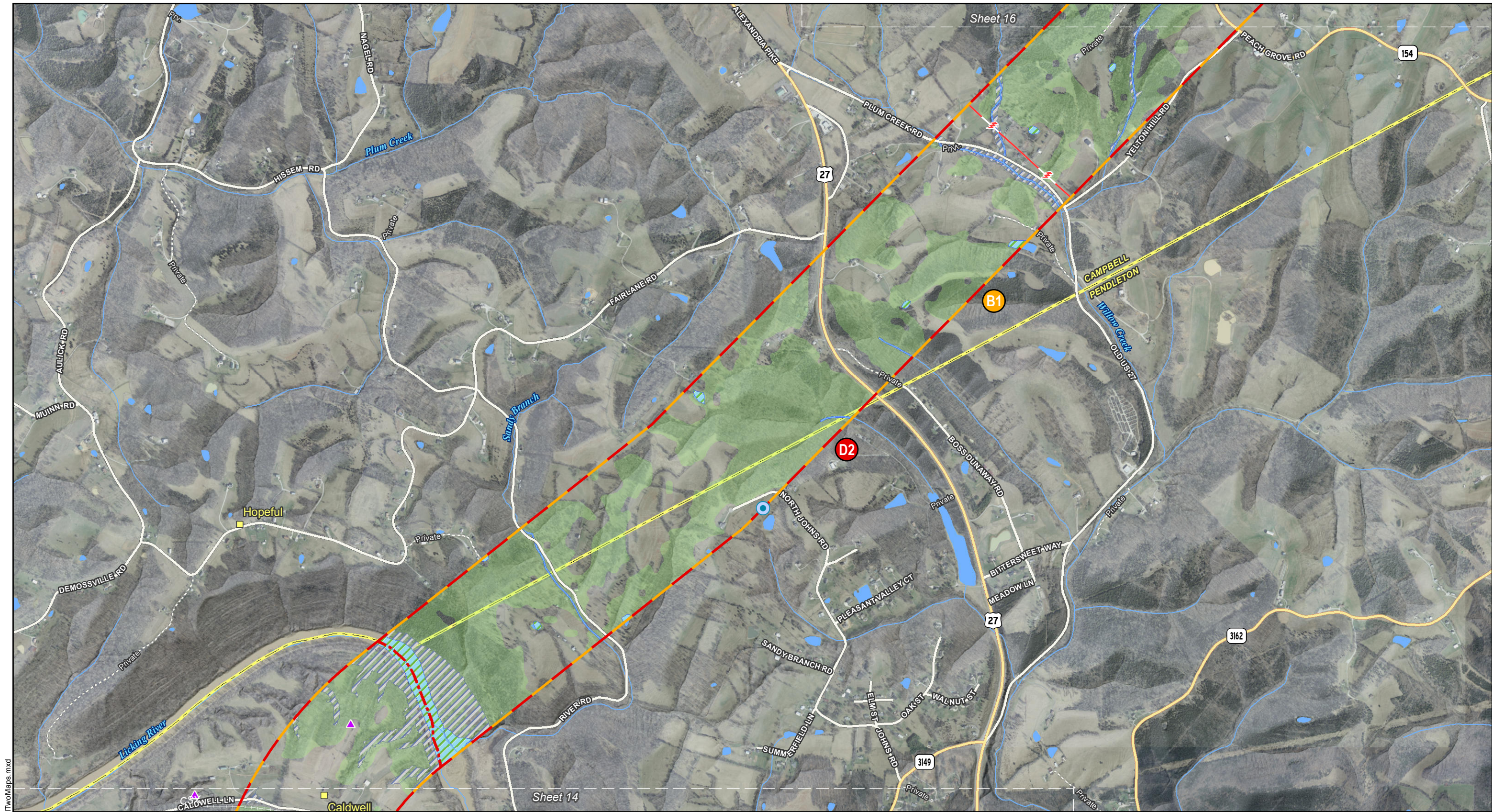

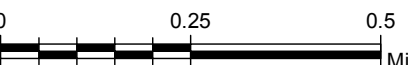


Exhibit 1 - Sheet 14 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458







































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Notes:

- Coordinate System: NAD 1983 State Plane Kentucky FIPS 1600 US Feet
- Imagery and Transportation Network: KY Division of Geographic Information

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|--|---|---|--|
|  Alternative A |  Place of Worship |  NWI Wetland (USFWS) |  Potentially NRHP Historic |
|  Alternative B1 |  School |  100-Yr Flood Zone (FEMA) |  Listed Historic Site (NRHP) |
|  Alternative D1 |  Domestic Water Well |  Sinkhole |  Potential EJ Cluster |
|  Alternative D2 |  Monitoring Well |  Hazardous Materials Site (USEPA) |  Agricultural Districts |
|  Populated Place |  Other Water Well |  Underground Storage Tank (UST) |  Park/Recreational Area (Public) |
|  Corporate Limits |  Public Well |  Oil/Gas Well (KGS) |  Recreational Area (Private) |
|  County Boundary |  Outstanding State Resource Waters (DOW) |  Electric Transmission Line (USEIA) |  Forested Area (USDA) |
|  Industrial Sites |  Streams (NHD) |  Listed Historic Structure (NRHP) |  Wildlife Management Area (KDFWR) |
|  Civil Services |  Waterbody (NHD) |  Potentially NRHP Historic (KHC Records) | |
|  Cemetery | | | |

