

Environmental Overview

US 60 Bridge Replacement Livingston County, Kentucky KYTC Item No. 1-1142.00

Prepared for
Parsons Brinckerhoff

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I. INTRODUCTION

The Kentucky Transportation Cabinet (KYTC) is conducting a preliminary engineering study to determine alternatives and conceptual bridge types for the US 60 bridge replacement over the Cumberland River in Livingston, County, Kentucky (Item No. 1-1142.00). Third Rock Consultants, LLC (Third Rock) was retained by Parsons Brinckerhoff to prepare an Environmental Overview for the proposed project. The Study Area comprises an approximately one-mile radius around the existing bridge (Exhibits 1 and 2, pages 2 and 3). This Environmental Overview documents resources within the proposed Study Area.

II. AQUATIC AND TERRESTRIAL RESOURCES

Third Rock biologists utilized field surveys combined with literature and mapping review to assess the ecology of the Study Area. Correspondence with Kentucky resource agencies was also conducted. Copies of correspondence are located in Appendix A.

A. *Ecological Environmental Setting*

The Study Area is located in southwestern Livingston County, Kentucky (Exhibits 1 and 2, pages 2 and 3). The westernmost extent of the Study Area is located within 500 feet of, but does not include, the confluence of the Ohio and Cumberland Rivers. The southern end of the project area includes the northern city limits of Smithland, Kentucky.

B. *Climate*

The average summer temperature of Livingston County, Kentucky, is 79 degrees Fahrenheit, with the average daily maximum temperature being 90 degrees Fahrenheit (USDA 1993). The annual precipitation in Livingston County is about 53 inches, with most of the rainfall occurring between April and September, and the average seasonal snowfall is 12 inches (USDA 1993).

The prevailing wind is from the south-southwest, with average highest wind speeds in the spring at 10 miles per hour (USDA 1993).

C. *Physiography*

The study area is in parts of two physiographic regions. These are the Western Pennyroyal or "Pennyryle" region to the north of the Cumberland River and the Jackson Purchase region to the south of the river (USDA 1993).

"The Pennyryle Region consists of a limestone plain characterized by tens of thousands of sinkholes, sinking streams, streamless valleys, springs, and caverns. The term 'karst' is used to define this type of terrain." (<http://www.uky.edu/KGS/geoky/regionpennyryle.htm>).

The Jackson Purchase is located in western Kentucky where Cretaceous and Tertiary sediments occur at the surface (<http://www.uky.edu/KGS/geoky/regionjackson.htm>). Because most of the Cretaceous, Tertiary and Quaternary deposits are unconsolidated sediment instead of rock, they are easily eroded, and, consequently, this part of Kentucky is relatively flat lying, with numerous lakes, ponds, sloughs, and swamps (<http://www.uky.edu/KGS/geoky/regionjackson.htm>).

D. *Geology*

The upland soils in the Western Pennyroyal area are underlain mostly by sedimentary rocks of the Mississippian System (USDA 1993). These rocks include interbedded limestone, sandstone, and shale of the St. Genevieve Formation; interbedded limestone, shale, and chert of the St. Louis Formation; interbedded limestone, sandstone, siltstone, and shale of the Golconda formation; interbedded sandstone, siltstone, and shale of the Cypress and Hardinsburg Formations; and sandstone of the Bethel Formation (USDA 1993). Some of the higher areas are underlain by sedimentary rocks of the Pennsylvanian System, including interbedded

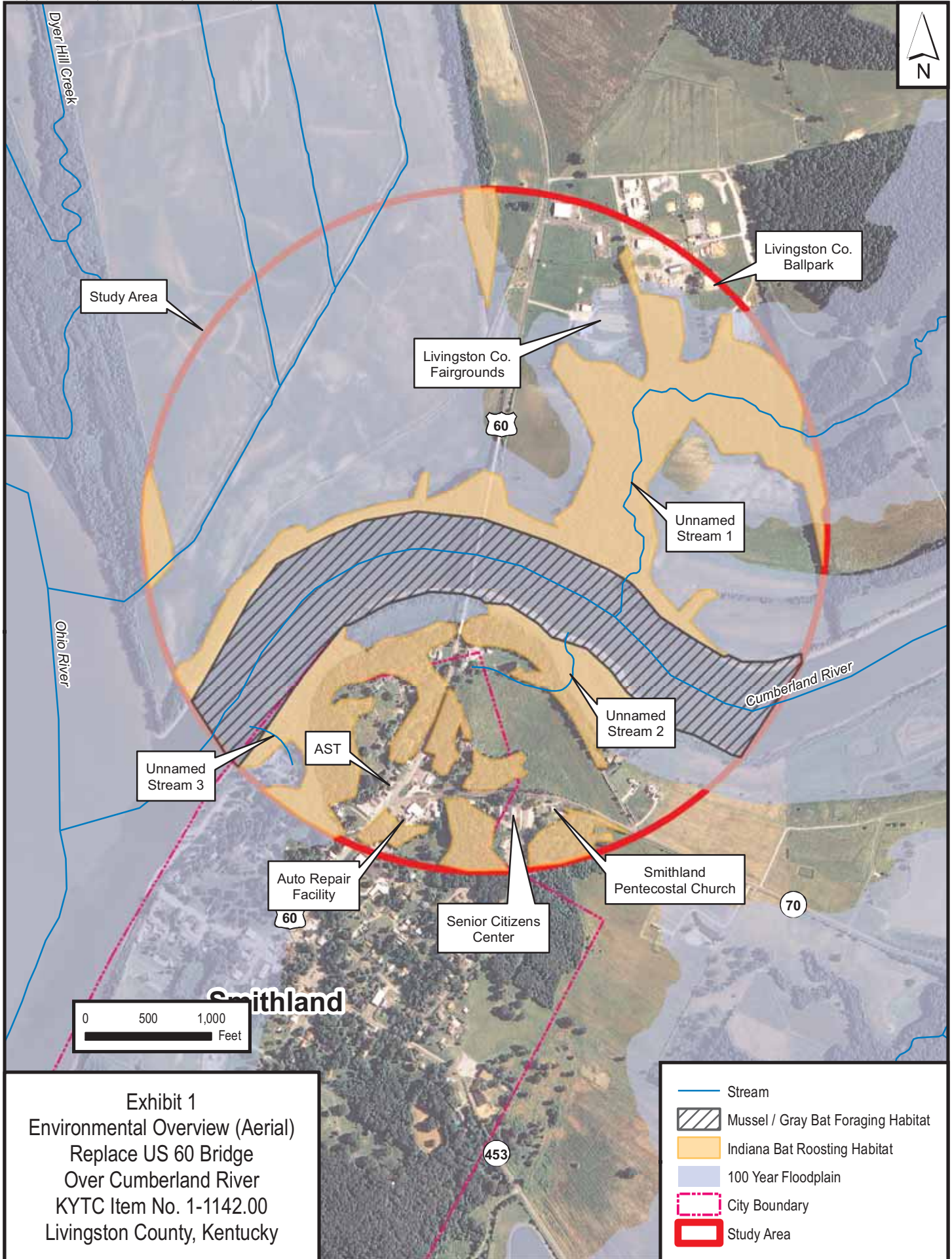


Exhibit 1
Environmental Overview (Aerial)
 Replace US 60 Bridge
 Over Cumberland River
 KYTC Item No. 1-1142.00
 Livingston County, Kentucky

- Stream
- Mussel / Gray Bat Foraging Habitat
- Indiana Bat Roosting Habitat
- 100 Year Floodplain
- City Boundary
- Study Area

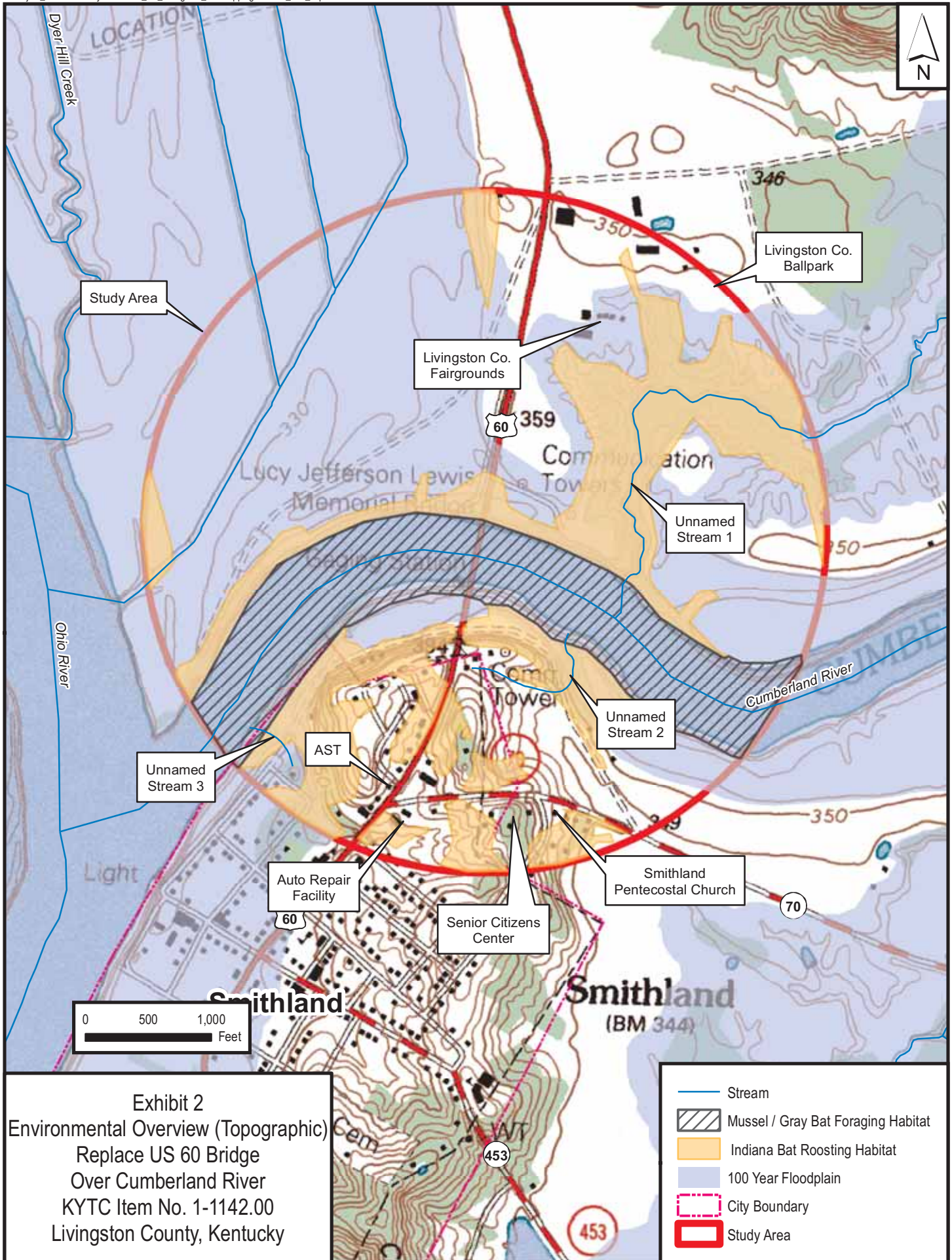


Exhibit 2
 Environmental Overview (Topographic)
 Replace US 60 Bridge
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sandstone, siltstone, and shale of the Caseyville Formation (USDA 1993).

The upland Soils in the Jackson Purchase area are underlain by sedimentary rocks of the Mississippian, Cretaceous, and Tertiary Systems (USDA 1993). Rocks of the Mississippian System include interbedded limestone, shale, and chert of the St. Louis Formation and interbedded limestone and chert of the Warsaw and Ft. Payne Formations (USDA 1993). Rocks of the Cretaceous System include intermixed gravel, sand, silt, and clay of the McNairy and Tuscaloosa Formations (USDA 1993). Rocks of the Tertiary System include intermixed sand, silt, clay, and gravel of the Continental Formation (USDA 1993).

Soils on floodplains and terraces formed in sediments of the Quaternary System and include intermixed silt, sand, gravel, and clay of lacustrine, fluviolacustrine, and alluvium formations and windblown, intermixed sand, silt, and clay of loess formations (USDA 1993).

E. Soils

Soil complexes within the Study Area include Huntington-Otwell-Lindsay-Wheeling Complex and Zanesville-Loring-Frondorf Complex. Huntington-Otwell-Lindsay-Wheeling soils are located along stream terraces and floodplains adjacent to the Cumberland River and its tributaries. These are loamy soils, very deep, nearly level to very steep, well drained and moderately well drained. Most acreage within Livingston County of this soil complex is used for row crops, hay and pasture, or urban development. The steepest areas are generally wooded. Zanesville-Loring-Frondorf soils, located on upland ridgetops and side slopes, are very deep and moderately deep, gently sloping to very steep, moderately well drained and well drained soils that have a loamy subsoil. Most soils in this complex are used for row crops, hay and

pasture, or urban development. The steepest areas are generally wooded (USDA 1993).

F. Land Use

Within the Study Area in Livingston County, land use includes residential, commercial, agriculture, and forested areas. Most of the nearly level areas are used for agriculture, while the hilly and very steep lands adjacent to the Cumberland River creek are forested. Additionally, narrow riparian forest is adjacent to the Cumberland River on its northern bank. Agricultural uses include cultivated crops and pasture/hay.

G. Ground Water

Approximately 1,700 people in Livingston County rely on private domestic water supplies: 1,100 use wells and 600 use other sources. Wells in the Ohio River alluvium yield several hundred gallons per minute; compound horizontal wells have a potential yield as high as 5,000 gallons per minute. In most of Livingston County, drilled wells in uplands are adequate for a domestic supply. In low-lying areas along the Cumberland and Tennessee Rivers and tributaries to the Ohio River, most wells are inadequate for domestic use, unless the well intercepts a major solution opening in limestone, and then the yield could be very large. Minimum flow generally occurs in early fall, maximum flows in late winter (<http://www.uky.edu/KGS/water/library/gwatlas/Livingston/Overview.htm>).

H. Surface Water

1. Streams

The Study Area is located within the Cumberland watershed (HUC#05130205), and the Lower Ohio watershed (HUC#05130205), and is bisected by the Cumberland River. Three unnamed tributaries of the Cumberland River are located with the Study Area (Exhibits 1 and 2, pages 2 and 3). Two streams within the Study area south of the Cumberland River are

intermittent streams. The unnamed stream to the north of the Cumberland River is perennial.

Approximately one kilometer of the Cumberland River is located within the Study Area limits. The Cumberland River was inspected on foot by biologists from Third Rock on February 21, 2013. The southern shore is located within the inside bend, while the north shore is located on the outside bend. Substrate along the south shore is predominately sand, steep and heavily eroded. Since the south shore is located in the inside bend, smaller substrate material would be expected. The north shore substrate is more varied, with areas west of the bridge being gravelly alluvium and areas of large cobble, with sandy areas to the east of the bridge.

The three unnamed tributaries that were identified during the field visit had low flow. Stream 1 within the Study Area was characterized by a heavy silt substrate and a flat gradient. Streams 2 and 3 had steep gradients and substrates of bedrock and cobble. Riparian vegetation is present along all streams identified within the Study Area.

Correspondence with the Kentucky Division of Water indicated that no Outstanding State Resource Waters or Wild Rivers existed within the Study Area.

2. Floodplain

According to FEMA Flood Hazard Mapping, areas adjacent to the Cumberland River and unnamed tributaries within the Study Area are designated as 100-Year Floodplain. If fill material is placed within these areas, No-Rise Certification will be required. A US Army Corps of Engineers 404 Permit and Kentucky Division of Water 401 Water Quality Certification and Floodplain Permit may be required for stream impacts. After alternatives are developed impacts will be assessed and permit needs will be determined.

