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Brent Spence Bridge
Replacement/Rehabilitation Project

KENTUCKY TRANSPORTATION CABINET

Level One Ecological Survey Report

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1.0 INTRODUCTION

Interstate 75 (I-75) within the Greater Cincinnati/Northern Kentucky region is a major thoroughfare for local and regional mobility. Locally, it connects to I-71, I-74 and US Route 50. The Brent Spence Bridge provides an interstate connection over the Ohio River and carries both I-71 and I-75 traffic (Exhibit 1; Photographs 1 and 2). The bridge also facilitates local travel by providing access to downtown Cincinnati, Ohio and Covington, Kentucky. Safety, congestion and geometric problems exist on the structure and its approaches. The Brent Spence Bridge, which opened to traffic in 1963, was designed to carry 80,000 vehicles per day. Currently, approximately 160,000 vehicles per day use the Brent Spence Bridge and traffic volumes are projected to increase to 200,000 vehicles per day in 2035.

The I-75 corridor within the Greater Cincinnati/Northern Kentucky region is experiencing problems, which threaten the overall efficiency and flexibility of this vital trade corridor. Areas of concern include, but are not limited to, growing demand and congestion, land use pressures, environmental concerns, adequate safety margins, and maintaining linkage in key mobility, trade, and national defense highways.

The I-75 corridor has been the subject of numerous planning and engineering studies over the years and is a strategic link in the region's and the nation's highway network. As such, the Ohio Department of Transportation (ODOT) and the Kentucky Transportation Cabinet (KYTC), in cooperation with the Federal Highway Administration (FHWA), are proposing to improve the operational characteristics of I-75 and the Brent Spence Bridge in the Greater Cincinnati/Northern Kentucky region through a major transportation project.

1.1 Purpose and Need

The Brent Spence Bridge Replacement/Rehabilitation Project is intended to improve the operational characteristics within the I-71/I-75 corridor for both local and through traffic. In the Greater Cincinnati/Northern Kentucky region, the I-71/I-75 corridor suffers from congestion and safety–related issues as a result of inadequate capacity to accommodate current traffic demand. The objectives of this project are to:

- improve traffic flow and level of service
- improve safety
- correct geometric deficiencies
- enhance connections to key regional and national transportation corridors

1.2 Study Corridor

The overall project corridor is located along a 7.8-mile segment of I-75 within the Commonwealth of Kentucky (state line mile 186.7) and the State of Ohio (state line mile 2.7). The southern limit of the project is 5,000 feet south of the midpoint of the Dixie Highway Interchange on I-71/I-75 in Fort Wright, south of Covington, Kentucky. The northern limit of the project is 1,500 feet north of the midpoint of the Western Hills Viaduct interchange on I-75 in Cincinnati, Ohio. The eastern and western limits of the study area generally follow the existing alignment of I-75. The study area for this ecological assessment is limited to the portion of the overall corridor located in Ohio.

1.3 Conceptual Alternatives

The development of conceptual alternatives for the Brent Spence Bridge was initiated in 2003 by KYTC and documented in the *Feasibility and Constructability Study of the Replacement/Rehabilitation of the Brent Spence Bridge* (May 2005). This report recommended six conceptual alternatives for further study.

In 2006, 25 conceptual alternatives including the No Build Alternative, and the six conceptual alternatives from the KYTC study, were developed as part of Step 4 of the ODOT PDP. These 25 conceptual alternatives were evaluated using a two-phased comparative analysis screening process which eliminated 19 of the 25 conceptual alternatives from further study and evaluation. The results of the conceptual alternatives considered and dismissed are presented in the *Planning Study Report* (September 2006). At the end of Step 4, a total of six conceptual alternatives were recommended for further study in Step 5 of the PDP. These alternatives included the No Build Alternative and five mainline build alternatives:

- Mainline Alternative 1 - Queensgate Alignment for I-75
- Mainline Alternative 2 - Queensgate Alignment for I-71/I-75
- Mainline Alternative 3 - New Bridge Just West for I-75
- Mainline Alternative 4 - New Bridge Just West for all Traffic
- Mainline Alternative 5 - Construct New Bridges for I-75

The No Build Alternative maintains the existing configuration of the I-71/I-75 corridor and consists of minor, short-term safety and maintenance improvements to the interstate, which would maintain its continuing operation. The No Build Alternative is retained as a baseline for evaluation of the build alternatives.