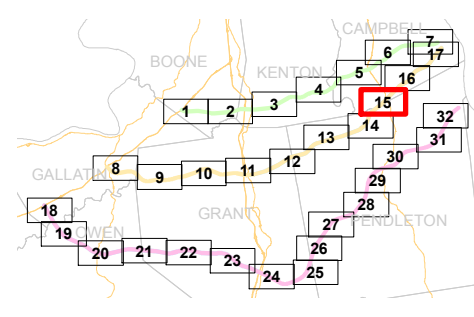
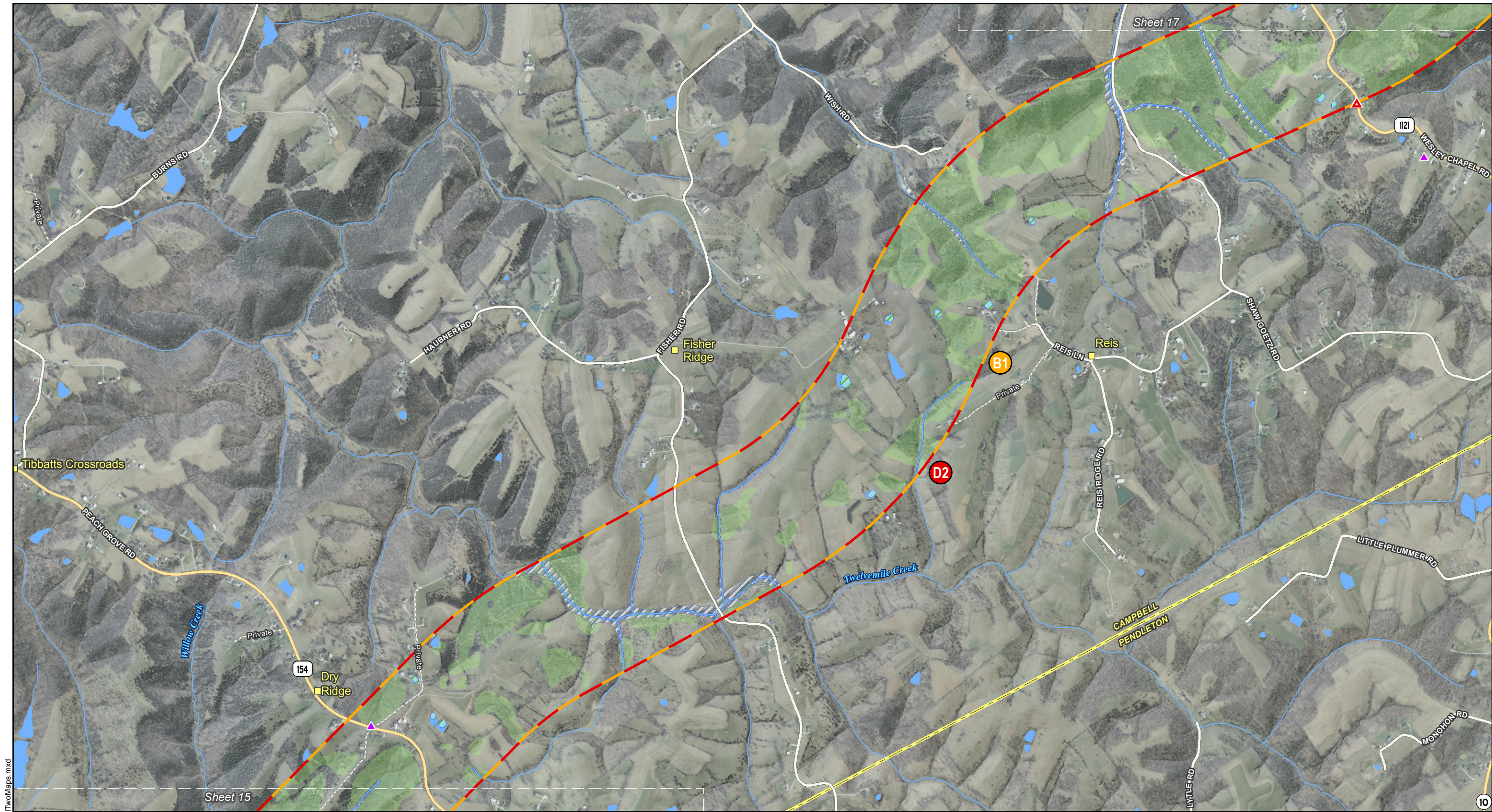


Exhibit 1 - Sheet 15 of 32
Level 2 Environmental Screening
Northern Kentucky Outer Loop
Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:

- Coordinate System: NAD 1983 State Plane Kentucky FIPS 1600 US Feet
- Imagery and Transportation Network: KY Division of Geographic Information

- Alternative A
- Alternative B1
- Alternative D1
- Alternative D2
- Populated Place
- Corporate Limits
- County Boundary
- Industrial Sites
- Civil Services
- Cemetery

- Place of Worship
- School
- Domestic Water Well
- Monitoring Well
- Other Water Well
- Public Well
- Outstanding State Resource Waters (DOW)
- Streams (NHD)
- Waterbody (NHD)

- NWI Wetland (USFWS)
- 100-Yr Flood Zone (FEMA)
- Sinkhole
- Hazardous Materials Site (USEPA)
- Underground Storage Tank (UST)
- Oil/Gas Well (KGS)
- Electric Transmission Line (USEIA)
- Listed Historic Structure (NRHP)
- Potentially NRHP Historic (KHC Records)

- Potentially NRHP Historic
- Listed Historic Site (NRHP)
- Potential EJ Cluster
- Agricultural Districts
- Park/Recreational Area (Public)
- Recreational Area (Private)
- Forested Area (USDA)
- Wildlife Management Area (KDFWR)