3. Wetlands

National Wetland Inventory (NWI) mapping for the Smithland USGS 7.5 minute topographic quadrangle was reviewed for wetlands and a windshield survey of the Study Area was conducted on February 21, 2013. The only wetlands indicated on NWI mapping were listed as (L1UBHh) Lake and (PFO1A) Freshwater Forested/Shrub Wetland. The Freshwater Forested/Shrub Wetland was inspected during the windshield survey of unnamed Stream 1. This potential wetland was dominated by sycamore (*Platanus occidentalis*) and bald cypress (*Taxodium distichum*), which are floodplain species. A small pond (Exhibit 1 and 2, pages 2 and 3) was discovered during the windshield survey, but it pond did not seem to be naturally occurring and there was no evidence of adjacent wetland.

1. Floral and Faunal Communities

Most ridgetops and floodplain areas within the Study Area have been converted to agricultural, residential, and commercial uses and are of limited value to wildlife. However, the sloped bluffs and ravines adjacent to streams and the Cumberland River are forested. Forests are oak-hickory, and are predominantly white oak, black oak, Southern red oak, and hickory on uplands, while beech, sugar maple, and southern red oak are common in mesic forests. Sycamore, red maple, hackberry, bald cypress, and sweetgum can be found in riparian areas. The understory of forested areas north of the Cumberland River is predominantly open with infrequent dense stands of river cane, while the understory south of the Cumberland River is dominated by privet.

1. Endangered, Threatened, and Special Concern Species Potentially Occurring within the Study Area

Correspondence with the United States Fish and Wildlife Service (USFWS) Frankfort Ecological Services Field Offices, Kentucky Department of Fish and Wildlife Resources (KDFWR), Kentucky

State Nature Preserves Commission (KSNPC) reported the known or potential occurrence of 36 species of concern (Table 1, pages 7 and 8). Listed species included three mammals, eight birds, five fish, three mollusks, three crustaceans, 11 mussels, and three plant species. All agency correspondence is included in Appendix A.

2. *Federally Listed Species*

The USFWS lists 11 federally listed species for the Study Area. The list includes two mammals, Indiana bat (*Myotis sodalis*) and gray bat (*Myotis grisescens*); one bird, interior least tern (*Sterna antillarum*); and eight mussel species, clubshell (*Pleurobema claya*), fat pocketbook (*Potamilus capax*), Orangefoot pimpleback (*Plethobasus cooperianus*), ring pink (*Obovaria retusa*), spectaclecase (*Cumberlandia monodonta*), sheepnose (*Plethobasus cyphus*), pink mucket (*Lampsilis abrupta*), and rough pigtoe (*Pleurobema plenum*). All of these species are listed as endangered.

i. *Indiana Bat*

The Indiana bat formally attained endangered species status on March 11, 1967 (USFWS 1999). A recovery plan was approved March 1, 1999. The historic range for this species consisted of the central and southeastern United States. Within Kentucky, two caves, Bat Cave in Carter County and Coach Cave in Edmonson County, have been designated as critical habitat for the species (USFWS 1976).

Indiana bats hibernate during the winter months in large, cool caves, sinks, and/or mines (hibernacula) where they form tight clusters containing hundreds of individuals. Mines include coal, limestone, and other mineral recovery operations. Each spring, the females emerge from these hibernacula and migrate to summer (maternity) habitat consisting of hardwood forests. Maternity colonies are formed in these areas under the exfoliating bark of dead trees or loose bark of living trees. The migration of males

is variable. Some males do not migrate, others migrate only a short distance to smaller, warmer caves, and others migrate to the same habitat as females.

Major reasons for the decline in Indiana bat populations include channelization of streams, impoundment of waterways and associated flooding of bottomland forests, deforestation, application of insecticides, destruction or improper gating of winter habitat (e.g., mines, cisterns, and caves), commercialization of caves, and vandalism of cave habitat (Barbour and Davis 1974; USFWS 1999, 2004; Slone and Wethington 2001).

According to correspondence with USFWS and KDFWR, the project is within the swarming range of two sensitive Priority 3 and 4 documented hibernacula. Additionally, KSNPC records indicate that the Indiana bat is known to occur in Kentucky within five miles of the Study Area.

No potential winter roost sites (e.g. caves, mines) are known to occur or were observed within the Study Area during the field survey. However, potential summer roosting habitat and foraging habitat for Indiana bat was observed (Exhibits 1 and 2, pages 2 and 3). Summer roosting habitat (e.g. living trees with exfoliating bark, crevices in dead snags) was observed in forested areas throughout the Study Area, especially riparian areas adjacent to the Cumberland River and its tributaries. The Cumberland River and riparian stream corridors represent foraging habitat for the Indiana bat.

Since roosting and foraging habitat does exist within the Study Area, further consultation with the USFWS Frankfort Field Office may be required as alternatives are developed to comply with Section 7 of the Endangered Species Act.

TABLE 1 – ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES POTENTIALLY OCCURRING WITHIN LIVINGSTON COUNTY

COMMON NAME	SPECIES NAME	STATUS	AGENCY
Indiana Bat	<i>Myotis sodalis</i>	Federally Endangered	USFWS, KDFWR, KSNPC
Gray bat	<i>Myotis grisescens</i>	Federally Endangered	USFWS, KDFWR, KSNPC
Southeastern Myotis	<i>Myotis austroriparius</i>	State Endangered, Federal Species of Concern	KSNPC
Clubshell	<i>Pleurobema clava</i>	Federally Endangered	USFWS
Fat pocketbook	<i>Potamilus capax</i>	Federally Endangered	USFWS, KDFWR, KSNPC
Orangefoot pimpleback	<i>Plethobasus cooperianus</i>	Federally Endangered	USFWS
Ring pink	<i>Obovaria retusa</i>	Federally Endangered	USFWS
Spectaclecase	<i>Cumberlandia monodonta</i>	Federally Endangered	USFWS, KDFWR, KSNPC
Sheepnose	<i>Plethobasus cyphus</i>	Federally Endangered	USFWS, KDFWR, KSNPC
Pink mucket	<i>Lampsilis abrupta</i>	Federally Endangered	USFWS
Rough pigtoe	<i>Pleurobema plenum</i>	Federally Endangered	USFWS
Pocketbook	<i>Lampsilis ovata</i>	State Endangered	KSNPC
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	State Endangered, Federal Species of Concern	KSNPC
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	State Threatened, Proposed Federally Threatened	KSNPC
Ohio Shrimp	<i>Macrobrachium ohione</i>	State Endangered	KSNPC
Livingston Crayfish	<i>Orconectes margorectus</i>	State Threatened	KSNPC
Vernal Crayfish	<i>Procambarus viaeviridis</i>	State Threatened	KSNPC
Armored rocksnail	<i>Lithasia armigera</i>	State Special Concern, Federal Species of Concern	KDFWR, KSNPC
Ornate Rocksnail	<i>Lithasia geniculate</i>	State Special Concern, Federal Species of Concern	KSNPC
Varicose Rocksnail	<i>Lithasia verrucosa</i>	State Special Concern, Federal Species of Concern	KSNPC
Price's potato-bean	<i>Apios priceana</i>	Federally Threatened, State Endangered	
Western false gromwell	<i>Onosmodium occidentale</i>	State Endangered	KSNPC
Hoary mock orange	<i>Philadelphus pubescens</i>	State Endangered	KSNPC
Burbot	<i>Lota lota</i>	State Special Concern	KSNPC
Lake sturgeon	<i>Acipenser fulvescens</i>	State Endangered, Federal Species of Concern	KSNPC
Chain Pickerel	<i>Esax niger</i>	State Special Concern	KSNPC
Black buffalo	<i>Ictiobus niger</i>	State Special Concern	KSNPC

COMMON NAME	SPECIES NAME	STATUS	AGENCY
Inland Silverside	<i>Menidia beryllina</i>	State Threatened	KSNPC
Interior least tern	<i>Sterna antillarum</i>	Federally Endangered	KDFWR
Bald eagle	<i>Haliaeetus leucocephalus</i>	State Threatened	KSNPC
Osprey	<i>Pandion haliaetus</i>	State Special Concern	KDFWR, KSNPC
Fish Crow	<i>Corvus ossifragus</i>	State Special Concern	KSNPC
Bank Swallow	<i>Riparia riparia</i>	State Special Concern	KSNPC
Henslow's sparrow	<i>Ammodramus henslowii</i>	State Special Concern, Federal Species of Concern	KSNPC
Great egret	<i>Ardea alba</i>	State Threatened	KSNPC
Barn owl	<i>Tyto alba</i>	State Special Concern	KSNPC
Bell's Vireo	<i>Vireo bellii</i>	State Special Concern, Federal Species of Concern	KSNPC

ii. Gray Bat

Gray bat formally attained endangered species status on April 28, 1976, and a recovery plan was approved on July 8, 1982 (USFWS 1982). It is the largest species of *Myotis* found in the eastern United States. Its historical North American range includes the cave regions of the central and south central United States. Within Kentucky, the species is most common in the cave region of the south central portion of the state (Sloan and Wethington 2001).

A pedestrian field survey of the project area was conducted to identify locations of potential roost habitat (*i.e.*, caves and mine portals). Incidental to the Indiana bat hibernacula survey methods, Phase I Cave Assessments were conducted in accordance with methods described in the 2012 Indiana Bat Survey Guidance (USFWS 2012). No features that may provide suitable gray bat habitat were identified during the field examination. The Cumberland River and unnamed Stream 1 provide a potential travel corridor, foraging area, and water source for gray bats.

iii. Interior Least Tern

The interior least tern formally attained endangered species status May 28, 1985. A recovery plan was approved on September 19,

1990. The interior least tern is a subspecies of the least tern, which has a worldwide distribution. Interior least tern populations extend across central North America (west from southern Indiana, along the Ohio and Mississippi River, west across Texas to New Mexico, north to Montana and North Dakota) and are directly linked with the Ohio, Mississippi, Missouri, Red, and Rio Grande River systems. While breeding populations historically occurred throughout this region, they are now generally restricted to less altered and disturbed river segments.

The interior least tern summers (between mid-May and mid-October) in Kentucky along the lower Ohio River from Union County downstream to the mouth, and then along the Mississippi to the Tennessee state line. Historically, it was known to nest as far east as Louisville, but most of the remaining suitable habitat is in the lower reach of the Ohio. Nesting has been observed in seven western Kentucky counties: Fulton, Hickman, Carlisle, Ballard, McCracken, Livingston, and Union (Mengel 1956; Palmer-Ball Jr. 1996). A single nesting record has been documented as far east as Jefferson County, at the Falls-of-the-Ohio (Palmer-Ball Jr. 1996). Post-nesting birds have been observed as far east as Cincinnati on the Ohio River (Mengel 1956).

The interior least tern favors habitat provided by large river systems, building its nests on sparsely vegetated sandbars. The species will also nest on artificial habitats such as sand and gravel pits and dredge-disposal islands. Water levels must not fluctuate significantly so that the nests are not inundated. During periods of high water, least terns have been reported to nest in sandy agricultural fields along the Mississippi River in Fulton County (Palmer-Ball Jr. 1996). They also prefer shallow water for feeding, fishing along the river or in nearby sloughs or ox-bow lakes.

A pedestrian field survey of the project area was conducted to identify locations of potential nesting habitat. Potential nesting sites do not exist within the Study Area.

iv. Clubshell Mussel

The clubshell formally attained endangered species status on January 22, 1993. A recovery plan was approved September 21, 1994. Historically, the species had a wide range and abundance. The species prefers large perennial streams and small to large rivers in clean, coarse, sand and gravel in runs, often just downstream of a riffle; it cannot tolerate mud or slack-water conditions and is very susceptible to siltation (Watters 1994). In the Study Area, potential habitat for clubshell exists in the Cumberland River.

v. Fat Pocketbook Mussel

The fat pocketbook attained endangered species status on June 14, 1976. A recovery plan was approved January 24, 1985. The fat pocketbook was once widely distributed in the Mississippi River drainage from the confluence of the Minnesota and St. Croix rivers downstream to the White River system and was known in Minnesota, Wisconsin, Iowa, Illinois, Indiana, Missouri, Kentucky, and Arkansas. Today, the fat pocketbook is found only in the lower Wabash (Indiana) and Ohio Rivers, in the lower Cumberland River in Kentucky, the Mississippi

River (Missouri), and the St. Francis River in Arkansas. The latter supports the largest known population (NatureServe 2005).

The species prefers sand, mud, and fine gravel bottoms of large rivers. It buries itself in these substrates in water ranging in depth from a few inches to eight feet, with only the edge of its shell and its feeding siphons exposed. Reproduction requires a stable, undisturbed habitat and a sufficient population of fish hosts to complete the mussel's larval development. At present, only one species of host fish, the freshwater drum (*Aplodinotus grunniens*), has been identified. In the Study Area, potential habitat for fat pocketbook exists in the Cumberland River.

vi. Orangefoot Pimpleback Mussel

Also referred to as the orange-footed pearlymussel, the orangefoot pimpleback mussel attained endangered species status on June 14, 1976. A recovery plan was approved September 30, 1984. This species was historically known from the Ohio River (from western Pennsylvania to southern Indiana), the Wabash River (below Mt. Carmel, Illinois), the Cumberland River (from Cumberland County, Kentucky to near Nashville, Tennessee), the lower Clinch River (Anderson County, Tennessee) and the Tennessee River (near Knoxville to Benton County, Tennessee) and has also been reported from the Caney Fork, Holston, and French Broad Rivers in Tennessee and the Green and Rough Rivers in Kentucky (Cicerello *et al.* 1991).

The species inhabits large rivers and is usually found in 15 to 20 feet of water, where it burrows in the sand or gravel substrates. Reproduction of the species requires a stable, undisturbed habitat and a sufficient population of fish hosts to complete the mussel's larval development. The host fish for the larvae (glochidia) of the orangefoot pimpleback are unknown (Parmalee and Bogan 1998). In the Study Area, potential

habitat for orangefoot pimpleback exists in the Cumberland River.

vii. Ring Pink Mussel

The ring pink formally attained endangered species status on September 29, 1989. A recovery plan was approved November 14, 1989. Historically, the ring pink was widely distributed in the Ohio, Cumberland, and Tennessee River systems in Pennsylvania, West Virginia, Ohio, Illinois, Indiana, Kentucky, Tennessee, and Alabama. The ring pink inhabits gravel and sandy substrates in large rivers of the Ohio River basin (Biggins 1991). Within these habitats the species has been observed in shallow water (two feet deep). The host fish is unknown. In the Study Area, potential habitat for ring pink exists in the Cumberland River.

viii. Spectaclecase Mussel

The spectaclecase formally attained endangered species status on April 12, 2012. Historically, the spectaclecase was found in at least 44 streams of the Mississippi, Ohio and Missouri River basins in 14 states. It has been extirpated from three states and today is found in only 20 streams. The spectaclecase's current range includes Alabama, Arkansas, Illinois, Iowa, Kentucky, Minnesota, Missouri, Tennessee, Virginia, West Virginia, and Wisconsin. With few exceptions, spectaclecase populations are fragmented and restricted to short stream reaches. Spectaclecase mussels are found in large rivers where they live in areas sheltered from the main force of the river current. This species often clusters in firm mud and in sheltered areas, such as beneath rock slabs, between boulders and even under tree roots. In the Study Area, potential habitat for spectaclecase exists in the Cumberland River.

ix. Sheepnose Mussel

The sheepnose formally attained endangered species status on April 12, 2012. Historically, the

sheepnose occurred throughout much of the Mississippi River system with the exception of the upper Missouri River system and most lowland tributaries in the lower Mississippi River system. In Kentucky the species is thought to persist in the Ohio, Licking, Kentucky, Green, and Cumberland Rivers (USFWS 2007). In unimpounded reaches the species can be encountered in relatively fast current in less than two feet of water, while it occurs at depths of 12 to 15 feet in impounded streams and rivers. Sheepnose are frequently observed in substrates of coarse sand and gravel. The sauger is the only known host fish for the glochidia (larva) of this species (Parmalee and Bogan 1998). In the Study Area, potential habitat for sheepnose exists in the Cumberland River.

x. Pink Mucket Mussel

The pink mucket formally attained endangered species status on June 14, 1976 and a recovery plan was approved on January 24, 1985. It was historically distributed in 25 rivers and tributaries in the Ohio, Cumberland, Mississippi, and Tennessee River systems. The species is likely extirpated in Illinois, New York, Ohio, Pennsylvania, and Virginia. Distributional records of the pink mucket in Kentucky are from the following drainages: Ohio River mainstem and minor tributaries, lower Tennessee River, lower Cumberland River, upper Green and Barren Rivers, Salt River, and upper Cumberland River below Cumberland Falls (Cicerello 1991).