1.3.1 Step 5 Conceptual Alternatives

The five conceptual build alternatives and sub-alternatives were further developed in more detail and refined during Step 5 of the Major Project Development Process (PDP). These efforts included environmental studies, traffic analysis, refinement of horizontal and vertical alignments, cost estimates, utilities coordination, and stakeholder coordination. As a result, the mainline alternatives and sub-alternatives evolved into eight conceptual alternatives. The eight conceptual alternatives were identified as Alternatives A through H.

- Alternative A (Alternative 1, I-71/US 50 Interchange Sub-Alternative 1, Hybrid of Collector-Distributor Roads Sub-Alternative 1 and Arterial Improvements Sub-Alternative 2 from the *Planning Study Report*)

- Alternative B (Alternative 2, I-71/US 50 Interchange Sub-Alternative 2, Hybrid of Collector-Distributor Roads Sub-Alternative 1 and Arterial Improvements Sub-Alternative 2 from the *Planning Study Report*)

- Alternative C (Variation of Alternative 3, I-71/I-75/US 50 Interchange Sub-Alternative, 1, Hybrid of Collector-Distributor Roads Sub-Alternative 1 and Arterial Improvements Sub-Alternative 2 from the *Planning Study Report*)

- Alternative D (Variation of Alternative 3, I-71/I-75/US 50 Interchange Sub- Alternative 3, Hybrid of Collector-Distributor Roads Sub-Alternative 1 and Arterial Improvements Sub-Alternative 2 from the *Planning Study Report*)

- Alternative E (Variation of Alternative 3, I-71/I-75/US 50 Interchange Sub-Alternative 3, Hybrid of Collector-Distributor Roads Sub-Alternative 1 and Arterial Improvements Sub-Alternative 2 from the *Planning Study Report*)

- Alternative F (Variation of Alternative 4, I-71/I-75/US 50 Interchange Sub-Alternative 2, Hybrid of Collector-Distributor Roads Sub-Alternative 1 and Arterial Improvements Sub-Alternative 2 from the *Planning Study Report*)

- Alternative G (Variation of Alternative 4, I-71/I-75/US 50 Interchange Sub- Alternative 3, Hybrid of Collector-Distributor Roads Sub-Alternative 1 and Arterial Improvements Sub-Alternative 2 from the *Planning Study Report*)

- Alternative H (Alternative 5 from the *Planning Study Report*)

A comparative analysis of the eight conceptual alternatives eliminated some of the alternatives, including Alternatives A, F, and H. Alternatives A and H were eliminated from further consideration due to fatal flaws, which were identified as the alternatives were developed in more detail. Alternative F was eliminated from further consideration because it was very similar to Alternative G and did not provide any additional benefit. Alternatives evaluated throughout Step 5 were Alternatives B, C, D, E, and G. These five alternatives then were compared for their ability to meet the project's purpose and need, impacts, constructability, and estimated costs. Impacts were determined using the construction limits of each alternative.

The conceptual alternatives developed and evaluated in Step 5 all have comparable impacts at both the southern and northern ends of the study area. Distinction among the alternatives is made by evaluating the impacts of each within the Central Business Districts (CBD) and adjacent communities of both Covington, Kentucky and Cincinnati, Ohio. The difference between the conceptual alternatives is the area between the limits of KY 12th Street and Ezzard Charles Drive. Alternative B, the "Queensgate alignment" is west of Longworth Hall (a Section 4(f) resource) through the Queensgate area. Alternatives C, D, E, and G, "Existing alignment," are all alignment variations which follow the existing interstate corridor. Among these alternatives, access to both CBD areas varies from providing direct access via new interchanges with I-71/I-75 to providing CBD access with a system of collector-distributor (C-D) roadways that connect to CBD access points.

Based on the adverse impacts to communities and property acquisition associated with Alternative B, as well as the overall complexity, constructability, risk, and cost, it was recommended that Alternative B be eliminated from further consideration.