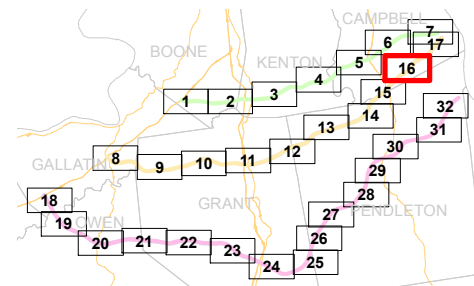
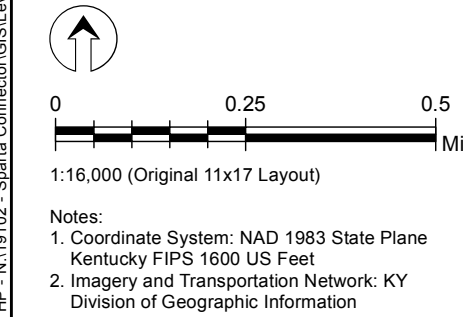
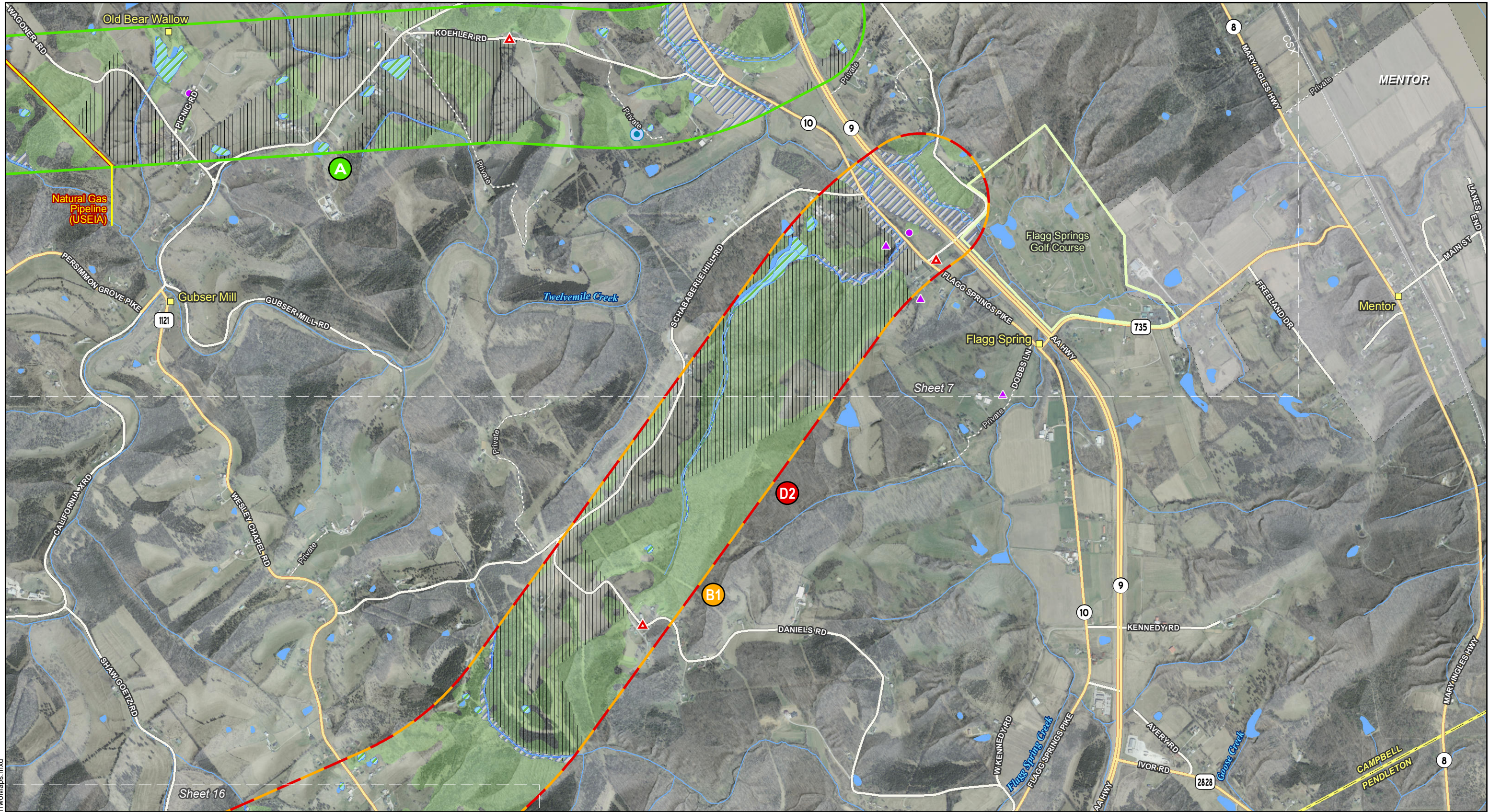


Exhibit 1 - Sheet 16 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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|--|--|--|---|
| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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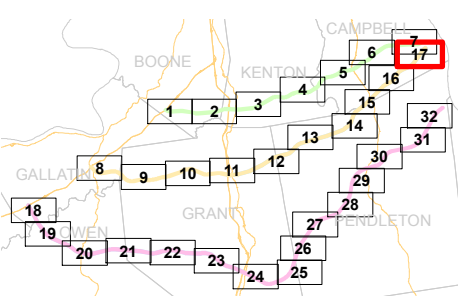
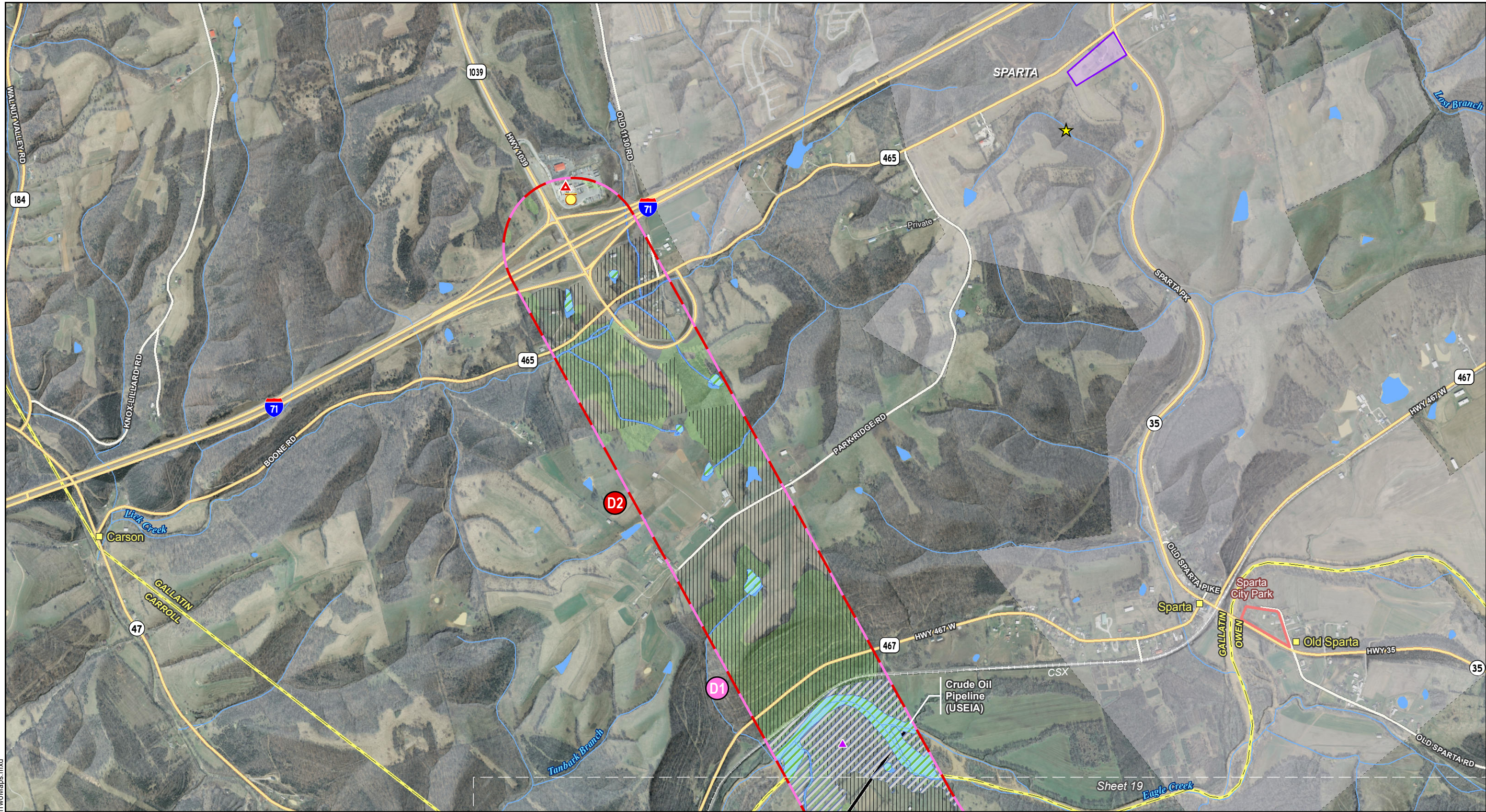