Pink mucket typically occurs in large rivers in habitats ranging in substrate compositions of silt, sand, gravel, cobble and boulder. With large rivers the species is most often associated with moderate to fast-flowing water with depths ranging from 0.5 to 8.0 meters. Sauger (*Stizostedion canadense*) and freshwater drum (*Aplodinotus grunniens*) have been listed among 19 possible host fishes for this species. In the Study Area, potential habitat for pink mucket exists in the Cumberland River.

xi. Rough Pigtoe Mussel

The rough pigtoe formally attained endangered species status on June 14, 1976. A recovery plan was approved August 6, 1984. The species was historically known from the Ohio, Cumberland and Tennessee River drainages in Alabama, Illinois, Indiana, Kentucky, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. Currently, the Kentucky distribution of this species is restricted to the Green River in Butler, Edmonson, Hart, and Warren Counties.

The species typically occurs in large rivers but may also become established in small rivers or headwater stretches of medium-sized rivers. It prefers substrates composed of firmly packed gravel and sand and has been found in Tennessee (Cumberland River) at water depths up to 15 feet. The host fishes are thought to be the rosefin shiner (*Lythrurus ardens*) and bluegill (*Lepomis macrochirus*). In the Study Area, potential habitat for rough pigtoe exists in the Cumberland River.

3. State Listed Species

Southeastern Myotis is listed as state endangered and a species of federal management concern (KSNPC). Kentucky populations winter in caves (often with *Myotis sodalis*) but are rare in most caves in the summer, when most roost in large hollow trees (natureserve.org). Foraging habitat is riparian floodplain forests or wooded wetlands with permanent open water nearby (natureserve.org). These bats may forage primarily over lakes, ponds, or slow-moving streams (natureserve.org). The forested areas of the Study Area represent potential roosting habitat while foraging habitat can be found over the Cumberland River.

Pocketbook (*Lampsilis ovate*) is listed as state endangered by KSNPC. This species is very generalized in habitat preference, adapting well to both impoundment situations as well as free-

flowing, shallow rivers. It may be found in big rivers (reservoirs) at depths of 15 to 20 feet and in small streams in less than two feet of water (natureserve.org). The Cumberland River represents habitat for this species within the Study Area.

Pyramid Pigtoe (*pleurobema rubrum*) is listed as state endangered and a federal species of management concern by KSNPC. This species typically inhabits large rivers but may occur in medium-sized lotic environments. It tends to occupy riffles or shoals in relatively shallow water and coarse-particle substrates, along sand bars, or in deep water (greater than four meters) with stable mud and muddy sand bottoms (natureserve.org). The Cumberland River represents habitat for this species within the Study Area.

Rabbitsfoot (*Quadrula cylindrica cylindrica*) is listed as state threatened and proposed federally threatened by KSNPC. Typical habitat for this species is small to medium rivers with moderate to swift currents, in smaller streams it inhabits bars or gravel and cobble close to the fast current (natureserve.org). It is also found in medium to large rivers in sand and gravel (natureserve.org). The Cumberland River represents habitat for this species within the Study Area.

Ohio shrimp (*Macrobrachium ohione*) is listed as state endangered by KSNPC. This species can be found in low velocity waters of medium and large rivers. Ohio shrimp prefer borders of main channels, especially when the borders are flooded and plant and animal material are available for foraging (natureserve.org). The Cumberland River represents habitat for this species within the Study Area.

Livingston crayfish (*Orconectes margorectus*) is listed as state threatened by KSNPC. This species occurs in small streams with substrates

of cobble and gravel intermixed with mud; most commonly under flat cobble in areas of moderate flow (natureserve.org). No streams fitting this description were observed during the field survey.

Vernal crayfish (*Procambarus viaeviridis*) is listed as state threatened by KSNPC. It inhabits sluggish streams and lentic situations; and is tolerant of heat and of low oxygen levels. It has an affinity for shallow, seasonally flooded swamps and sloughs, and avoids flowing-water habitats (natureserve.org). Unnamed Stream1 represents habitat for this species within the study area.

Armored rocksnail (*Lithasia armigera*) is listed as a state species of concern and a federal species of management concern by KDFWR and KSNPC. This species has been found within the Cumberland River in partially buried logs and on gravel with its highest densities on submerged rock outcrops (natureserve.org)

Ornate rocksnail (*Lithasia geniculata*) is listed as a state species of concern and a federal species of management concern by KSNPC. This species is found in large rivers and prefers sandy gravel substrates (natureserve.org). The Cumberland River represents habitat for this species within the Study Area.

Varicose rocksnail (*Lithasia verrucosa*) is listed as a state species of concern and a federal species of management concern by KSNPC. This species inhabits rocky shoals and riffles of medium and large rivers in moderate current velocities in depths from near the water surface to several feet (natureserve.org). The Cumberland River represents habitat for this species within the Study Area.

Western false gromwell (*Onosmodium occidentale*) is listed as state endangered by KSNPC. This species is found at sandy, gravelly,

or rocky prairies, glades, and open woods (KSNPC 2012). No habitat fitting this description was observed during the field survey.

Hoary mock orange (*Philadelphus pubescens*) is listed as state endangered by KSNPC. This species is found at sandstone and limestone bluffs and riverbanks (KSNPC 2012). No habitat fitting this description was observed during the field survey.

Burbot (*Lota lota*) is listed as a state species of special concern by KSNPC. It is common in deep cold waters of lakes, reservoirs, and large rivers. River-spawning populations prefer low-velocity areas in main channels or in side channels behind deposition bars. The Cumberland River represents potential habitat for this species within the Study Area.

Lake sturgeon (*Acipenser fulvescens*) is listed as state endangered and a federal species of management concern by KSNPC. The lake sturgeon's primary habitat is the bottoms of large, clean, freshwater rivers and lakes (natureserve.org). In rivers, preferred habitat is deep mid-river areas and pools, where water depths vary between four and nine meters and food is abundant (natureserve.org). KSNPC reports records of lake sturgeon in the Ohio River within one mile of the study area. The Cumberland River represents potential habitat for this species within the Study Area.

Chain Pickerel (*Esox niger*) is listed as a state species of concern by KSNPC. Its habitats include vegetated lakes, swamps, and backwaters and quiet pools of creeks and small to medium rivers (natureserve.org). The Cumberland River represents habitat for this species within the Study Area.

Black buffalo (*Ictobus niger*) is a state listed special concern species (KSNPC) that is associated with pools and backwaters of large

ivers (Burr and Warren 1986). The Cumberland River represents habitat for this fish species within the Study Area.

Inland silverside (*Menidia beryllina*) is listed as state threatened by KSNPC. This species can be found in medium to large rivers of coastal and freshwater habitats. It moves far up streams and rivers in the southern part of its range (natureserve.org). In fresh water, it usually swims at the surface of clear quiet water over sand and gravel bottoms (natureserve.org). The Cumberland River represents habitat for this species within the Study Area.

Bald eagle (*Haliaeetus leucocephalus*) is a state threatened species (KSNPC). Bald eagles are found primarily along major rivers and large, open bodies of water where fish, waterfowl, and other prey are abundant (Slone and Wethington 2001). This is also their preferred breeding habitat. Nests are built in large trees or less frequently on a cliff near water. They prefer large trees or snags along the water for daytime perches. Night roosts are in similar habitat and communal roosting is common. The Cumberland River represents potential bald eagle habitat within the Study Area. KSNPC has recorded the occurrence of bald eagles on the Ohio River within 10 miles of the Study Area.

Osprey (*Pandion haliaetus*) is listed as a state species of special concern by KDFWR and KSNPC. Ospreys occur primarily along rivers, lakes, reservoirs, and seacoasts. They often cross land between bodies of water and typically build nests near or above water (natureserve.org). According to KDFWR, ospreys have nested on the US 60 bridge for several years. Nest sites are often used for several consecutive years, as long as they are protected and minimally disturbed. Prior to construction, KDFWR should be contacted to discuss ways to minimize impacts to the osprey to the extent practical.

Fish crow (*Corvus ossifragus*) is listed as a state species of special concern by KSNPC. In inland situations, fish crow can be found primarily in bald-cypress swamps and along major watercourses (natureserve.org). The Ohio River and unnamed Stream 1 represent potential habitat for this species within the Study Area.

Bank swallow (*Riparia riparia*) is a state special concern bird species (KSNPC). Bank swallows form colonies within high earthen or sandy banks adjacent to streams (Palmer-Ball Jr. 2003). This type of habitat does exist adjacent to the Cumberland River within the Study Area.

Henslow's sparrow (*Ammodramus henslowii*) is listed as a state species of concern and a federal species of management concern by KSNPC. This sparrow is found in open fields and meadows with relatively thick/dense grass interspersed with weeds or shrubby vegetation (natureserve.org). All open fields and meadows within the project area show evidence of regular mowing/tilling; therefore, no habitat was observed during the field survey.

Great egret (*Ardea alba*) is listed as state threatened by KSNPC. This species is found at marshes, swampy woods, tidal estuaries, lagoons, mangroves, along streams, lakes, and ponds. Potential habitat can be found along the Cumberland River and within the bald cypress swamp associated with unnamed Stream1.

Barn owl (*Tyto alba*) is listed as a state species of special concern by KSNPC. Barn owls hunt over open farmland, woodlands, and suburban areas (Vanner 2003). Roosting occurs in dark secluded buildings (e.g. barns), cliffs, and trees (Barbour et al. 1973). This habitat exists in cleared agricultural areas within the Study Area.

Bell's vireo (*Vireo bellii*) is listed as a state species of concern and a federal species of management concern by KSNPC. The project

area is located at the eastern-most extent of the bell's vireos breeding range. Breeding habitats vary widely but among the study area habitats may include streamside riparian thickets and dense brush of scrub oak. It will nest in a shrub or low tree, usually about one meter off the ground near the edge of a thicket.

III. UNDERGROUND STORAGE TANKS / HAZARDOUS MATERIALS

Third Rock performed a database search and cursory field reconnaissance in an effort to identify potential recognized environmental conditions located within the Study Area. A recognized environmental condition is defined as follows:

The presence or likely presence of any Hazardous Substances or Petroleum Products on a Property under conditions that indicate an existing release, a past release, or a material threat of a release of any Hazardous Substances or Petroleum Products into structures on the Property or into the ground, groundwater, or surface water of the Property. The term includes Hazardous Substances or Petroleum Products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not represent a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. (Phase I Environmental Site Assessment Process, ASTM Standard E-1527-05).

A. Database Search

Environmental Data Resources (EDR) was contacted to provide an electronic review of applicable environmental databases located within the Study Area. Various databases were researched, including those pursuant to ASTM standards. A copy of the EDR Executive Summary is included in Appendix B.

Numerous sites were identified by the EDR report but only one was confirmed to be located within the Study Area. The confirmed mapped site located within the Study Area is discussed below.

Site: Livingston County Co-op

Location: US 60 & KY 70; Smithland, KY

Database: Underground Storage Tank (UST)

The local county co-op / farm supply store is listed on the UST database due to the past presence of a UST on the premises. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and are administered locally by the Kentucky Division of Waste Management UST Branch (USTB). According to the EDR report, one 1,000-gallon gasoline UST was removed from the property in 1997. The official status of the UST is listed as "Tank removed / verified." Additional research regarding the closure of this UST is recommended if this property is impacted by future highway improvements.

Additionally, 25 orphan sites were identified by the EDR report as being potentially located within the Study Area based on poor or inadequate address information. Ten of the orphan sites are located within Smithland and may in fact be located near the proposed project. Additional research is recommended regarding the exact location of the orphan sites once future alternatives are developed.

B. Field Reconnaissance

A limited field investigation was conducted by a Third Rock representative on February 21, 2013. The reconnaissance activities involved driving roadways within the Study Area and walking along areas of concern. The findings of the site visit are discussed below.

Site: KYTC Roadway Maintenance Garage

Location: Brumitte Road, Smithland, KY

KYTC's maintenance facility is partially located within the Study Area. Numerous 55-gallon drums and four above ground storage tanks (AST's) were observed on the KYTC property. The drums and AST's were not inspected; however, the AST's are believed to contain gasoline and/or diesel. Various pieces of heavy equipment were also stored on the property during the site visit. Due to the storage of large quantities of petroleum products, additional research is recommended for this parcel if future roadway impacts are anticipated.

Site: AST

Location: Conant / US 60 intersection, Smithland, KY

An approximately 500-gallon AST was observed at the intersection of Conant and US 60. The AST is believed to be associated with a backup generator for a water or sewer pump station. No obvious signs of leakage or contamination were observed near the AST. The AST does not represent a significant recognized environmental condition.

Site: Smithland Tire

Location: 421 East Adair Street, Smithland, KY

Smithland Tire is an operating automobile repair facility that specializes in the sale and replacement of car and truck tires. According to an interview with a Smithland Tire employee, no UST's are currently located on the property. Automobile repair facilities can potentially represent environmental conditions due to a variety of reasons including, but not limited to, the presence of subsurface hydraulic cylinders, petroleum product storage, and waste fluid disposal. Further investigation is recommended for this facility if roadway impacts are expected on this parcel.

C. Lead Contamination

The potential exists to encounter lead contamination in the soil under the approaches of the existing US 60 bridge over the Cumberland River. The existing bridge was built in 1931, rehabilitated in 1954, and assumed to have been painted a number of times prior to the 1978 ban on paint containing greater than 0.06 percent lead. Any bridge painting and cleaning conducted prior to 1978 could have resulted in potential lead contamination in the soil under the bridge approaches. Additional research is recommended regarding the past bridge maintenance activities.

D. Oil, Gas, and Water Wells

Oil, gas, and water well information was researched using a database maintained by the Kentucky Geological Survey (KGS). According to KGS, there are no registered oil, gas, or water wells located within the Study Area.

E. Mapping Review

A limited mapping review was conducted using Google Earth and mapping from the United States Geological Survey (USGS). Aerial images back to 1993 were reviewed with Google Earth while select topographic mapping (1954 and 1968) was reviewed via the USGS Historic Quadrangle Scanning Project. No obvious recognized environmental conditions were observed during the limited mapping review.

IV. AIR QUALITY

The proposed bridge replacement project is in the Paducah (KY) – Cairo (IL) Interstate Air Quality Control Region. This project is listed page 83 of FY 2013-2016 KYTC Statewide Transportation Implementation Program (STIP).

There are currently no required traffic control measures in this area. The area is in attainment for all criteria, transportation-related pollutants

established by the United States Environmental Protection Agency (USEPA).

The impact of the project related to each criteria pollutant is described below.

A. Carbon Monoxide (CO)

According to the *Kentucky Guidelines for Addressing Transportation Air Quality in NEPA Documents* (FHWA & KYTC 2008), a full air quality analysis is not expected to be required for this project due to the fact that average daily traffic volumes in the open-to-traffic year are not expected to meet or exceed 80,000 vehicles per day. Additionally, CO emissions are typically concentrated near intersections, where queuing and idling of vehicles occurs. The average daily traffic (ADT) on the existing bridge is only 4,900 vehicles per day and ADT is projected to be 6,900 in the design year (2038). Additionally, pollution from idling and queuing of vehicles is minimal in the study area. Based on the Kentucky CO Screening Criteria, this project should not meet the criteria requiring a CO project level analysis and will not produce a projected violation of the CO standards (35 parts per million over a one-hour period or nine parts per million over an eight-hour period); thus, the proposed project would not have an adverse impact on CO air quality in the region.

B. Lead (Pb)

Lead has not been a mobile source concern since tetraethyl lead was banned as a fuel additive in 1995. All areas in Kentucky are in attainment for lead and the proposed project will not impact this status.