Alternatives C and D are very similar in overall design. Based on the comparative analysis with respect to horizontal and vertical alignments, impacts, and the flow of traffic of Alternatives C and D, it was recommended that a hybrid alternative of the northbound portion of Alternative C and the southbound portion of Alternative D should be advanced for further consideration.

Alternative G was recommended to be eliminated from further consideration due to the high costs of this alternative and the higher property acquisition associated with it. Alternative G would result in 31 residential and 41 business displacements. The business displacements would affect over 1,300 employees. However, the following beneficial design features of Alternative G will be carried forward for further analysis and incorporated into the feasible alternatives:

- access to north end of Clay Wade Bailey Bridge from I-75 southbound using a connector-distributor roadway and US 50 eastbound;
- two access points into Covington;
- access from a northbound connector-distributor roadway from KY to I-71 northbound in Ohio; and
- access ramp just north of Ezzard Charles Drive for Freeman Ave and local traffic to I-75 northbound.

1.3.2 Recommended Feasible Alternatives

The comparative analysis led to the recommendation of carrying forward two feasible alternatives. The two feasible alternatives consist of Alternative E and a combination of Alternatives C and D (Exhibits 2A-2D). Based on the analyses completed and feedback as part of community input, it was also recommended that certain design elements (as listed above) of Alternative G be incorporated into the two feasible alternatives in Step 6 of the PDP.

Alternative C/D

Alternative C/D utilizes the existing I-71/I-75 alignment from the southern project limits at the Dixie Highway Interchange north to the Kyles Lane Interchange. The Dixie Highway and Kyles Lane interchanges will be modified slightly to accommodate a connector-distributor (C-D) roadway, which will be constructed along both sides of I-71/I-75 between the two interchanges. North of the Kyles Lane Interchange, the alignment shifts to the west to accommodate additional I-71/I-75 travel lanes. Between Kyles Lane and KY 12th Street, six lanes will be provided in each direction for a total of 12 travel lanes. Near KY 12th Street, the alignment separates into three routes for I-71, I-75 and a local C-D roadway.

A new double deck bridge will be built just west of the existing Brent Spence Bridge to carry northbound and southbound I-75 (three lanes in each direction), two lanes for southbound I-71 and three lanes for southbound local traffic. The existing Brent Spence Bridge will be rehabilitated to carry two lanes for northbound I-71 and three lanes for northbound local traffic.

Alternative C/D reconfigures I-75 through the I-71/I-75/US 50 Interchange and eliminates all access to and from I-75 from KY 12th Street to the US 50/6th Street overpass in the northbound direction. Alternative C/D also eliminates access to and from I-75 southbound between KY 12th Street and the Freeman Avenue exit.

In Ohio, a local C-D roadway will be constructed along both sides of I-75. The local northbound C-D roadway will carry local traffic from the existing bridge and provide access ramps to OH 2nd Street, I-71 northbound, US 50 westbound, OH 5th Street, and Winchell Avenue before reconnecting to I-75 just south of Ezzard Charles Drive. The

northbound ramps from OH 6th and 9th streets to I-75 will be removed requiring traffic from these three points to utilize a new local roadway parallel to the northbound C-D roadway for access to I-75 around the Western Hills Viaduct Interchange. The northbound ramps from OH 4th Street will utilize the new local northbound C-D roadway for access to I-75. The southbound C-D roadway begins near the Ezzard Charles Drive overpass and carries both downtown Covington and Cincinnati traffic. The southbound C-D roadway will provide access to OH 7th, 5th, 3rd, and 2nd streets, as well as connecting to access ramps from Western Avenue, OH 9th Street, and US 50 eastbound. The C-D roadway will continue south over the new bridge into Covington.

Between Ezzard Charles Drive and the Western Hills Viaduct, northbound I-75 will have five lanes and southbound I-75 will have six lanes, for a total of 11 travel lanes. The ramps to Western Avenue and from Winchell Avenue just north of Ezzard Charles Drive to the Interstate will be eliminated. The southbound ramp to Freeman Avenue and the northbound ramp from Freeman Avenue to I-75 will remain. Alternative C/D also improves Western and Winchell avenues to facilitate traffic flow and increase capacity. Ramps to Western Avenue and from Winchell Avenue will be provided around the Western Hills Viaduct Interchange, which will be reconfigured to provide a full movement interchange.