Exhibit 1 - Sheet 17 of 32
Level 2 Environmental Screening
Northern Kentucky Outer Loop
Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane
Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

- Alternative A
- Alternative B1
- Alternative D1
- Alternative D2
- Populated Place
- Corporate Limits
- County Boundary
- Industrial Sites
- Civil Services
- Cemetery

- Place of Worship
- School
- Domestic Water Well
- Monitoring Well
- Other Water Well
- Public Well
- Outstanding State Resource Waters (DOW)
- Streams (NHD)
- Waterbody (NHD)

- NWI Wetland (USFWS)
- 100-Yr Flood Zone (FEMA)
- Sinkhole
- Hazardous Materials Site (USEPA)
- Underground Storage Tank (UST)
- Oil/Gas Well (KGS)
- Electric Transmission Line (USEIA)
- Listed Historic Structure (NRHP)
- Potentially NRHP Historic (KHC Records)

- Potentially NRHP Historic
- Listed Historic Site (NRHP)
- Potential EJ Cluster
- Agricultural Districts
- Park/Recreational Area (Public)
- Recreational Area (Private)
- Forested Area (USDA)
- Wildlife Management Area (KDFWR)

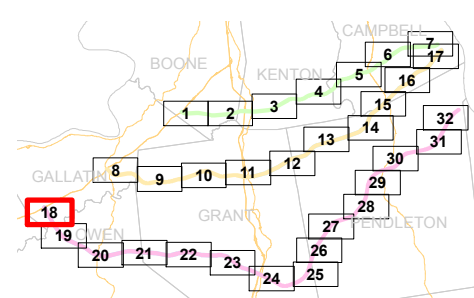


Exhibit 1 - Sheet 18 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane
Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

- Alternative A
- Alternative B1
- Alternative D1
- Alternative D2
- Populated Place
- Corporate Limits
- County Boundary
- Industrial Sites
- Civil Services
- Cemetery

- Place of Worship
- School
- Domestic Water Well
- Monitoring Well
- Other Water Well
- Public Well
- Outstanding State Resource Waters (DOW)
- Streams (NHD)
- Waterbody (NHD)

- NWI Wetland (USFWS)
- 100-Yr Flood Zone (FEMA)
- Sinkhole
- Hazardous Materials Site (USEPA)
- Underground Storage Tank (UST)
- Oil/Gas Well (KGS)
- Electric Transmission Line (USEIA)
- Listed Historic Structure (NRHP)
- Potentially NRHP Historic (KHC Records)

- Potentially NRHP Historic
- Listed Historic Site (NRHP)
- Potential EJ Cluster
- Agricultural Districts
- Park/Recreational Area (Public)
- Recreational Area (Private)
- Forested Area (USDA)
- Wildlife Management Area (KDFWR)

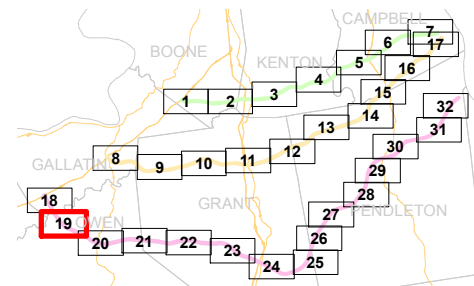


Exhibit 1 - Sheet 19 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458

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Notes:

1. Coordinate System: NAD 1983 State Plane Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY Division of Geographic Information

- Alternative A
- Alternative B1
- Alternative D1
- Alternative D2
- Populated Place
- Corporate Limits
- County Boundary
- Industrial Sites
- Civil Services
- Cemetery

- Place of Worship
- School
- Domestic Water Well
- Monitoring Well
- Other Water Well
- Public Well
- Outstanding State Resource Waters (DOW)
- Streams (NHD)
- Waterbody (NHD)

- NWI Wetland (USFWS)
- 100-Yr Flood Zone (FEMA)
- Sinkhole
- Hazardous Materials Site (USEPA)
- Underground Storage Tank (UST)
- Oil/Gas Well (KGS)
- Electric Transmission Line (USEIA)
- Listed Historic Structure (NRHP)
- Potentially NRHP Historic (KHC Records)

- Potentially NRHP Historic
- Listed Historic Site (NRHP)
- Potential EJ Cluster
- Agricultural Districts
- Park/Recreational Area (Public)
- Recreational Area (Private)
- Forested Area (USDA)
- Wildlife Management Area (KDFWR)

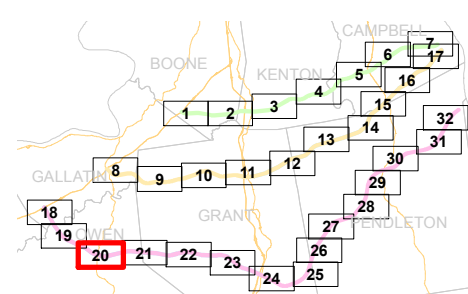


Exhibit 1 - Sheet 20 of 32
Level 2 Environmental Screening
Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane
Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

- Alternative A
- Alternative B1
- Alternative D1
- Alternative D2
- Populated Place
- Corporate Limits
- County Boundary
- Industrial Sites
- Civil Services
- Cemetery

- Place of Worship
- School
- Domestic Water Well
- Monitoring Well
- Other Water Well
- Public Well
- Outstanding State Resource Waters (DOW)
- Streams (NHD)
- Waterbody (NHD)

- NWI Wetland (USFWS)
- 100-Yr Flood Zone (FEMA)
- Sinkhole
- Hazardous Materials Site (USEPA)
- Underground Storage Tank (UST)
- Oil/Gas Well (KGS)
- Electric Transmission Line (USEIA)
- Listed Historic Structure (NRHP)
- Potentially NRHP Historic (KHC Records)

- Potentially NRHP Historic
- Listed Historic Site (NRHP)
- Potential EJ Cluster
- Agricultural Districts
- Park/Recreational Area (Public)
- Recreational Area (Private)
- Forested Area (USDA)
- Wildlife Management Area (KDFWR)