C. Nitrogen Oxides (NO_x) and Ozone (O₃)

Ground level ozone (O₃) is created by chemical reactions between nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. Urban and industrial areas are considered the primary sources of NO_x and

VOC. There are no large urban areas within at least 10 miles of the study area; peak levels of O₃ generally occur six to 13 miles downwind of the source of NO_x and VOC emissions. All areas in Kentucky are in attainment for nitrogen dioxide (NO₂). The study area is in attainment for O₃ and is not a project-level concern. The proposed project would not worsen existing levels of O₃ or NO₂.

D. Sulfur Dioxide (SO₂)

Sulfur dioxide (SO₂) is primarily an industrial source concern and not a mobile source concern. All areas in Kentucky are in attainment for SO₂ and the proposed project would not worsen existing levels of SO₂.

E. Particulate Matter (PM)

Automobiles are not generally regarded as significant sources of particulate matter; emissions are predominantly from industrial, commercial, and agricultural sources. The proposed project is located in a PM_{2.5} attainment area and it is not a project-level concern. Therefore, the conformity procedures of 23 CFR 770 do not apply to this project and a qualitative PM 2.5 hot-spot analysis is not required. All areas in Kentucky are in attainment for PM₁₀. The conformity procedures set forth in 30 CFR 770 do not apply to this project.

F. Mobile Source Air Toxics (MSAT)

It is anticipated that the proposed project will generate no meaningful MSAT effects. Aside from the period of construction, the proposed project will not result in any appreciable changes in traffic volumes or vehicle mix that could cause an increase in emissions.

1. Qualitative Analysis

Based on the anticipated low number of vehicles per day crossing the bridge (currently 4,900 ADT and 6,900 ADT projected in 2038), the proposed project is a project with low potential MSAT

effects as defined by FHWA's *Interim Guidance Update on Air Toxic Analysis in NEPA Documents (2012)*. Projects with low potential MSAT effects have design year traffic projections that are less than 140,000 to 150,000 Average Annual Daily Traffic (AADT). The purpose of this project is to replace the existing, functionally obsolete bridge; thus, the proposed project will not increase capacity or result in significant traffic volume increases.

For each alternative under consideration, the amount of MSAT emitted would be proportional to the vehicle miles traveled (VMT) assuming that other variables, such as fleet mix, are the same for each alternative. If a project alternative includes new lengths of roadway, that alternative will result in greater VMT compared to the existing condition, thus the potential for additional MSAT emissions would be greater for those alternatives. However, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

If a new bridge location and roadway alignment is selected, there may be localized areas where VMT would increase or decrease compared to existing conditions. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the new roadway sections that would be built west of US 51. However, the magnitude and the duration of these potential

increases compared to the No Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. Additionally, even if these increases do occur, they too will be substantially reduced in the future due to implementation of US EPA vehicle and fuel regulations.

In sum, on a regional basis, USEPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than present levels.

2. Construction Emissions and Mitigation

Construction activity associated with implementation of the design alternative may generate a temporary increase in MSAT emissions from the use of construction equipment and emissions from construction-generated traffic. Any increase in air pollution from construction would be temporary in duration and not impact the health of residents.

A number of mitigation strategies and solutions for minimizing the effects of construction-related MSAT emissions are available. Construction mitigation includes strategies that reduce engine activity or reduce emissions per unit of operating time. Operational agreements that reduce or redirect work or shift times to avoid community exposures can have positive benefits when sites are near vulnerable populations. For example, agreements that stress work activity outside normal hours of an adjacent school campus would be operations-oriented mitigation. Additionally on the construction emissions front, technological adjustments to equipment, such as off-road dump trucks and bulldozers, could be appropriate strategies. These technological fixes could include particulate matter traps, oxidation catalysts, and other devices that provide an after-

treatment of exhaust emissions. The use of clean fuels, such as ultra-low sulfur diesel, also can be a very cost-beneficial strategy.

The USEPA has listed a number of approved diesel retrofit technologies; many of these can be deployed as emissions mitigation measures for equipment used in construction. This listing can be found at www.epa.gov/otaq/retrofit/index.htm <<http://www.epa.gov/otaq/retrofit/index.htm>.

3. *Uncertainty Analysis*

Technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions associated with the project, as noted above. Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can provide a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives.

G. *Cumulative and Indirect Impacts*

Indirect air quality impacts on rural, commercial, and residential areas along the project corridor are expected to be minor as future traffic volumes increase and improved access encourages development in the project vicinity. Replacing the bridge may cause additional growth in the area, but the additional traffic is not expected to create any cumulative air quality impacts. The proposed project is not anticipated to significantly alter the rural nature of the area or the ambient CO levels.

H. *Summary*

Due to minimal changes to traffic volumes or composition, the proposed project is not

expected to negatively impact the ambient air quality in the project area. The proposed project is classified as a project with low potential MSATs effects. For all alternative scenarios produced, the amount of MSAT emissions in the design year is expected to be significantly lower than existing conditions on a regional basis. No cumulative or indirect impacts will result from the construction activities or the implementation of the project.

V. *TRAFFIC NOISE*

The Federal Highway Administration (FHWA) Noise Standard requires that noise abatement measures be considered when traffic noise impacts are identified. Vehicle tires, engines, and exhaust propagate noise at levels dependent upon the volume, speed, percentage of trucks, and the slope of the roadway. These traffic noises are measured in decibels in the A-scale (dBA). The A-scale is designed to best approximate the way noise is heard by the human ear. Due to the logarithmic nature of noise measurements, a three dBA increase in the noise level represents a doubling in the noise level, but this increase is barely detectible by the human ear. A 10 dBA increase is perceived as a doubling of the noise level. Noise levels decrease in proportion with the square of the distance from the source such that a 4.5 dBA decrease is usually achieved when the distance from the roadway is doubled.

According to the FHWA, traffic noise impacts occur when the predicted traffic noise levels approach (are within one dBA) or exceed the noise abatement criteria (NAC) or when the predicted traffic noise levels substantially exceed the existing noise level. The noise abatement criteria are established to address traffic noise levels that interfere with speech communication.

Noise Abatement Criteria are broken into activity categories by description of land use and evaluation location (exterior or interior). Based on

a cursory examination of topographical and aerial maps of the study area, most noise sensitive receptors in the study area are categorized as Activity Category B which includes exterior areas of single or multifamily homes and mobile home parks where traffic noise would interfere with normal conversation such as on balconies, patios or in backyards. Residences in Smithland, including the Cumberland View Apartments, would be Activity Category B receptors as well as scattered rural residences. Other noise sensitive non-residential lands such as schools, parks cemeteries, recreational areas, trail crossings, and churches present in the area include the Livingston County Ball Fields, Livingston County Fairgrounds, Smithland Pentecostal Church, and the Senior Citizens Center. Exterior areas of frequent use at offices, restaurants, and other locations have a higher threshold for noise levels, and the undeveloped lands and retail facilities in the area do not have noise abatement criteria.

Based on noise propagation principles, traffic noise is not usually a serious problem for receptors more than 500 feet from heavily traveled freeways or more than 100 to 200 feet from lightly traveled roads. Such distances may be utilized to minimize potential noise impacts in the selection of alternatives.

VI. COMMUNITY FACILITIES

The proposed project is located in the City of Smithland, the seat of Livingston County. Several community features are present within the Study Area. These features include the Smithland Pentecostal Church, along KY 70 in the southeastern portion of the Study Area. The community Senior Citizen's Center is located to the west of the church.

The Livingston County Fairgrounds are located on the north side of the Cumberland River. The fairgrounds include a covered arena, as well as an outdoor show ring. The Livingston County Ball Park, which includes several baseball fields

for Livingston Central High School as well as a playground, basketball court, walking trail, and picnic shelter, is located to the west of the fairgrounds. The high school is located along US 60 to the south of the Study Area and will not be impacted by the project.

If the facility is publically owned, impacts to the Livingston County Ball Park could potentially constitute a Section 4(f) impact. Section 4(f), as established by the US Department of Transportation (US DOT) Act of 1966 and amended in 1989 (49 U.S.C. Section 303), states that all park and recreation lands, wildlife and waterfowl refuges, and historic sites must be considered in transportation project development. Section 4(f) applies to all projects that receive federal funding or require approval by any agencies of the US DOT. It requires that an alternative that uses a Section 4(f) resource may only be selected if it can be proven that no other prudent or feasible alternatives exist, and that the selected alternative minimizes disturbance to the resource. In 2005, the act was amended to allow *de minimis* ruling in the event any impacts would not appreciably alter the attributes, features, or function of the resource. No other non-historic potential Section 4(f) sites are present in the Study Area. The Historic Architectural and Archaeological overview being prepared for the project will identify any historic Section 4(f) resources present in the Study Area.

In addition to Section 4(f), impacts to the Livingston County Ball Park may also constitute a Section 6(f) impact. Section 6(f) of the Land and Water Conservation Fund Act (LWCFCA) of 1965 (16 U.S.C. 4601-4) established a funding source for both federal acquisition of parks and recreation lands and matching grants to state and local governments for recreation planning, acquisition, and development. It set requirements for state planning and provided a formula for allocating annual LWCFCA appropriations to the states. The National Park Service (NPS) and US

Department of the Interior (US DOI) must approve any impacts to parks that have received LWCFA funding. According to an online database maintained by the National Park Service, \$25,547.50 in LWCFA funding was awarded to a "Smithland Recreation Complex" in 1984, which may refer to the Ball Park. An unidentified "Livingston County Park" also received \$17,320.21 in 1973 and \$5,000 in 2004; this funding may also have been used for the Ball Park.

As the Ball Field is located on the outer edge of the Study Area, impacts to it are not likely, but if alternatives are developed that do impact the facility, a Section 4(f) analysis proving no other alternatives are prudent or feasible will be required if the facility is publically owned. In addition to the Section 4(f) analysis, verification of whether or not LWCFA funding was used for the property will be required. Should it be determined that LWCFA funding was used for the facility, impacts will need to be coordinated with the NPS and US DOI.

No other community features are located within the Study Area. Land use in the Study Area is primarily undeveloped and agricultural, though residential and commercial properties are present, primarily in the southern portion of the Study Area.

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APPENDICES

APPENDIX A – AGENCY CORRESPONDENCE



United States Department of the Interior

FISH AND WILDLIFE SERVICE
 Kentucky Ecological Services Field Office
 330 West Broadway, Suite 265
 Frankfort, Kentucky 40601
 (502) 695-0468

March 13, 2013

Ms. Amanda Kerley
 Third Rock Consultants
 2526 Regency Road
 Lexington, KY 40503

Re: FWS 2013-B-0280; KYTC 1-1142.00; US 60 bridge replacement over the Cumberland River; located in Livingston County, Kentucky

Dear Ms. Kerley:

Thank you for the opportunity to provide comments on the above-referenced project. The U.S. Fish and Wildlife Service (Service) has reviewed this proposed project and offers the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), Bald and Golden Eagle Protection Act (54 Stat. 250, as amended, 16 U.S.C. 668a-d), and the Migratory Bird Treaty Act (MBTA) (40 Stat. 775, as amended; 16 U.S.C. 703 *et seq.*). This is not a concurrence letter. Please read carefully, as further consultation with the Service may be required.

In order to assist you in determining if the proposed project has the potential to impact protected species we have searched our records for occurrences of listed species within the vicinity of the proposed project. Based upon the information provided to us and according to our databases, we believe that the following federally listed species have the potential to occur within the project vicinity. The listed species are:

Group	Species	Common name	Legal Status
Mammals	<i>Myotis grisescens</i>	gray bat	E
	<i>Myotis sodalis</i>	Indiana bat	E
Mussels	<i>Pleurobema clava</i>	clubshell	E
	<i>Potamilus capax</i>	fat pocketbook	E
	<i>Plethobasus cooperianus</i>	orangefoot pimpleback	E
	<i>Obovaria retusa</i>	ring pink	E
	<i>Cumberlandia monodonta</i>	spectaclecase	C
	<i>Plethobasus cyphus</i>	sheepnose	C
	<i>Lampsilis abrupta</i>	pink mucket	E
	<i>Pleurobema plenum</i>	rough pigtoe	E
Birds	<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted

* Key to notations: E = Endangered, T = Threatened, C = Candidate, CH = Critical Habitat

We must advise you that collection records available to the Service may not be all-inclusive. Our database is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitats and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality.

Gray bat

Gray bats roost, breed, rear young, and hibernate in caves year round. They migrate between summer and winter caves and will use transient or stopover caves along the way. Gray bats eat a variety of flying aquatic and terrestrial insects present along streams, rivers, and lakes. Low-flow streams produce an abundance of insects, and are especially valuable to the gray bat as foraging habitat. For hibernation, the roost site must have an average temperature of 42 to 52 degrees F. Most of the caves used by gray bats for hibernation have deep vertical passages with large rooms that function as cold air traps. Summer caves must be warm, between 57 and 77 degrees F, or have small rooms or domes that can trap the body heat of roosting bats. Summer caves are normally located close to rivers or lakes where the bats feed. Gray bats have also been found in non-cave summer roosts, such as under bridges and inside culverts.

Because we have concerns relating to the gray bat on this project and due to the lack of occurrence information available on this species relative to the proposed project area, we have the following recommendation relative to gray bats.

- If the project is constructed in late March through November, the underside of the existing bridge should be inspected for the presence of roosting gray bats.

Indiana bat

Based on your correspondence, summer habitat (suitable forested areas) for the federally endangered Indiana bat occurs within the project area. Furthermore, the proposed project is within the swarming range of two sensitive P-3 and P-4 documented hibernacula. Prior to hibernation, Indiana bats utilize the forest habitat around the hibernacula, where they feed and roost until temperatures drop to a point that forces them into hibernation. This "fall swarming" period lasts, depending on weather conditions in a particular year, from about August 16 to about November 15. This is a critical time for Indiana bats, since they are acquiring additional fat reserves and mating prior to hibernation. Another critical time for Indiana bats utilizing this swarming range is during spring emergence (~April 1 - ~May 14) from the hibernacula. During this time, bats utilize the swarming range to forage prior to migrating to their respective summering areas. It should also be noted that some bats may continue to utilize this swarming area year round; however, these are typically adult males. Typically for a project of this nature, the Service would recommend seasonal tree clearing or the completion of a mist net survey before construction activities take place. Mist net surveys provide presence/absence information; however, we already know that the Indiana bats are present and that the project area falls within the swarming range of known hibernacula. We do not believe a survey is necessary for the proposed project. Also, seasonal tree clearing could result in indirect and/or cumulative effects to the bats utilizing this hibernacula and associated swarming ranges through changes to the landscape and the removal of potential foraging and roosting habitat while the bats are hibernating. Currently, the available forested habitat within the swarming range of this hibernacula is already relatively low and determined sensitive, so even seasonal removal of habitat is likely to result in significant or non-discountable effects to the Indiana bat.

In order to address these concerns and be in compliance with the ESA, we recommend one of the following options:

- The project proponent can design or modify the proposed project to eliminate impacts to Indiana bat habitat and thus avoid impacts;
- The project proponent can request formal section 7 consultation through the lead federal action agency associated with the proposed project; or
- The project proponent may choose to enter into a Conservation Memorandum of Agreement (MOA) with the Service to account for the incidental take of Indiana bats. By entering into a Conservation MOA with the Service, Cooperators gain flexibility in project timing with regard to the removal of suitable Indiana bat habitat. In exchange for this flexibility, the Cooperator provides recovery-focused conservation benefits to the Indiana bat through the implementation of minimization and mitigation measures that are described in the Indiana Bat Mitigation Guidance for the Commonwealth of Kentucky. For additional information about this option, please notify our office.

Federally listed mussels

Federally listed mussel species are known to inhabit the Cumberland River. Should the proposed project require disturbance of substrate that coincides with the habitat required for these mussel species, an on-site inspection or survey of the area may need to be conducted to determine if listed species are present or occur seasonally. Surveys should be done by qualified personnel and be conducted during the appropriate time of day and or year to ensure confidence in survey results. Please notify this office with the results of any surveys and an analysis of the “effects of the action,” as defined by 50 CFR 402.02 on any listed species including consideration of direct, indirect, and cumulative effects.