Alternative E

Alternative E utilizes the existing I-71/I-75 alignment from the southern project limits at the Dixie Highway Interchange north to the Kyles Lane Interchange. The Dixie Highway and Kyles Lane interchanges will be modified slightly to accommodate a C-D roadway, which will be constructed along both sides of I-71/I-75 between the two interchanges. North of the Kyles Lane Interchange, the alignment shifts to the west to accommodate additional I-71/I-75 travel lanes. Between Kyles Lane and KY 12th Street, six lanes will be provided in each direction for a total of 12 travel lanes. Near KY 12th Street, the northbound alignment separates into two routes; one for interstate traffic and one for a local C-D roadway. Between Pike Street and KY 9th Street, the interstate separates into I-71 and I- 75 only routes.

A new double deck bridge will be built just west of the existing Brent Spence Bridge to carry northbound and southbound I-71 and I-75 traffic. On the upper deck, I-71 southbound will have three lanes and I-71 northbound will have two lanes. On the lower deck, I-75 will have three northbound and three southbound lanes. The existing Brent Spence Bridge will be rehabilitated to carry northbound and southbound local traffic with two lanes in the southbound direction and three lanes in the northbound direction.

In Ohio, Alternative E reconfigures I-75 through the I-71/I-75/US 50 Interchange and eliminates some of the existing access points along I-75. Existing ramps to I-71, US 50 and downtown Cincinnati will be reconfigured. The existing direct connections between I-75 to westbound and from eastbound US 50 will be maintained in Alternative E. US 50 will be reconfigured to eliminate left-hand entrances and exits. The OH 5th Street overpass will be eliminated and the 6th Street Expressway will be reconfigured as a two-way, six-lane elevated roadway with a new signalized intersection for US 50 access and egress. Access between southbound I-71 (Fort Washington Way) and northbound I-75 will be provided near OH 9th Street as a direct connection. Both I-75 southbound and US 50 (Sixth Street Expressway) will have access to northbound I-71 (Fort Washington

Way). Access to OH 3rd Street at the Clay Wade Bailey Bridge intersection will also be available via the I-75 southbound to northbound I-71 (Fort Washington Way) connection.

A local C-D roadway will carry local traffic northbound from the existing Brent Spence Bridge and provide access to OH 2nd, 5th, and 9th streets, Winchell Avenue and access from OH 4th before reconnecting to I-75 just south of the Linn Street overpass. The northbound ramps from OH 6th and 9th Street to I-75 will be removed requiring traffic from these points to utilize a new local roadway parallel to I-75 and access the interstate at Bank Street. Southbound I-75 traffic will separate from the local C-D roadway near Ezzard Charles Drive. The southbound C-D roadway will carry traffic over I-75 to OH 7th Street, allowing traffic to either; access downtown at 7th Street, travel south to OH 5th and 2nd streets, or travel across the existing Brent Spence Bridge into Covington. Access to the local southbound C-D roadway will be provided at Western Avenue and at OH 4th and 8th streets.

Alternative E also improves Western and Winchell avenues to facilitate traffic flow and increase capacity. The ramps to Western Avenue and from Winchell Avenue just north of Ezzard Charles Drive will be removed. The ramp from Freeman Avenue to I-75 northbound and the ramp from I-75 southbound to Freeman will remain. Between Ezzard Charles Drive and Western Hills Viaduct, southbound I-75 will have six lanes, northbound I-75 will have five lanes, and one auxiliary lane to the Western Hills Viaduct. The Western Hills Viaduct Interchange will be reconfigured to provide a full movement interchange.

1.3.3 No Build Alternative

The No Build Alternative would be limited to minor, short-term safety and maintenance improvements to the Brent Spence Bridge and I-75 corridor, which would maintain continuing operations. The No Build Alternative does not meet the Purpose and Need goals; however, this alternative will be carried forward as a baseline for evaluation of the feasible alternatives.