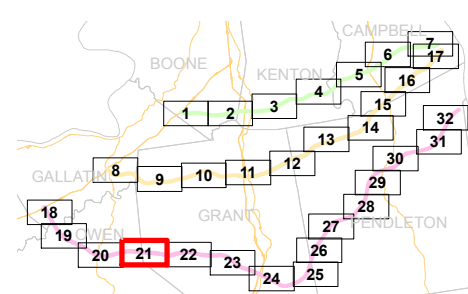
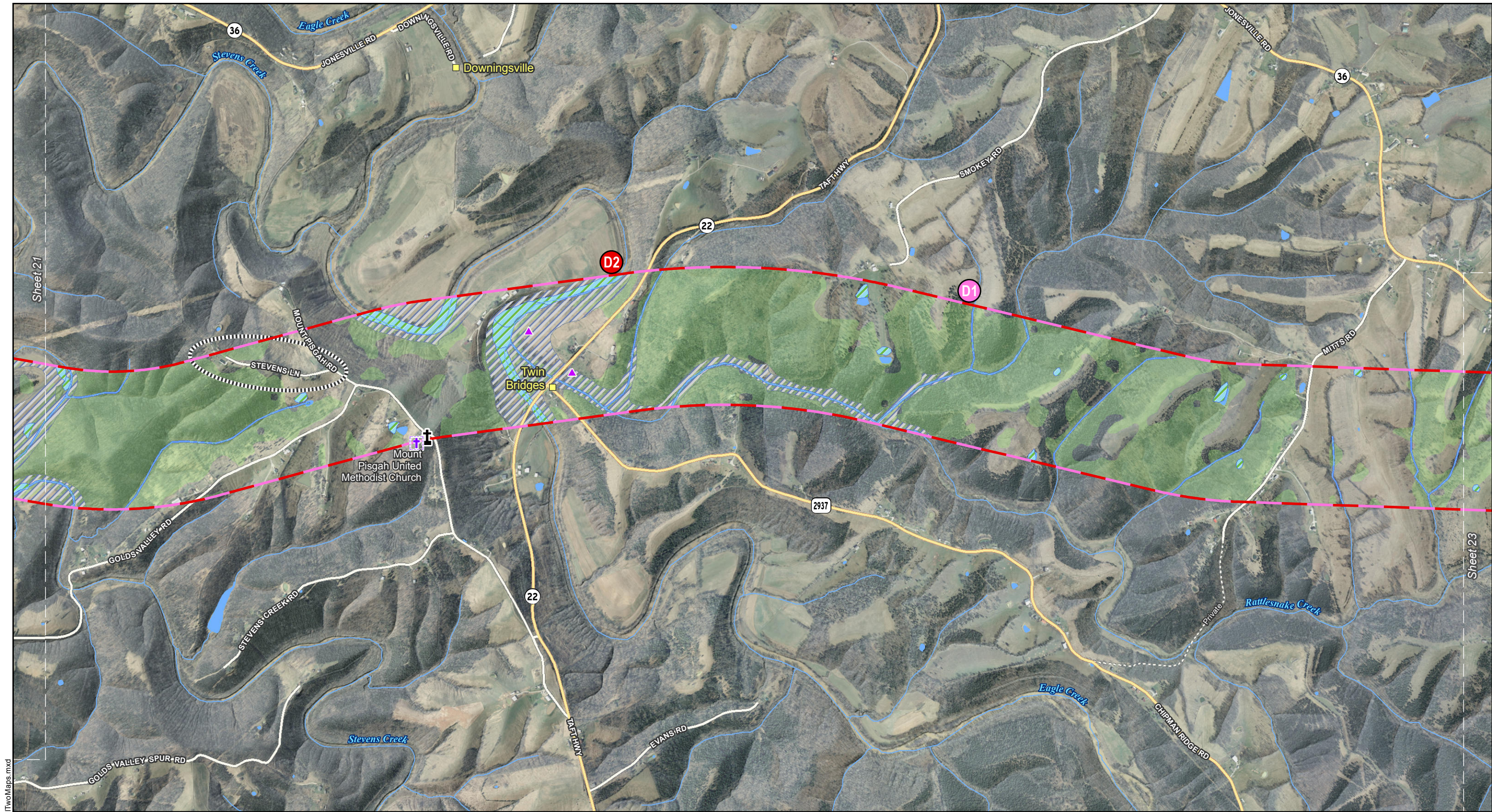
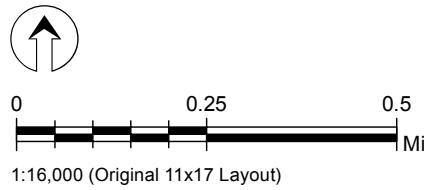


Exhibit 1 - Sheet 21 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY Division of Geographic Information

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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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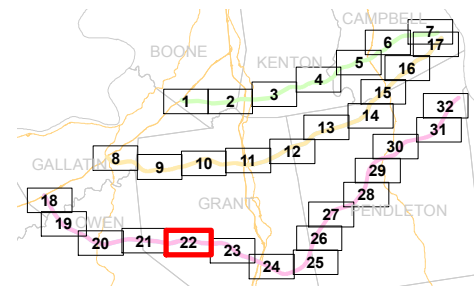


Exhibit 1 - Sheet 22 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane
Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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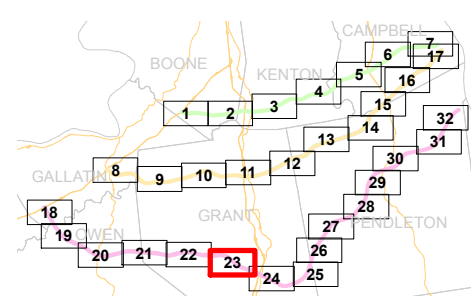
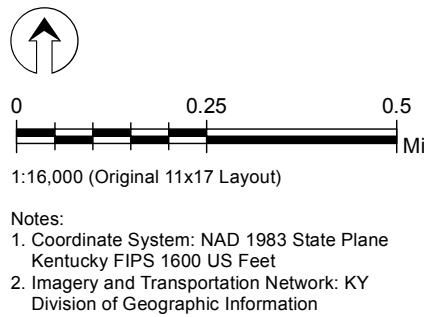


Exhibit 1 - Sheet 23 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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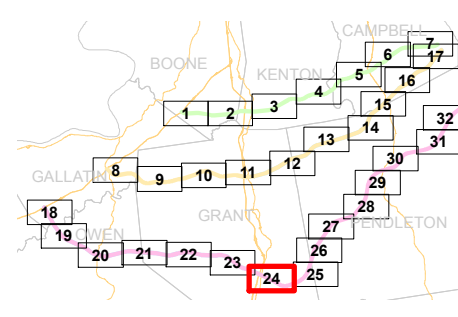
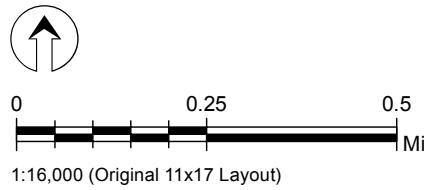