Surveys for the listed species would not be necessary if sufficient site-specific information was available that showed that: (1) there is no potentially suitable habitat within the project area or its vicinity or (2) the species would not be present within the project area or its vicinity due to site-specific factors.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) was officially removed from the List of Endangered and Threatened Species on August 8, 2007 but it continues to be protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). According to our database, there are no known bald eagle nests within one mile of the proposed project area, but it is possible that new or previously unidentified nests are present.

Eagles in Kentucky typically nest in large mature trees (e.g., bald cypress, sycamore, willow, etc.) near major rivers and large, open bodies of water where fish, waterfowl, and other prey are abundant. Eggs are laid in late February or early March and hatch after 35 days. Bald eagles often revisit and reuse the same nest season after season.

Breeding bald eagles occupy “territories” that they will typically defend against intrusion by other eagles, and that they likely return to each year. A territory may include one or more alternate nests that are built and maintained by the eagles, but which may not be used for nesting in a given year. Potential nest trees within a nesting territory may, therefore, provide important alternative bald eagle nest sites. In forested areas, bald eagles often select the tallest trees with limbs strong enough to support a nest that may weigh more than 1,000 pounds. Most nests are located in the upper 30 feet of the tree; the cone-shaped nest may be 6 to 8 feet in diameter and 6 to 8 feet from top to bottom. Nest sites typically include at least one perch with a clear view of the water or area where the eagles

usually forage. Shoreline trees or snags located near large water bodies provide the visibility and accessibility needed to locate aquatic prey. Bald eagles are vulnerable to disturbance during courtship, nest building, egg laying, incubation, and brooding. Disturbance during this critical period may lead to nest abandonment, cracked and chilled eggs, and exposure of small young to the elements. Human activity near a nest late in the nesting cycle may also cause flightless birds to jump from the nest tree, thus reducing their chance of survival. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants (*i.e.*, organochlorine pesticides and lead).

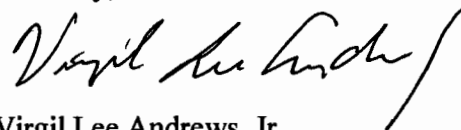
The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles, particularly where such impacts may constitute "disturbance," which is prohibited by the BGEPA. A copy of the NBEM Guidelines is available at: <http://www.fws.gov/migratorybirds/BaldEagle.htm>. Those guidelines recommend: (1) maintaining a specified distance between the activity and the nest (buffer area); (2) maintaining natural areas (preferably forested) between the activity and nest trees (landscape buffers); and (3) avoiding certain activities during the breeding season. On-site personnel should be informed of the possible presence of nesting bald eagles within the project boundary, and should identify, avoid, and immediately report any such nests to this office. If a bald eagle nest is discovered within or adjacent to the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: <http://www.fws.gov/southeast/es/baldeagle>. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary. The Division of Migratory Birds for the Southeast Region of the Service (phone: 404/679-7051, e-mail: SEmigratorybirds@fws.gov) has the lead role in conducting such consultations. Should you need further assistance interpreting the guidelines or performing an on-line project evaluation, please contact this office.

Migratory Bird Treaty Act comments

The MBTA prohibits the take of 1,007 species of birds listed under the four international migratory bird treaties signed by the U.S. (50 CFR 10.13). If the existing bridge is to be removed between approximately April 15th and August 31st, the underside should be inspected for the presence of nesting birds, such as barn swallows and cliff swallows.

Thank you again for your request. Your concern for the protection of endangered and threatened species is greatly appreciated. If you have any questions regarding the information that we have provided, please contact Jessi Miller at (502) 695-0468 extension 104.

Sincerely,



Virgil Lee Andrews, Jr.
Field Supervisor



**KENTUCKY DEPARTMENT OF FISH & WILDLIFE RESOURCES
TOURISM, ARTS, AND HERITAGE CABINET**

Steven L. Beshear
Governor

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Frankfort, Kentucky 40601
Phone (502) 564-3400
1-800-858-1549
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Marcheta Sparrow
Secretary

Dr. Jonathan W. Gassett
Commissioner

6 March 2013

Amanda Kerley
Third Rock Consultants
2526 Regency Road
Lexington, KY 40503

RE: US 60 Bridge Replacement over the Cumberland River, Livingston County, KY
KYTC Item No. 1-1142.00

Dear Ms. Kerley:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for information pertaining to the subject project. The Kentucky Fish and Wildlife Information System indicates that the federally - endangered Interior Least Tern (*Sternula antillarum athalassos*), Spectacle Case (*Cumberlandia monodonta*), Fat Pocketbook (*Potamilus capax*), Sheepsnose (*Plethobasus cyphus*), Grey bat (*Myotis grisescens*), and Indiana bat (*Myotis sodalis*) are known to occur within close proximity to the proposed project site. The Armored Rocksnail (*Lithasia armigera*) and Osprey (*Pandion haliaetus*) are additional state-listed species known to occur within the study area. Please be aware that our database system is a dynamic one that only represents our current knowledge of various species distributions.

This project falls within known Indiana bat swarming habitat of P3/P4 cave(s) and is considered a sensitive area by the U.S. Fish and Wildlife Service Kentucky Field Office (USFWS). Any tree cutting will likely be restricted, and recommended only from November 15th – March 31st to reduce impacts to listed bats. The Interior Least Tern nests on exposed sandbars and isolated mudflats on the lower Ohio River and the Mississippi River. Nesting occurs in late spring and summer, and often groups of nests are located close together. The KDFWR recommends surveying within the study area outlined in the project description for these nests prior to any construction. Disturbances within close proximity to the nests may cause abandonment, and reduced nesting success.

The KDFWR also recommends mussel surveys within the study area, and perhaps downstream of the study area, to determine the presence of federally-listed mussel species. Also, please contact the USFWS at 502-695-0468 to discuss appropriate measures to reduce impacts to these federally-listed species and ensure compliance under the Federal Endangered Species Act.

According to our records, Ospreys have nested on this bridge for the past several years. Ospreys prefer to nest on elevated structures (often man-made) near large bodies of water, making this bridge an attractive

nesting opportunity. Nest sites are often used for several consecutive years, as long as they are protected and minimally disturbed. Prior to construction, please contact KDFWR biologist Kate Heyden (502-564-7109 ex. 4475) to discuss ways to minimize impacts to these birds to the extent practical. Since nesting occurs in late winter through early summer, the KDFWR requests that disturbance be minimized on the current bridge during that time. While Ospreys are not protected under the Federal Endangered Species Act, they are protected under the Migratory Bird Treaty Act which does carry fines and other reprimands if harassments do occur to protected species. Clearly this area is used by a large number of threatened/endangered species, and construction techniques should be utilized to minimize impacts to these species.

To minimize indirect impacts to aquatic resources, strict erosion control measures should be developed and implemented prior to any construction to minimize siltation into streams and storm water drainage systems located within the project area. Such erosion control measures may include, but are not limited to silt fences, staked straw bales, brush barriers, sediment basins, and diversion ditches. Erosion control measures will need to be installed prior to construction and should be inspected and repaired regularly as needed.

I hope this information is helpful to you, and if you have questions or require additional information, please call me at (502) 564-7109 extension 4453.

Sincerely,



Dan Stoelb
Wildlife Biologist

Cc: Environmental Section File

Steven L. Beshear
Governor



Leonard K. Peters
Secretary
Energy and Environment Cabinet

Donald S. Dott, Jr.
Director

**Commonwealth of Kentucky
Kentucky State Nature Preserves Commission
801 Schenkel Lane
Frankfort, Kentucky 40601-1403
502-573-2886 Voice
502-573-2355 Fax**

March 1, 2013

Amanda Kerley
Third Rock Consultants
2526 Regency Rd.; Suite 180
Lexington, KY 40503

Data Request 13-053

Dear Ms. Kerley:

This letter is in response to your data request of February 25, 2013 for the KY 60 Bridge Replacement over the Cumberland River (Livingston County) project. We have reviewed our Natural Heritage Program Database to determine if any of the endangered, threatened, or special concern plants and animals or exemplary natural communities monitored by the Kentucky State Nature Preserves Commission occur near the project area on the Smithland USGS Quadrangle, as shown on the map provided. Please see the attached reports for more information, which reflect analysis of the project area with three buffers applied:

- 1-mile for all records – 16 records
- 5-mile for aquatic records – 30 records
- 5-mile for federally listed species – 16 records
- 10-mile for mammals and birds – 32 records

Myotis grisescens (Gray myotis, federally listed endangered, KSNPC threatened) and *Myotis sodalis* (Indiana myotis, federally listed endangered, KSNPC endangered) are known within five miles of the project and *Myotis austroriparius* (Southeastern myotis, federal species of management concern, KSNPC endangered) has been found within ten miles of the project area. A thorough survey for these species should be conducted by a qualified biologist if suitable habitat will be disturbed. The survey should include a search for potential roost and winter sites, and a mistnetting census at numerous points within the proposed corridor, particularly in preferred summer habitat. Summer foraging habitats include upland forests, bottomland forests and riparian corridors. Suitable roost and winter sites include sandstone and limestone caves, rockhouses, cliffhines, auger holes, and abandoned mines. In order to avoid impacts to bats, bottomland forests and riparian corridors, particularly near caves, should not be disturbed.

Please see attached report for a list of aquatic species found near this project. Aquatic species and habitats in the area are sensitive to increased turbidity, sediment, and other adverse influences on water quality.

I would like to take this opportunity to remind you of the terms of the data request license, which you agreed upon in order to submit your request. The license agreement states "Data and data products received from the Kentucky State Nature Preserves Commission, including any portion thereof, may not be reproduced in any form or by any means without the express written authorization of the Kentucky State Nature Preserves Commission." The exact location of plants, animals, and natural communities, if released by the Kentucky State Nature Preserves Commission, may not be released in any document or correspondence. These products are provided on a temporary basis for the express project (described above) of the requester, and may not be redistributed, resold or copied without the written permission of the Kentucky State Nature Preserves Commission's Data Manager (801 Schenkel Lane, Frankfort, KY, 40601. Phone: (502) 573-2886).

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed, and new plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. We would greatly appreciate receiving any pertinent information obtained as a result of on-site surveys.

Data Request 13-053

March 1, 2013

Page 3

If you have any questions or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Sara Hines
Data Manager

SLD/SGH

Enclosures: Data Report and Interpretation Key

Standard Occurrence Report

KSNPC Monitored Aquatic Elements within a 5-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
Extant in Kentucky																		
Aquatic Snails																		
IMGASK6010*003 6454	<i>Lithasia armigera</i>	Armored Rocksnail	G3G4	S3S4	S	SOMC		Y	1989-06-09	S	E	Livingston	Smithland	370842N	0882426W	05140203190 - Ohio River/Dyer Hill Ck. 05130205290 - Cumberland River/Vicksburg	CUMBERLAND RIVER MILE 2.3R.	Bars and pools with sand, gravel, and rock substrates (KNPC), sloping rock outcrops with pockets of sand, gravel and mud, partially buried logs, and rock riprap (Sickel 1988).
IMGASK6010*022 6269	<i>Lithasia armigera</i>	Armored Rocksnail	G3G4	S3S4	S	SOMC		Y	1989-06-09	S	X	Livingston	Burna	370916N	0882205W	05130205290 - Cumberland River/Vicksburg	CUMBERLAND RIVER MI 4.9 L, MOUTH OF FERGUSON CREEK.	
IMGASK6010*023 7480	<i>Lithasia armigera</i>	Armored Rocksnail	G3G4	S3S4	S	SOMC		Y	1988-03	S	A	Livingston	Smithland	370853N	0882416W	05130205290 - Cumberland River/Vicksburg	CUMBERLAND RIVER MI 2.5 R.	
IMGASK6010*024 1986	<i>Lithasia armigera</i>	Armored Rocksnail	G3G4	S3S4	S	SOMC		Y	1988-03	M	A	Livingston	Smithland Burna	370857N	0882244W	05130205290 - Cumberland River/Vicksburg 05140203190 - Ohio River/Dyer Hill Ck.	CUMBERLAND RIVER MI 4.3 L.	
IMGASK6010*025 7427	<i>Lithasia armigera</i>	Armored Rocksnail	G3G4	S3S4	S	SOMC		Y	2008-10-02	S	C	Livingston	Burna	371110N	0881847W	05130205290 - Cumberland River/Vicksburg 05130205280 - Sandy Creek 05130205240 - Cumberland River/Dycusburg	CUMBERLAND RIVER MILE 10.0 R (025A). Cumberland River rm 9 to 9.5 (025B).	
IMGASK6010*049 11047	<i>Lithasia armigera</i>	Armored Rocksnail	G3G4	S3S4	S	SOMC		Y	2003-05-06	S	D	Livingston	Little Cypress	370552N	0882620W	05140206020 - Ohio River/Ledbetter	Ohio River miles 923.8-924.4.	
IMGASK6040*018 12755	<i>Lithasia geniculata</i>	Ornate Rocksnail	G3Q	S1	S	SOMC		Y	2008-10-02	S	C	Livingston	Burna	371111N	0881907W	05130205290 - Cumberland River/Vicksburg	Cumberland River between rm 9.0 and 9.5.	
IMGASK6100*026 11048	<i>Lithasia verrucosa</i>	Varicose Rocksnail	G4Q	S3S4	S	SOMC		Y	2003-05-06	S	C	Livingston	Little Cypress	370552N	0882620W	05140206020 - Ohio River/Ledbetter	Ohio River mile 923.8-924.4.	

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Standard Occurrence Report

KSNPC Monitored Aquatic Elements within a 5-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EIOD	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
Freshwater Mussels																		
IMBIV08010*045 12650	<i>Cumberlandia monodonta</i>	Spectaclecase	G3	S1	E	LE		Y	2008-10-02	S	D	Livingston	Burna	371140N	0882047W	05130205290 - Cumberland River/Vicksburg	Cumberland River, Horseshoe Bend vicinity, ca 0.12 mi upstream from Lemen Landing, between 10 and 20 m from shore (KSNPC staff based on coordinates provided by surveyers).	
IMBIV21130*114 11046	<i>Lampsilis ovata</i>	Pocketbook	G5	S1	E			Y	2003-05-06	S	D	Livingston	Little Cypress	370559N	0882615W	05140206020 - Ohio River/Ledbetter	Ohio River mile 924, 250-260 m from the KY shore.	
IMBIV21130*136 12352	<i>Lampsilis ovata</i>	Pocketbook	G5	S1	E			Y	2007-07-25	S	D	Livingston	Little Cypress	370637N	0882543W	05140206020 - Ohio River/Ledbetter	Cumberland River, Livingston Co: along E bank of river adjacent to Towhead Island.	
IMBIV34030*044 317	<i>Plethobasus cyphus</i>	Sheepnose	G3	S1	E	LE		Y	1987-12-10	S	D	Livingston	Little Cypress	370644N	0882534W	05140206020 - Ohio River/Ledbetter	Ohio River mile ca 922.7 between Cumberland Island Towhead and the Kentucky shoreline.	Usually found in large rivers in current on mud, sand, or gravel bottoms at depth of 1-2 meters or more (Baker 1928, Parmalee 1967, Gordon and Layzer 1989).
IMBIV35250*036 2646	<i>Pleurobema rubrum</i>	Pyramid Pigtoe	G2G3	S1	E	SOMC		Y	No Date	M	X	Livingston	Smithland	370905N	0882510W	05140203190 - Ohio River\Dyer Hill Ck.	Ohio River mile 919.7, gravel bar at head of Cumberland Island.	Inhabits medium to large rivers and usually occurs in sand or gravel bottoms in deep waters (Ahlstedt 1984, Murray and Leonard 1962, Parmalee et al. 1982).

Standard Occurrence Report

KSNPC Monitored Aquatic Elements within a 5-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
IMBIV37030*009 8639	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	1987-07-31	S	F	Livingston	Smithland	370834N	0882517W	05140206020 - Ohio River/Ledbetter	OHIO RIVER MILE 920.6, AT SANDBAR ADJACENT TO CUMBERLAND ISLAND, 1.8 KM W OF KY 70-US 60 JCT IN SMITHLAND.	Occurs in medium to large-sized rivers often around island and back channels, and sometimes in ditches, in mud (ooze); mixed sand, mud, and clay; or fine silt and mud in flowing water at depths of a few inches up to eight feet (Parmalee 1967, Ahlstedt and Jenkinson 1987, Cummings and Mayer 1993, Cummings et al. 1990).
IMBIV37030*010 8637	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2007-07-25	S	C	Livingston	Little Cypress	370654N	0882528W	05140206020 - Ohio River/Ledbetter	Ohio River mile ca 922.5 between Cumberland Island Towhead and the Kentucky shoreline.	
IMBIV37030*030 11032	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	1998-08-18	S	C	Livingston	Little Cypress	370509N	0882643W	05140206020 - Ohio River/Ledbetter	Ohio River mile 925 [ca mile 925.1].	
IMBIV37030*031 11045	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2003-05-06	S	B	Livingston	Little Cypress	370552N	0882620W	05140206020 - Ohio River/Ledbetter	Ohio River mile 924.2 (and ca 924.1 and 924.4).	
IMBIV37030*033 12651	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2008-10-02	S	CD	Livingston	Burna	371146N	0882058W	05130205290 - Cumberland River/Vicksburg	Cumberland River, Horseshoe Bend area 0.1 (033B) and 0.4 mi (033A) downstream from Lemen Landing across from Bissell Bluff.	
IMBIV37030*035 12691	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2007-09-12	S	C	Livingston	Smithland	370944N	0882504W	05140203190 - Ohio River\Dyer Hill Ck.	Smithland Dam, along E-bank within island channel just downstream of dam (Bestsource). Ohio River mile 919.2, approx 0.8 mi below Smithland Dam (Stansbery).	
IMBIV37030*038 12827	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2008-11-21	S	C	Livingston	Burna	370936N	0882203W	05130205290 - Cumberland River/Vicksburg	Cumberland River, approximately river mile 5.0.	

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Standard Occurrence Report

KSNPC Monitored Aquatic Elements within a 5-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
IMBIV39041*111 11031	<i>Quadrula cylindrica cylindrica</i>	Rabbitsfoot	G3G4T3	S2	T	PT		Y	1998-08-18	S	C	Livingston	Little Cypress	370559N	0882615W	05140206020 - Ohio River/Ledbetter	Ohio River mile 924.	
Crustaceans																		
ICMAL26030*006 12888	<i>Macrobrachium ohione</i>	Ohio Shrimp	G4	S1	E			Y	2009-08-01	S	E	Livingston	Smithland	370958N	0882512W	05140203190 - Ohio River\Dyer Hill Ck.	Ohio River, Livingston County: just below Smithland Lock and Dam on left descending bank.	
ICMAL11860*005 12057	<i>Orconectes margorectus</i>	Livingston Crayfish	G2	S2	T			Y	2003-03-08	M	B	Livingston	Burna	370829N	0882133W	05130205290 - Cumberland River/Vicksburg	Ferguson Creek, Livingston County: 2 mi E of Smithland, Hwy 70.	
ICMAL14260*010 12753	<i>Procambarus viaeviridis</i>	Vernal Crayfish	G5	S1	T			Y	1998-04-22	S	E	Livingston	Burna	370830N	0882133W	05130205290 - Cumberland River/Vicksburg	Ferguson Cr., 4.5 mi E of Smithland, along Hwy 70.	
Fishes																		
AFCAA01020*016 6696	<i>Acipenser fulvescens</i>	Lake Sturgeon	G3G4	S1	E	SOMC		Y	1992-04	G	E	Livingston	Smithland Little Cypress	370802N	0882542W	05140206020 - Ohio River/Ledbetter 05130205290 - Cumberland River/Vicksburg 05140203190 - Ohio River\Dyer Hill Ck.	Ohio River near Smithland, below the dam.	Lakes and large rivers with a firm sand/gravel bottom (Burr and Warren 1986, Etnier and Starnes 1993).
AFCHD01040*013 1099	<i>Esox niger</i>	Chain Pickerel	G5	S3	S			Y	1987-10	G	D	Livingston	Smithland	370943N	0882513W	05140203190 - Ohio River\Dyer Hill Ck. 05130205290 - Cumberland River/Vicksburg 05140206020 - Ohio River/Ledbetter	OHIO RIVER, SMITHLAND TAILWATERS NEAR MILE 919.0.	Coastal Plain wetlands, streams, and vegetated oxbow lake shorelines, and it also tolerates reservoir conditions (Burr and Warren 1986, Etnier and Starnes 1993).

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Standard Occurrence Report

KSNPC Monitored Aquatic Elements within a 5-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USESA	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
AFCJC07030*024 4957	<i>Ictiobus niger</i>	Black Buffalo	G5	S3	S				1988-	G	D	Livingston	Smithland	370943N	0882513W	05130205290 - Cumberland River/Vicksburg 05140203190 - Ohio River\Dyer Hill Ck. 05140206020 - Ohio River/Ledbetter	OHIO RIVER IN SMITHLAND POOL.	Reservoirs and medium to large rivers with moderate to low gradient and sometime swift current (Becker 1983, Pflieger 1975, Smith 1979, Trautman 1981, and Burr and Warren 1986).
AFCJC07030*035 4165	<i>Ictiobus niger</i>	Black Buffalo	G5	S3	S			Y	1997-09-30	M	D	Livingston	Smithland	371310N	0882710W	05140203190 - Ohio River\Dyer Hill Ck.	OHIO RIVER NEAR BIRDSVILLE.	
AFCMA01010*009 11034	<i>Lota lota</i>	Burbot	G5	S2	S			Y	2002-06-05	S	D	Livingston	Smithland	371249N	0882653W	05140203190 - Ohio River\Dyer Hill Ck.	Ohio River mile 915 near Birdsville.	
AFCND02010*016 11660	<i>Menidia beryllina</i>	Inland Silverside	G5	S2	T			Y	2000-08-09	G	E	Livingston McCracken	Paducah West Paducah East Metropolis Little Cypress Smithland	370631N	0883657W	06040006060 - Tennessee River/Tyler 05140206040 - Ohio River/Perkins Creek 05140206020 - Ohio River/Ledbetter 05140203190 - Ohio River\Dyer Hill Ck. 05130205290 - Cumberland River/Vicksburg 06040006070 - Island Creek	Ohio River, Livingston/McCracken Co: Pool 52.	

Standard Occurrence Report

KSNPC Monitored Elements within a 1-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
Extant in Kentucky																		
Vascular Plants																		
PDBOR0S033*001 3241	<i>Onosmodium occidentale</i>	Western False Gromwell	G4?	S1	E			Y	1980-08-08	M	H	Livingston	Smithland	371020N	0882422W	05140203190 - Ohio River\Dyer Hill Ck. 05130205290 - Cumberland River/Vicksburg	E SIDE OF US 60 AT JCT OF ROAD TO RIVER LIGHT, APPROX. 1.75 MI N OF CUMBERLAND RIVER BRIDGE AT SMITHLAND.	Sandy, gravelly, or rocky prairies, glades, and open woods.
PDHDR090S0*002 9976	<i>Philadelphus pubescens</i>	Hoary Mock Orange	G5?	S1	E				1969-05-19	M	H	Livingston	Smithland Burna	370852N	0882242W	05130205290 - Cumberland River/Vicksburg	BLUFFS OVERLOOKING CUMBERLAND RIVER, SMITHLAND.	Sandstone and limestone bluffs and riverbanks.
Aquatic Snails																		
IMGASK6010*003 6454	<i>Lithasia armigera</i>	Armored Rocksnail	G3G4	S3S4	S	SOMC		Y	1989-06-09	S	E	Livingston	Smithland	370842N	0882426W	05140203190 - Ohio River\Dyer Hill Ck. 05130205290 - Cumberland River/Vicksburg	CUMBERLAND RIVER MILE 2.3R.	Bars and pools with sand, gravel, and rock substrates (KNPC), sloping rock outcrops with pockets of sand, gravel and mud, partially buried logs, and rock riprap (Sickel 1988).
IMGASK6010*023 7480	<i>Lithasia armigera</i>	Armored Rocksnail	G3G4	S3S4	S	SOMC		Y	1988-03	S	A	Livingston	Smithland	370853N	0882416W	05130205290 - Cumberland River/Vicksburg	CUMBERLAND RIVER MI 2.5 R.	
IMGASK6010*024 1986	<i>Lithasia armigera</i>	Armored Rocksnail	G3G4	S3S4	S	SOMC		Y	1988-03	M	A	Livingston	Smithland Burna	370857N	0882244W	05130205290 - Cumberland River/Vicksburg 05140203190 - Ohio River\Dyer Hill Ck.	CUMBERLAND RIVER MI 4.3 L.	
Freshwater Mussels																		
IMBIV35250*036 2646	<i>Pleurobema rubrum</i>	Pyramid Pigtoe	G2G3	S1	E	SOMC		Y	No Date	M	X	Livingston	Smithland	370905N	0882510W	05140203190 - Ohio River\Dyer Hill Ck.	Ohio River mile 919.7, gravel bar at head of Cumberland Island.	Inhabits medium to large rivers and usually occurs in sand or gravel bottoms in deep waters (Ahlstedt 1984, Murray and Leonard 1962, Parmalee et al. 1982).

Standard Occurrence Report

KSNPC Monitored Elements within a 1-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EIOD	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
IMBIV37030*035 12691	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2007-09-12	S	C	Livingston	Smithland	370944N	0882504W	05140203190 - Ohio River\Dyer Hill Ck.	Smithland Dam, along E-bank within island channel just downstream of dam (Bestsource). Ohio River mile 919.2, approx 0.8 mi below Smithland Dam (Stansbery).	
Fishes																		
AFCAA01020*016 6696	<i>Acipenser fulvescens</i>	Lake Sturgeon	G3G4	S1	E	SOMC		Y	1992-04	G	E	Livingston	Smithland Little Cypress	370802N	0882542W	05140206020 - Ohio River/Ledbetter 05130205290 - Cumberland River/Vicksburg 05140203190 - Ohio River\Dyer Hill Ck.	Ohio River near Smithland, below the dam.	Lakes and large rivers with a firm sand/gravel bottom (Burr and Warren 1986, Etnier and Starnes 1993).
AFCHD01040*013 1099	<i>Esox niger</i>	Chain Pickerel	G5	S3	S			Y	1987-10	G	D	Livingston	Smithland	370943N	0882513W	05140203190 - Ohio River\Dyer Hill Ck. 05130205290 - Cumberland River/Vicksburg 05140206020 - Ohio River/Ledbetter	OHIO RIVER, SMITHLAND TAILWATERS NEAR MILE 919.0.	Coastal Plain wetlands, streams, and vegetated oxbow lake shorelines, and it also tolerates reservoir conditions (Burr and Warren 1986, Etnier and Starnes 1993).
AFCJC07030*024 4957	<i>Ictiobus niger</i>	Black Buffalo	G5	S3	S				1988-	G	D	Livingston	Smithland	370943N	0882513W	05130205290 - Cumberland River/Vicksburg 05140203190 - Ohio River\Dyer Hill Ck. 05140206020 - Ohio River/Ledbetter	OHIO RIVER IN SMITHLAND POOL.	Reservoirs and medium to large rivers with moderate to low gradient and sometime swift current (Becker 1983, Pflieger 1975, Smith 1979, Trautman 1981, and Burr and Warren 1986).

Standard Occurrence Report

KSNPC Monitored Elements within a 1-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
AFCND02010*016 11660	<i>Menidia beryllina</i>	Inland Silverside	G5	S2	T			Y	2000-08-09	G	E	Livingston McCracken	Paducah West Paducah East Metropolis Little Cypress Smithland	370631N	0883657W	06040006060 - Tennessee River/Tyler 05140206040 - Ohio River/Perkins Creek 05140206020 - Ohio River/Ledbetter 05140203190 - Ohio River\Dyer Hill Ck. 05130205290 - Cumberland River/Vicksburg 06040006070 - Island Creek	Ohio River, Livingston/McCracken Co: Pool 52.	
Breeding Birds																		
ABPAV10080*019 6936	<i>Corvus ossifragus</i>	Fish Crow	G5	S3B	S			Y	1992-04-06	M	E	Livingston	Smithland	371020N	0882509W	05140203190 - Ohio River\Dyer Hill Ck.	Smithland Dam, in vicinity of dam and downstream along the Ohio River (019A and unmapped) and along Ohio River between Smithland Dam and Bayou, mostly in vicinity of Stewart Island (019B).	Beaches, bays, lagoons, inlets, swamps, near marshes, and, less frequently, deciduous or coniferous woodland, in inland situations primarily in baldcypress swamps and along major watercourses. Also garbage dumps.
ABNKC01010*036 12841	<i>Pandion haliaetus</i>	Osprey	G5	S2S3B	S			Y	2009-06-18	S	C	Livingston	Smithland	370857N	0882357W	05130205290 - Cumberland River/Vicksburg	On top of N end of US 60 bridge over the Cumberland River at Smithland.	
ABPAU08010*009 6243	<i>Riparia riparia</i>	Bank Swallow	G5	S3B	S			Y	1993-07-18	S	B	Livingston	Smithland	370908N	0882500W	05140203190 - Ohio River\Dyer Hill Ck.	Upstream end of Cumberland Island in the Ohio River at the mouth of the Cumberland River.	Open and partly open situations, frequently near flowing water (B83COM01NA).
ABNNM08102*014 7005	<i>Sternula antillarum athalassos</i>	Interior Least Tern	G4T2Q	S2B	T	LE		Y	2004-07-29	S	D	Livingston	Smithland	370904N	0882458W	05140206020 - Ohio River/Ledbetter 05140203190 - Ohio River\Dyer Hill Ck.	Along upstream end of sandbar adjacent to Cumberland Island, Ohio River ORM 920 (014A) and on bars E of upstream end of Cumberland Island (014B).	Bare or nearly bare alluvial islands or sand bars; will also use bare flats along the margin of industrial ponds.

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Standard Occurrence Report

KSNPC Monitored Elements within a 1-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USESA	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
Historically known from Kentucky																		
Vascular Plants																		
PDBRA060U0*002 11011	<i>Arabis hirsuta</i>	Western Hairy Rockcress	G5	SH	H			Y	1978-06-09	G	H	Livingston	Smithland Burna	371213N	0882247W	05140203190 - Ohio River/Dyer Hill Ck. 05130205290 - Cumberland River/Vicksburg 05140206070 - Bayou Creek	Smithland, KY. Limestone terraces on Biswell Bluff road [mapped on Bissell Bluff Rd. north of Smithland].	

Standard Occurrence Report

KSNPC Federal Status Elements within a 5-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
Extant in Kentucky																		
Freshwater Mussels																		
IMBIV08010*045 12650	<i>Cumberlandia monodonta</i>	Spectaclecase	G3	S1	E	LE		Y	2008-10-02	S	D	Livingston	Burna	371140N	0882047W	05130205290 - Cumberland River/Vicksburg	Cumberland River, Horseshoe Bend vicinity, ca 0.12 mi upstream from Lemen Landing, between 10 and 20 m from shore (KSNPC staff based on coordinates provided by surveyers).	
IMBIV34030*044 317	<i>Plethobasus cyphus</i>	Sheepnose	G3	S1	E	LE		Y	1987-12-10	S	D	Livingston	Little Cypress	370644N	0882534W	05140206020 - Ohio River/Ledbetter	Ohio River mile ca 922.7 between Cumberland Island Towhead and the Kentucky shoreline.	Usually found in large rivers in current on mud, sand, or gravel bottoms at depth of 1-2 meters or more (Baker 1928, Parmalee 1967, Gordon and Layzer 1989).
IMBIV37030*009 8639	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	1987-07-31	S	F	Livingston	Smithland	370834N	0882517W	05140206020 - Ohio River/Ledbetter	OHIO RIVER MILE 920.6, AT SANDBAR ADJACENT TO CUMBERLAND ISLAND, 1.8 KM W OF KY 70-US 60 JCT IN SMITHLAND.	Occurs in medium to large-sized rivers often around island and back channels, and sometimes in ditches, in mud (ooze); mixed sand, mud, and clay; or fine silt and mud in flowing water at depths of a few inches up to eight feet (Parmalee 1967, Ahlstedt and Jenkinson 1987, Cummings and Mayer 1993, Cummings et al. 1990).
IMBIV37030*010 8637	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2007-07-25	S	C	Livingston	Little Cypress	370654N	0882528W	05140206020 - Ohio River/Ledbetter	Ohio River mile ca 922.5 between Cumberland Island Towhead and the Kentucky shoreline.	
IMBIV37030*030 11032	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	1998-08-18	S	C	Livingston	Little Cypress	370509N	0882643W	05140206020 - Ohio River/Ledbetter	Ohio River mile 925 [ca mile 925.1].	