Exhibit 1 - Sheet 24 of 32
Level 2 Environmental Screening
Northern Kentucky Outer Loop
Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane
Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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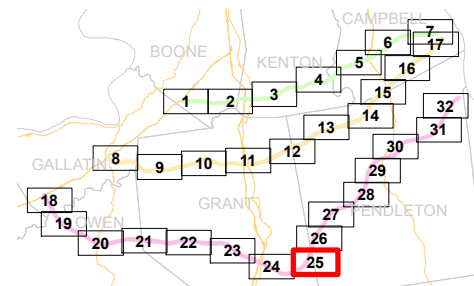
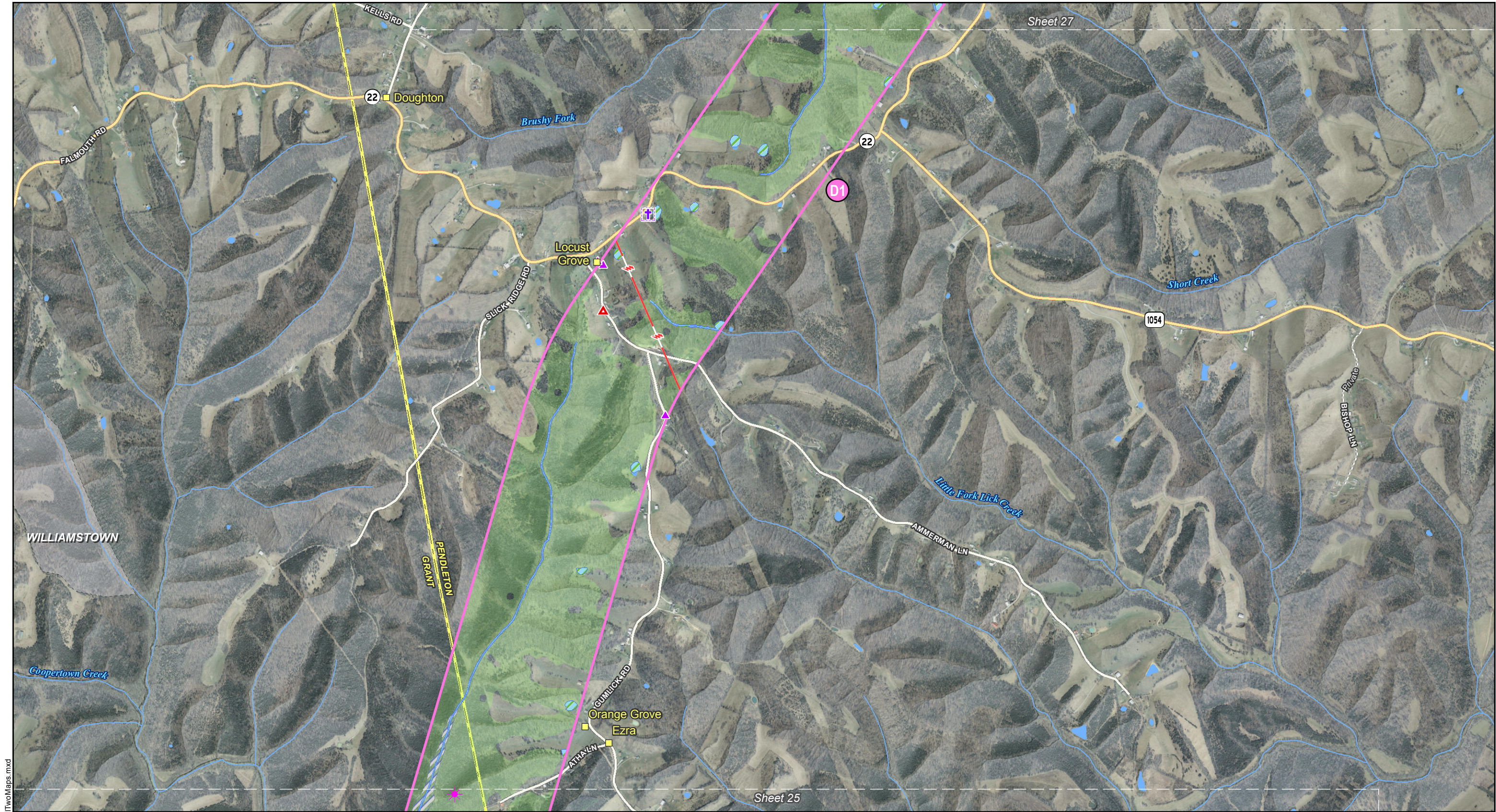


Exhibit 1 - Sheet 25 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane
Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

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|------------------|---|---|----------------------------------|
| Alternative A | Place of Worship | NWI Wetland (USFWS) | Potentially NRHP Historic |
| Alternative B1 | School | 100-Yr Flood Zone (FEMA) | Listed Historic Site (NRHP) |
| Alternative D1 | Domestic Water Well | Sinkhole | Potential EJ Cluster |
| Alternative D2 | Monitoring Well | Hazardous Materials Site (USEPA) | Agricultural Districts |
| Populated Place | Other Water Well | Underground Storage Tank (UST) | Park/Recreational Area (Public) |
| Corporate Limits | Public Well | Oil/Gas Well (KGS) | Recreational Area (Private) |
| County Boundary | Outstanding State Resource Waters (DOW) | Electric Transmission Line (USEIA) | Forested Area (USDA) |
| Industrial Sites | Streams (NHD) | Listed Historic Structure (NRHP) | Wildlife Management Area (KDFWR) |
| Civil Services | Waterbody (NHD) | Potentially NRHP Historic (KHC Records) | |
| Cemetery | | | |

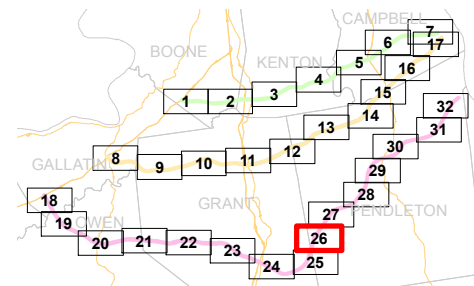
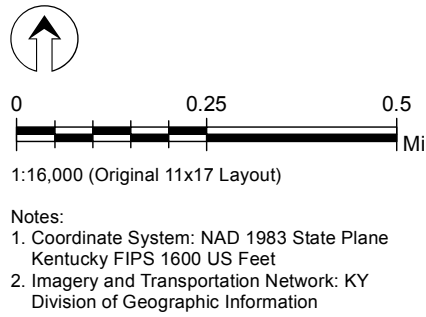