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Standard Occurrence Report

KSNPC Federal Status Elements within a 5-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
IMBIV37030*031 11045	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2003-05-06	S	B	Livingston	Little Cypress	370552N	0882620W	05140206020 - Ohio River/Ledbetter	Ohio River mile 924.2 (and ca 924.1 and 924.4).	
IMBIV37030*033 12651	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2008-10-02	S	CD	Livingston	Burna	371146N	0882058W	05130205290 - Cumberland River/Vicksburg	Cumberland River, Horseshoe Bend area 0.1 (033B) and 0.4 mi (033A) downstream from Lemen Landing across from Bissell Bluff.	
IMBIV37030*035 12691	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2007-09-12	S	C	Livingston	Smithland	370944N	0882504W	05140203190 - Ohio River\Dyer Hill Ck.	Smithland Dam, along E-bank within island channel just downstream of dam (Bestsource). Ohio River mile 919.2, approx 0.8 mi below Smithland Dam (Stansbery).	
IMBIV37030*038 12827	<i>Potamilus capax</i>	Fat Pocketbook	G2	S1	E	LE		Y	2008-11-21	S	C	Livingston	Burna	370936N	0882203W	05130205290 - Cumberland River/Vicksburg	Cumberland River, approximately river mile 5.0.	
IMBIV39041*111 11031	<i>Quadrula cylindrica cylindrica</i>	Rabbitsfoot	G3G4T3	S2	T	PT		Y	1998-08-18	S	C	Livingston	Little Cypress	370559N	0882615W	05140206020 - Ohio River/Ledbetter	Ohio River mile 924.	
Breeding Birds																		
ABNNM08102*014 7005	<i>Sternula antillarum athalassos</i>	Interior Least Tern	G4T2Q	S2B	T	LE		Y	2004-07-29	S	D	Livingston	Smithland	370904N	0882458W	05140206020 - Ohio River/Ledbetter 05140203190 - Ohio River\Dyer Hill Ck.	Along upstream end of sandbar adjacent to Cumberland Island, Ohio River ORM 920 (014A) and on bars E of upstream end of Cumberland Island (014B).	Bare or nearly bare alluvial islands or sand bars; will also use bare flats along the margin of industrial ponds.
ABNNM08102*025 10933	<i>Sternula antillarum athalassos</i>	Interior Least Tern	G4T2Q	S2B	T	LE		Y	2005-06-24	S	C	Livingston	Little Cypress	370537N	0882656W	05140206020 - Ohio River/Ledbetter	Ohio River, IL side at "pipeline crossing", ca ORM 925 (025A-025C) and upstream to ca ORM 924 (025D).	

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Standard Occurrence Report

KSNPC Federal Status Elements within a 5-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
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SENSITIVE ELEMENTS: Locational information for sensitive plants, animals, and natural communities, if released by the Kentucky State Nature Preserves Commission, may not be released in any document or correspondence. Please refer to the Data License Agreement for a full description of rights and restrictions.

Extant in Kentucky

Mammals

AMACC01040*045 84	<i>Myotis grisescens</i> Transient roost site	Gray Myotis	G3	S2	T	LE		Y	2000-09-22	S	D	Livingston					CONTACT KSNPC	CONTACT KSNPC	SENSITIVE ELEMENT- CONTACT KSNPC	Primarily use caves throughout the year, although they move from one cave to another seasonally. Males and young of the year use different caves in summer than females. Smaller colonies also occasionally roost under bridge structures.
AMACC01040*077 9329	<i>Myotis grisescens</i> Hibernaculum	Gray Myotis	G3	S2	T	LE		Y	1996-02-13	S	D	Livingston					CONTACT KSNPC	CONTACT KSNPC	SENSITIVE ELEMENT- CONTACT KSNPC	
AMACC01100*066 2210	<i>Myotis sodalis</i> Hibernaculum	Indiana Bat	G2	S1S2	E	LE		Y	1996-02-01	S	D	Livingston					CONTACT KSNPC	CONTACT KSNPC	SENSITIVE ELEMENT- CONTACT KSNPC	Primarily use caves for hibernacula, although they are occasionally found in old mine portals. During summer, colonies are found behind slabs of exfoliating bark of dead trees, often in bottomland or floodplain habitats, but also in upland situations.
AMACC01100*122 7056	<i>Myotis sodalis</i> Hibernaculum	Indiana Bat	G2	S1S2	E	LE		Y	2000-09-22	S	D	Livingston					CONTACT KSNPC	CONTACT KSNPC	SENSITIVE ELEMENT- CONTACT KSNPC	

Standard Occurrence Report

KSNPC Monitored Bird and Mammal Elements within a 10-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
Extant in Kentucky																		
Breeding Birds																		
ABPBXA0030*051 8933	<i>Ammodramus henslowii</i>	Henslow's Sparrow	G4	S3B	S	SOMC		Y	2004-06-18	S	E	Livingston	Smithland	371444N	0882345W	05140206070 - Bayou Creek	Burna, S side KY 763, ca 1.25 rd mi W of jct US 60 (051A), and N side of road (051B) (Joy BBS Route, Stop 48).	Open fields & meadows with relatively thick/dense grass interspersed with weeds or shrubby vegetation.
ABNGA04040*023 13460	<i>Ardea alba</i>	Great Egret	G5	S2B	T			Y	2011-05-19	S	C	Livingston	Paducah East Little Cypress	370152N	0882953W	06040006010 - Tennessee River/Cooper Creek	Along Lower Tennessee River, ca. 0.6 air mi E of E end of Chestnut Lake.	
ABPAV10080*019 6936	<i>Corvus ossifragus</i>	Fish Crow	G5	S3B	S			Y	1992-04-06	M	E	Livingston	Smithland	371020N	0882509W	05140203190 - Ohio River\Dyer Hill Ck.	Smithland Dam, in vicinity of dam and downstream along the Ohio River (019A and unmapped) and along Ohio River between Smithland Dam and Bayou, mostly in vicinity of Stewart Island (019B).	Beaches, bays, lagoons, inlets, swamps, near marshes, and, less frequently, deciduous or coniferous woodland, in inland situations primarily in baldcypress swamps and along major watercourses. Also garbage dumps.
ABNKC10010*045 11030	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2B,S2 S3N	T	Delisted		Y	2007-03-22	S	C	Livingston	Little Cypress	370624N	0882509W	05140206020 - Ohio River/Ledbetter	Along Ohio River near mouth of Davis Creek.	
ABNKC10010*059 12013	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2B,S2 S3N	T	Delisted		Y	2007-05	S	C	Livingston	Little Cypress	370143N	0882952W	06040006010 - Tennessee River/Cooper Creek	Floodplain slough, ca 0.75 air mi ESE of Chestnut Lake and just E of impoundment levee.	
ABNKC01010*002 6589	<i>Pandion haliaetus</i>	Osprey	G5	S2S3B	S			Y	2009-06-18	S	C	Livingston	Smithland	371458N	0882910W	05140203130 - Ohio River\McGilligan Ck.	Along the Kentucky shore of the Ohio River, 0.3 mi upstream from the mouth of Bayou Creek.	Primarily along rivers, lakes, and seacoasts, occurring widely in migration, often crossing land between bodies of water (B83COM01NA).

Standard Occurrence Report

KSNPC Monitored Bird and Mammal Elements within a 10-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
ABNKC01010*017 11143	<i>Pandion haliaetus</i>	Osprey	G5	S2S3B	S			Y	2009-06-18	S	C	Livingston	Calvert City	370219N	0881743W	06040006010 - Tennessee River/Cooper Creek 06040005310 - Tennessee River/Jonathon Creek	East bank of Tennessee River, ca 1.0 air mi downstream from I-24 bridge.	
ABNKC01010*021 11369	<i>Pandion haliaetus</i>	Osprey	G5	S2S3B	S			Y	2005-06-24	S	C	Marshall	Calvert City	370338N	0882221W	06040006010 - Tennessee River/Cooper Creek	Tennessee River bank at Arkema plant property, ca 0.95 air mi W (021A) and ca 0.3 air mi W (021B) of the end of KY 95 near Calvert City.	
ABNKC01010*022 11406	<i>Pandion haliaetus</i>	Osprey	G5	S2S3B	S			Y	2007-08-29	S	C	Marshall	Little Cypress	370115N	0882839W	06040006010 - Tennessee River/Cooper Creek	Tennessee River, Marshall Co side (022A) and Livingston Co side (022B) at river mile 8.6.	
ABNKC01010*024 11675	<i>Pandion haliaetus</i>	Osprey	G5	S2S3B	S			Y	2007-06-12	S	E	Livingston	Smithland	370757N	0882536W	05140206020 - Ohio River/Ledbetter	At downstream end of small island just W of Cumberland Island, ORM ca 921.3.	
ABNKC01010*036 12841	<i>Pandion haliaetus</i>	Osprey	G5	S2S3B	S			Y	2009-06-18	S	C	Livingston	Smithland	370857N	0882357W	05130205290 - Cumberland River/Vicksburg	On top of N end of US 60 bridge over the Cumberland River at Smithland.	
ABPAU08010*009 6243	<i>Riparia riparia</i>	Bank Swallow	G5	S3B	S			Y	1993-07-18	S	B	Livingston	Smithland	370908N	0882500W	05140203190 - Ohio River\Dyer Hill Ck.	Upstream end of Cumberland Island in the Ohio River at the mouth of the Cumberland River.	Open and partly open situations, frequently near flowing water (B83COM01NA).
ABPAU08010*011 8842	<i>Riparia riparia</i>	Bank Swallow	G5	S3B	S			Y	2002-07-07	S	C	Livingston	Little Cypress	370435N	0882707W	05140206020 - Ohio River/Ledbetter	Ohio River bluff just upstream from the mouth of Goodlow Slough (011A) and 0.4 mi downstream from the mouth of Goodlow Slough (011B).	

Standard Occurrence Report

KSNPC Monitored Bird and Mammal Elements within a 10-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
ABNNM08102*014 7005	<i>Sternula antillarum athalassos</i>	Interior Least Tern	G4T2Q	S2B	T	LE		Y	2004-07-29	S	D	Livingston	Smithland	370904N	0882458W	05140206020 - Ohio River/Ledbetter 05140203190 - Ohio River\Dyer Hill Ck.	Along upstream end of sandbar adjacent to Cumberland Island, Ohio River ORM 920 (014A) and on bars E of upstream end of Cumberland Island (014B).	Bare or nearly bare alluvial islands or sand bars; will also use bare flats along the margin of industrial ponds.
ABNNM08102*016 6852	<i>Sternula antillarum athalassos</i>	Interior Least Tern	G4T2Q	S2B	T	LE		Y	1986	M	X	Livingston	Paducah East	370330N	0883050W	05140206020 - Ohio River/Ledbetter	Ohio River at ORM 929.5.	
ABNNM08102*019 5080	<i>Sternula antillarum athalassos</i>	Interior Least Tern	G4T2Q	S2B	T	LE		Y	2001-07-02	S	X	Livingston	Paducah East	370354N	0883014W	05140206020 - Ohio River/Ledbetter	Ohio River, nr IL side downstream from Cottonwood Bar, ca RM 928.5 (nr upstream end of long sandbar).	
ABNNM08102*023 10727	<i>Sternula antillarum athalassos</i>	Interior Least Tern	G4T2Q	S2B	T	LE		Y	2005-07-21	S	C	Marshall	Little Cypress	370308N	0882239W	06040006010 - Tennessee River/Cooper Creek	Arkema Chemical Plant impoundment along Tennessee River nr Calvert City, westernmost impoundment referred to as Hf lagoon.	
ABNNM08102*025 10933	<i>Sternula antillarum athalassos</i>	Interior Least Tern	G4T2Q	S2B	T	LE		Y	2005-06-24	S	C	Livingston	Little Cypress	370537N	0882656W	05140206020 - Ohio River/Ledbetter	Ohio River, IL side at "pipeline crossing", ca ORM 925 (025A-025C) and upstream to ca ORM 924 (025D).	
ABNSA01010*002 85	<i>Tyto alba</i>	Barn Owl	G5	S3	S			Y	1985	G	E	Marshall	Calvert City Little Cypress	370134N	0882056W	06040006010 - Tennessee River/Cooper Creek 06040006020 - Cypress Creek	SW block of quad.	Open and partly open country in a wide variety of situations, often around human habitation (B83COM01NA). In northern winter often roosts in dense conifers; also roosts in nest boxes if available (A85MAR01NA).

Standard Occurrence Report

KSNPC Monitored Bird and Mammal Elements within a 10-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EOORANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
ABNSA01010*018 6590	<i>Tyto alba</i>	Barn Owl	G5	S3	S			Y	1991	G	E	Livingston	Smithland Golconda Lola Burna	371336N	0882421W	05130205290 - Cumberland River/Vicksburg 05140203190 - Ohio River\Dyer Hill Ck. 05140206070 - Bayou Creek	Somewhere on quad outside of NE block.	Open and partly open country in a wide variety of situations, often around human habitation (B83COM01NA). In northern winter often roosts in dense conifers; also roosts in nest boxes if available (A85MAR01NA).
ABPBW01110*014 12010	<i>Vireo bellii</i>	Bell's Vireo	G5	S2S3B	S	SOMC		Y	2007-08-29	S	E	Livingston	Little Cypress	370149N	0882921W	06040006010 - Tennessee River/Cooper Creek	Tennessee River floodplain, ca 1.4 air mi SSW of Ledbetter.	
ABPBW01110*015 12842	<i>Vireo bellii</i>	Bell's Vireo	G5	S2S3B	S	SOMC		Y	2009-06-18	S	CD	Livingston	Smithland	371437N	0882319W	05140203160 - Bayou Creek	South side of KY 763, 1.2 rd mi W of jct US 60.	
Mammals																		
AMACC01030*035 12420	<i>Myotis austroriparius</i>	Southeastern Myotis	G3G4	S1S2	E	SOMC		Y	2002-08-14	S	E	Livingston	Burna	371240N	0882012W	05130205290 - Cumberland River/Vicksburg	Bissell Bluff, along entrance road in across abandoned Klondike Mine.	
AMACC01030*036 12421	<i>Myotis austroriparius</i>	Southeastern Myotis	G3G4	S1S2	E	SOMC		Y	2002-08-16	S	E	Livingston	Burna	370829N	0882134W	05130205290 - Cumberland River/Vicksburg	Ferguson Creek at KY 70 (Tiline Road).	

SENSITIVE ELEMENTS: Locational information for sensitive plants, animals, and natural communities, if released by the Kentucky State Nature Preserves Commission, may not be released in any document or correspondence. Please refer to the Data License Agreement for a full description of rights and restrictions.

Extant in Kentucky

Mammals

AMACC01030*006 3889	<i>Myotis austroriparius</i>	Southeastern Myotis	G3G4	S1S2	E	SOMC		Y	2000-09-22	S	D	Livingston		CONTACT KSNPC	CONTACT KSNPC		SENSITIVE ELEMENT- CONTACT KSNPC	Primarily uses caves for hibernacula and uses caves, bridges, and hollow trees as summer maternity and roosting sites.
AMACC01030*008 6415	<i>Myotis austroriparius</i>	Southeastern Myotis	G3G4	S1S2	E	SOMC		Y	1984-08-20	S	D	Livingston		CONTACT KSNPC	CONTACT KSNPC		SENSITIVE ELEMENT- CONTACT KSNPC	

Standard Occurrence Report

KSNPC Monitored Bird and Mammal Elements within a 10-mi radius of the KY 60 Bridge Replacement over the Cumberland River project (Livingston Co.)

EOCODE EOID	SNAME EO Type	SCOMNAME	GRANK	SRANK	SPROT	USES	OTHER STATUS	IDENT	LASTOBS	PREC	EO RANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT		
AMACC01030*012 3616	<i>Myotis austroriparius</i> Hibernaculum; maternity site	Southeastern Myotis	G3G4	S1S2	E	SOMC		Y	1996-02-01	S	C	Livingston					CONTACT KSNPC	CONTACT KSNPC	SENSITIVE ELEMENT- CONTACT KSNPC	Primarily uses caves for hibernacula and uses caves, bridges, and hollow trees as summer maternity and roosting sites.
AMACC01030*022 8807	<i>Myotis austroriparius</i> Hibernaculum	Southeastern Myotis	G3G4	S1S2	E	SOMC			1988-01-22	G	E	Livingston Crittenden					CONTACT KSNPC	CONTACT KSNPC	SENSITIVE ELEMENT- CONTACT KSNPC	
AMACC01040*045 84	<i>Myotis grisescens</i> Transient roost site	Gray Myotis	G3	S2	T	LE		Y	2000-09-22	S	D	Livingston					CONTACT KSNPC	CONTACT KSNPC	SENSITIVE ELEMENT- CONTACT KSNPC	Primarily use caves throughout the year, although they move from one cave to another seasonally. Males and young of the year use different caves in summer than females. Smaller colonies also occasionally roost under bridge structures.
AMACC01040*077 9329	<i>Myotis grisescens</i> Hibernaculum	Gray Myotis	G3	S2	T	LE		Y	1996-02-13	S	D	Livingston					CONTACT KSNPC	CONTACT KSNPC	SENSITIVE ELEMENT- CONTACT KSNPC	
AMACC01100*066 2210	<i>Myotis sodalis</i> Hibernaculum	Indiana Bat	G2	S1S2	E	LE		Y	1996-02-01	S	D	Livingston					CONTACT KSNPC	CONTACT KSNPC	SENSITIVE ELEMENT- CONTACT KSNPC	Primarily use caves for hibernacula, although they are occasionally found in old mine portals. During summer, colonies are found behind slabs of exfoliating bark of dead trees, often in bottomland or floodplain habitats, but also in upland situations.
AMACC01100*122 7056	<i>Myotis sodalis</i> Hibernaculum	Indiana Bat	G2	S1S2	E	LE		Y	2000-09-22	S	D	Livingston					CONTACT KSNPC	CONTACT KSNPC	SENSITIVE ELEMENT- CONTACT KSNPC	

THESE DATA ARE VALID ONLY ON THE DATE ON WHICH THE REPORT WAS GENERATED.
THESE DATA MAY ONLY BE USED FOR THE PROJECT NAMED ABOVE.

**APPENDIX B – ENVIRONMENTAL DATA RESOURCES, INC. REPORT
(EXECUTIVE SUMMARY)**

Livingston County

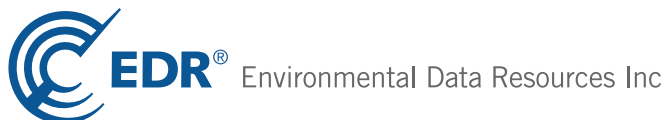
198-101 MILL ST

Smithland, KY 42081

Inquiry Number: 3523196.1s

February 19, 2013

EDR Summary Radius Map Report



440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

198-101 MILL ST
SMITHLAND, KY 42081

COORDINATES

Latitude (North): 37.1485000 - 37° 8' 54.60"
Longitude (West): 88.3995000 - 88° 23' 58.20"
Universal Transverse Mercator: Zone 16
UTM X (Meters): 375714.2
UTM Y (Meters): 4112059.2
Elevation: 302 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property: TP
Source: USGS 7.5 min quad index

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from: 2010, 2011
Source: USDA

MAPPED SITES SUMMARY

Target Property Address:
 198-101 MILL ST
 SMITHLAND, KY 42081

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft.) DIRECTION
1	LIVINGSTON CO SPECIA	811 US HWY 60 E	SHWS	Higher	1321, South
A2	LIVINGSTON COUNTY MI	1370 US 60 EAST	FINDS	Higher	1917, North
A3	LIVINGSTON CO MIDDLE	1370 US 60 E	UST	Higher	1917, North
A4	NORTH LIVINGSTON COU	1372 US 60 EAST	FINDS	Higher	1960, North
5	MARSHALL CO COOP	US 60 & KY 70	UST	Higher	2027, SSW
6	THOMPSONS GROCERY	217 E ADAIR ST	UST, Financial Assurance	Higher	2659, SSW
B7		119 E ADAIR ST	EDR US Hist Auto Stat	Higher	3013, SSW
B8		105 E ADAIR ST	EDR US Hist Auto Stat	Higher	3064, SSW
B9	SMITHLAND BP	109 W ADAIR ST	UST, Financial Assurance	Higher	3136, SSW
B10		118 W ADAIR ST	EDR US Hist Auto Stat	Higher	3180, SSW
B11		119 W ADAIR ST	EDR US Hist Auto Stat	Higher	3183, SSW
12	COURT STREET PROPERT	216 E COURT ST	UST	Higher	3570, SSW
C13	LIVINGSTON COUNTY FI	355 COURT STREET	HIST LF	Higher	3594, SSW
C14		220 W ADAIR ST	EDR US Hist Auto Stat	Higher	3714, SSW
C15	SMITHLAND SERVICE ST	220 W ADAIR ST	UST, Financial Assurance	Higher	3714, SSW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

SHWS: A review of the SHWS list, as provided by EDR, and dated 01/02/2013 has revealed that there is 1 SHWS site within approximately 1.5 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
LIVINGSTON CO SPECIA Facility Status: Closed	811 US HWY 60 E	S 1/4 - 1/2 (0.250 mi.)	1	7

State and tribal registered storage tank lists

UST: A review of the UST list, as provided by EDR, and dated 10/01/2012 has revealed that there are 6 UST sites within approximately 0.75 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
LIVINGSTON CO MIDDLE	1370 US 60 E	N 1/4 - 1/2 (0.363 mi.)	A3	7
MARSHALL CO COOP	US 60 & KY 70	SSW 1/4 - 1/2 (0.384 mi.)	5	7
<i>THOMPSONS GROCERY</i>	<i>217 E ADAIR ST</i>	<i>SSW 1/2 - 1 (0.504 mi.)</i>	<i>6</i>	<i>8</i>
<i>SMITHLAND BP</i>	<i>109 W ADAIR ST</i>	<i>SSW 1/2 - 1 (0.594 mi.)</i>	<i>B9</i>	<i>8</i>
COURT STREET PROPERT	216 E COURT ST	SSW 1/2 - 1 (0.676 mi.)	12	9
<i>SMITHLAND SERVICE ST</i>	<i>220 W ADAIR ST</i>	<i>SSW 1/2 - 1 (0.703 mi.)</i>	<i>C15</i>	<i>10</i>

EXECUTIVE SUMMARY

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

HIST LF: A review of the HIST LF list, as provided by EDR, and dated 05/01/2003 has revealed that there is 1 HIST LF site within approximately 1 mile of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
LIVINGSTON COUNTY FI	355 COURT STREET	SSW 1/2 - 1 (0.681 mi.)	C13	9

Other Ascertainable Records

FINDS: A review of the FINDS list, as provided by EDR, and dated 10/23/2011 has revealed that there are 2 FINDS sites within approximately 0.5 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
LIVINGSTON COUNTY MI	1370 US 60 EAST	N 1/4 - 1/2 (0.363 mi.)	A2	7
NORTH LIVINGSTON COU	1372 US 60 EAST	N 1/4 - 1/2 (0.371 mi.)	A4	7

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR US Hist Auto Stat: A review of the EDR US Hist Auto Stat list, as provided by EDR, has revealed that there are 5 EDR US Hist Auto Stat sites within approximately 0.75 miles of the target property.

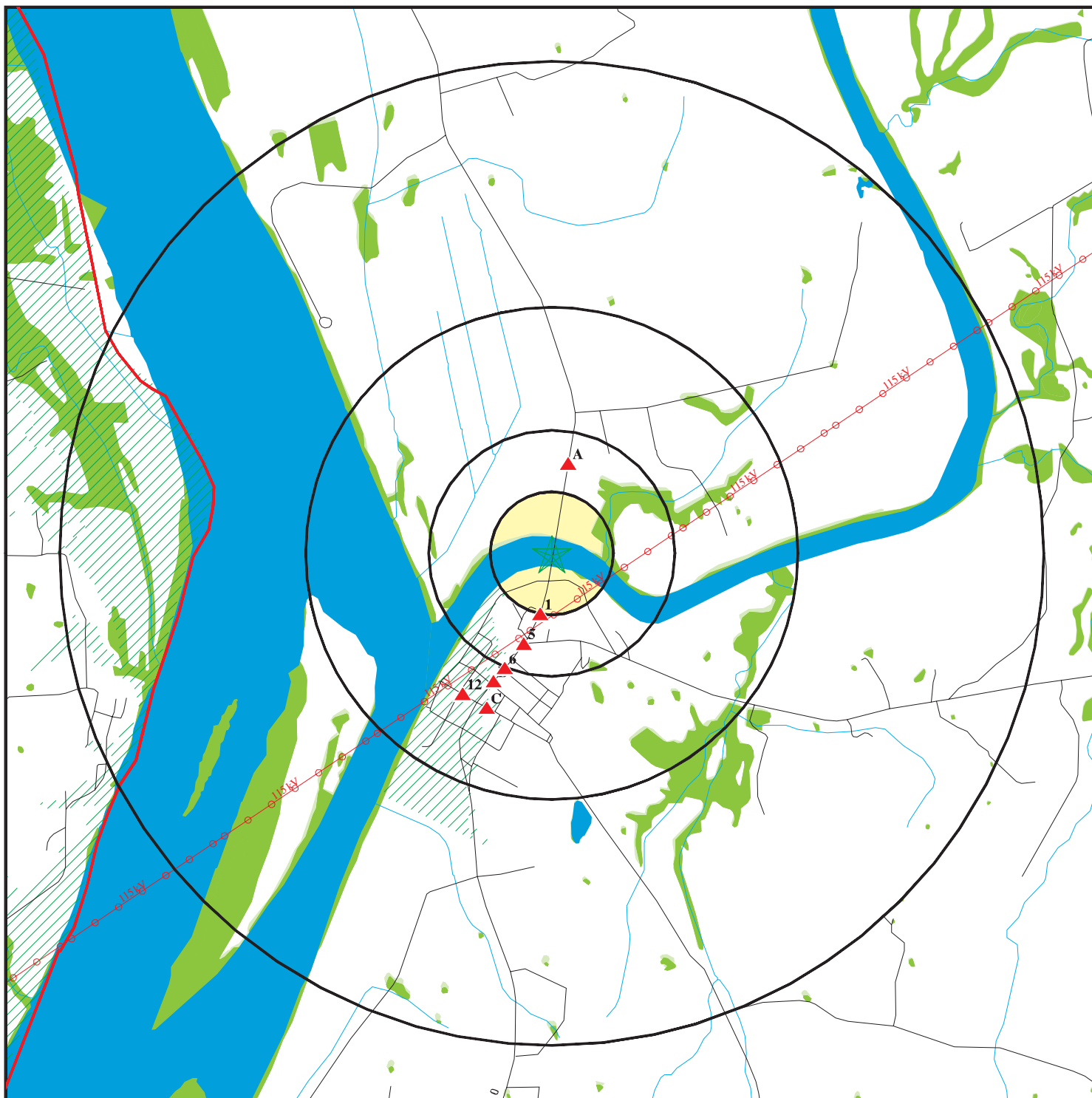
<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
Not reported	119 E ADAIR ST	SSW 1/2 - 1 (0.571 mi.)	B7	8
Not reported	105 E ADAIR ST	SSW 1/2 - 1 (0.580 mi.)	B8	8
Not reported	118 W ADAIR ST	SSW 1/2 - 1 (0.602 mi.)	B10	9
Not reported	119 W ADAIR ST	SSW 1/2 - 1 (0.603 mi.)	B11	9
Not reported	220 W ADAIR ST	SSW 1/2 - 1 (0.703 mi.)	C14	9

Count: 25 records.

ORPHAN SUMMARY

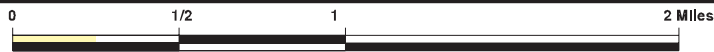
City	EDR ID	Site Name	Site Address	Zip	Database(s)
SMITHLAND	1000518172	PETROLEUM MONITORING INC. (PMI)	HIGHWAY 137	42081	FINDS,RCRA-CESQG
BURNA	1000518189	BROWN'S SERVICE STATION	HIGHWAY 60	42028	FINDS,RCRA-NLR
GOLCONDA	1004472162	POPE COUNTY ELEMENTARY SCHOOL	ROUTE 2, BOX 22	62938	FINDS,NPDES
GOLCONDA	1004474885	POPE COUNTY HIGH SCHOOL	ROUTE 2, BOX 22	62938	FINDS
GOLCONDA	1008127864	POPE COUNTY ROAD DISTRICT 1	RTE 3	62938	FINDS
VARIOUS	1015742561	IDOT	POPE CO BRIDGE & HWY	62938	RCRA-NLR
SMITHLAND	S108011728	BILLS QUICKSERVICE	HWY 60 AND LEVER ST.	42081	FINANCIAL ASSURANCE 1
SMITHLAND	S108014191	EUGENE BELT PROPERTY	HWY 133 LOLA ROAD	42081	FINANCIAL ASSURANCE 1
BURNA	S108014846	GEE JAYS	HWY 60	42028	FINANCIAL ASSURANCE 1
SMITHLAND	S108020968	UNION 76	HWY. 60	42081	FINANCIAL ASSURANCE 1
GOLCONDA	S108112731	POPE COUNTY ROAD DISTRICT #1	ROUTE 3	62938	LF
DIXON SPRINGS	S108113312	UNIVERSITY OF ILLINOIS	OFF ROUTE 145	62938	LF
SMITHLAND	S108760889	POWELL RED GRAVEL PIT	HWY 60 / HWY 937	42081	NPDES
SMITHLAND	S108902048	SOUTH LIVINGSTON ELEM SCHOOL	KY HWY 937	42081	NPDES
GOLCONDA	S108967769	POPE COUNTY HIGH SCHOOL STP	ROUTE 2, BOX 22	62938	NPDES
SMITHLAND	S110350078	COOPERATIVE EXTENSION OFFICE	US HWY 60	42081	NPDES
JOY	U000806836	JOY GROCERY	RTE 3 HWY 133	42081	UST
SMITHLAND	U001180884	LIVINGSTON CO BUS GARAGE	US HWY 60 BOX 219	42081	UST
CARRSVILLE	U003180474	PERRINS GROCERY	HWY 135	42081	UST
GOLCONDA	U003309737	RICHERSON OIL COMPANY - BULK PLANT	NORTH HIGHWAY 146	62938	UST
GOLCONDA	U003310026	RICHERSON HOMER	HWY 146	62938	UST
GOLCONDA	U003310110	FRUIT BELT SER CO	HWY 146	62938	UST
LOLA	U003555011	GULF GAS	HWY 133	42081	UST,FINANCIAL ASSURANCE 1
SMITHLAND	U003555045	UNION 76	HWY 60	42081	UST
SMITHLAND	U004107689	L & K MARKET	853 CUTOFF RD HWY 937	42081	UST

OVERVIEW MAP - 3523196.1s



- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ▲ Manufactured Gas Plants
- ☒ National Priority List Sites
- ☒ Dept. Defense Sites

- ☒ Indian Reservations BIA
- ⚡ County Boundary
- ⚡ Power transmission lines
- ⚡ Oil & Gas pipelines from USGS
- ▨ 100-year flood zone
- ▨ 500-year flood zone
- National Wetland Inventory
- State Wetlands



This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Livingston County
 ADDRESS: 198-101 MILL ST
 Smithland KY 42081
 LAT/LONG: 37.1485 / 88.3995

CLIENT: Third Rock Consultants LLC
 CONTACT: Cory Bloyd
 INQUIRY #: 3523196.1s
 DATE: February 19, 2013 12:08 pm