Exhibit 1 - Sheet 26 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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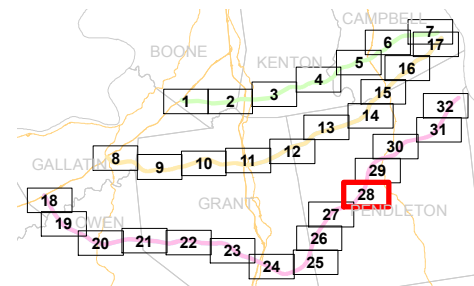
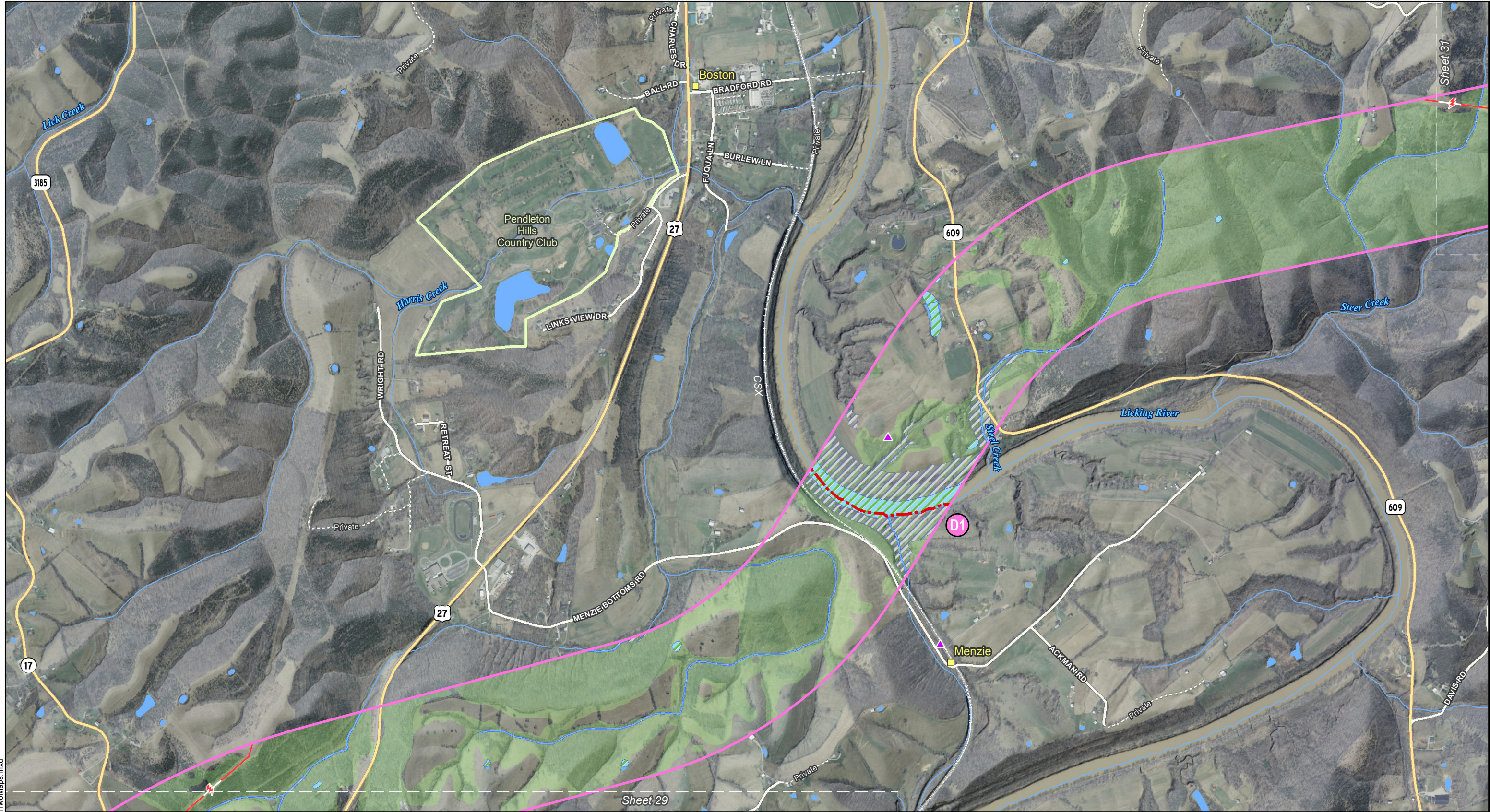

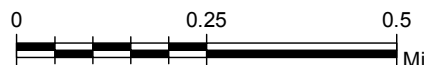


Exhibit 1 - Sheet 28 of 32
Level 2 Environmental Screening
Northern Kentucky Outer Loop
Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane
Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY
Division of Geographic Information

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|------------------|---|---|----------------------------------|
| Alternative A | Place of Worship | NWI Wetland (USFWS) | Potentially NRHP Historic |
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| Industrial Sites | Streams (NHD) | Listed Historic Structure (NRHP) | Wildlife Management Area (KDFWR) |
| Civil Services | Waterbody (NHD) | Potentially NRHP Historic (KHC Records) | |
| Cemetery | | | |

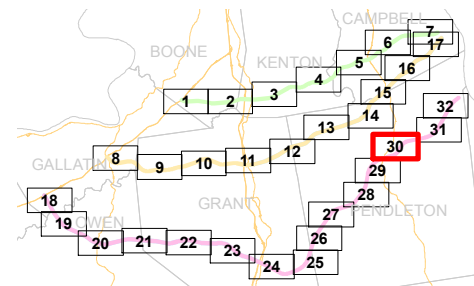


Exhibit 1 - Sheet 30 of 32
Level 2 Environmental Screening
Northern Kentucky Outer Loop
Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458



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Notes:
1. Coordinate System: NAD 1983 State Plane Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY Division of Geographic Information

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| <ul style="list-style-type: none">Alternative AAlternative B1Alternative D1Alternative D2Populated PlaceCorporate LimitsCounty BoundaryIndustrial SitesCivil ServicesCemetery | <ul style="list-style-type: none">Place of WorshipSchoolDomestic Water WellMonitoring WellOther Water WellPublic WellOutstanding State Resource Waters (DOW)Streams (NHD)Waterbody (NHD) | <ul style="list-style-type: none">NWI Wetland (USFWS)100-Yr Flood Zone (FEMA)SinkholeHazardous Materials Site (USEPA)Underground Storage Tank (UST)Oil/Gas Well (KGS)Electric Transmission Line (USEIA)Listed Historic Structure (NRHP)Potentially NRHP Historic (KHC Records) | <ul style="list-style-type: none">Potentially NRHP HistoricListed Historic Site (NRHP)Potential EJ ClusterAgricultural DistrictsPark/Recreational Area (Public)Recreational Area (Private)Forested Area (USDA)Wildlife Management Area (KDFWR) |
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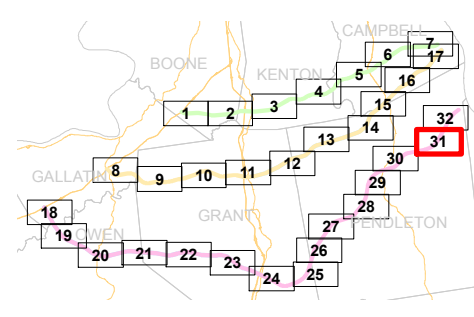
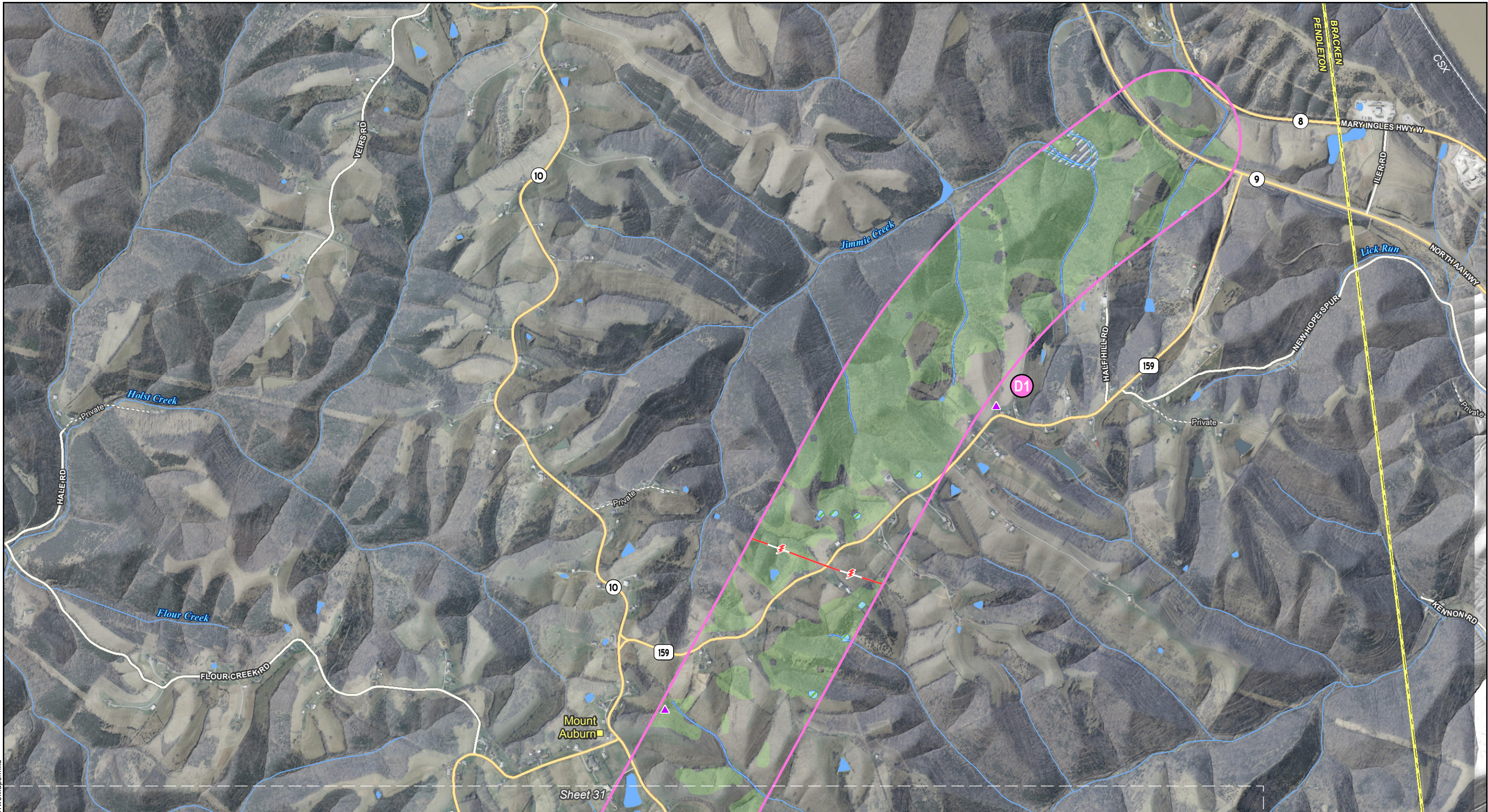


Exhibit 1 - Sheet 31 of 32 Level 2 Environmental Screening Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458

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Notes:

1. Coordinate System: NAD 1983 State Plane Kentucky FIPS 1600 US Feet
2. Imagery and Transportation Network: KY Division of Geographic Information

- Alternative A
- Alternative B1
- Alternative D1
- Alternative D2
- Populated Place
- Corporate Limits
- County Boundary
- Industrial Sites
- Civil Services
- Cemetery

- Place of Worship
- School
- Domestic Water Well
- Monitoring Well
- Other Water Well
- Public Well
- Outstanding State Resource Waters (DOW)
- Streams (NHD)
- Waterbody (NHD)

- NWI Wetland (USFWS)
- 100-Yr Flood Zone (FEMA)
- Sinkhole
- Hazardous Materials Site (USEPA)
- Underground Storage Tank (UST)
- Oil/Gas Well (KGS)
- Electric Transmission Line (USEIA)
- Listed Historic Structure (NRHP)
- Potentially NRHP Historic (KHC Records)

- Potentially NRHP Historic
- Listed Historic Site (NRHP)
- Potential EJ Cluster
- Agricultural Districts
- Park/Recreational Area (Public)
- Recreational Area (Private)
- Forested Area (USDA)
- Wildlife Management Area (KDFWR)

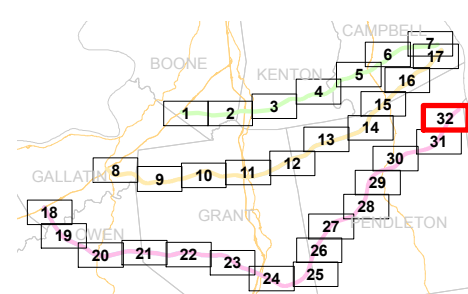


Exhibit 1 - Sheet 32 of 32
Level 2 Environmental Screening
Northern Kentucky Outer Loop

Boone, Campbell, Gallatin, Grant, Kenton,
Owen, and Pendleton Counties, Kentucky
KYTC Item No.: 6-458