1.4 Ecological Study Summary

This report provides an ecological analysis of the portion of the Brent Spence Bridge Relocation/Rehabilitation Project located within the State of Ohio (Exhibits 2B and 2D). An ecological survey of the area was conducted on October 9 to 12, 2006, November 29, 2006, and February 8, 2007. For purposes of this report, Project Corridor will refer to the entire 7.8-mile segment located in both Kentucky and Ohio. Study Area or Survey Area refers to the approximately three-mile portion of the project located only within Hamilton County, Ohio. The following sections coincide with the Level One Survey Report outline from the *Ohio Department of Transportation, Office of Environmental Services Ecological Manual* (Section 200, January, 2005).

2.0 LITERATURE REVIEW

The literature review of the study area consisted of a review of relevant maps, state and federal agency correspondence, and pertinent ecological resources regarding the Ohio River.

2.1 Map Review

The U.S. Geological Survey (USGS) topographic quadrangle map (Exhibit 1), aerial photography (Exhibits 2A-2D), National Wetlands Inventory (NWI) map (Exhibit 3), and soil survey (Exhibit 4) of the survey area was reviewed prior to conducting field investigations. The USGS topographic quadrangle map (Covington, KY; Cincinnati West, OH) identifies the study area as an intentionally developed metropolitan area consisting of commercial, industrial, and residential uses, and traversed with numerous roads, interstates, and railroads. No streams, ponds, or wetland features are identified on the USGS topographic quadrangle map or on recent aerial photography of the study area. Further, the NWI map provides no indication of wetlands present in the study area.

2.2 State and Federal Agency Correspondence Review

The U.S Fish and Wildlife Service (USFWS) and the Ohio Department of Natural Resources (ODNR) provided comments on ecological resources within the survey area. Discussion of each of these letters is presented below.

2.2.1 United States Fish and Wildlife Service

Correspondence dated August 16, 2006

The USFWS – Reynoldsburg office stated in a letter dated August 16, 2006, that they will serve as the lead USFWS field office for this project (Appendix I). Two federally endangered species (E) and one candidate species (C) are identified as potentially occurring within the project corridor: Indiana bat (*Myotis sodalis*) (E), running buffalo clover (*Trifolium stoloniferum*) (E), and sheepnose mussel (*Plethobasus cyphyus*) (C).

Although not well defined, summer habitat requirements for the Indiana bat include: 1) live trees or snags with peeling or exfoliating bark, split trunks, branches or cavities, which may be used as maternity or roost areas; 2) live trees, such as shagbark hickory (*Carya ovata*) and oaks (*Quercus spp.*) which have exfoliating bark that may be used for roosting; and 3) stream corridors, riparian areas, and upland woodlots which provide forage sites. Should the proposed site contain trees or associated habitats exhibiting any of the previously mentioned characteristics, the USFWS recommends that the habitat and surrounding trees be saved wherever possible. If trees must be removed, further coordination with the USFWS is requested to determine if additional surveys are warranted.

Running buffalo clover can be found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails within rich woods. It requires periodic disturbance and somewhat open habitat to successfully flourish, but cannot tolerate full-sun, full-shade, heavy invasive species growth, or severe disturbance. If suitable habitat is present, the USFWS recommends that a trained botanist conduct surveys in May or June when the plant is in flower.

The sheepnose mussel is primarily found in larger streams and rivers and typically occurs in shallow shoal habitats with moderate to swift currents over coarse sand and gravel. It is also found in mud, cobble, and boulder habitats. The USFWS recommends that if the project directly or indirectly impacts any of the habitat types described above, a survey be conducted to determine the presence or probable absence of sheepnose mussels in the project corridor.

Correspondence Dated June 19, 2009

The USFWS – Ohio office provided comments regarding water resources, endangered species and consultation in a letter dated June 19, 2009 (Appendix I).

Several aquatic resources will be impacted by this project, including the Ohio River, three streams (two intermittent and one ephemeral), and three wetlands (two jurisdictional and one isolated, totaling 0.59 acres). All the streams and wetlands are located in Kenton County, Kentucky. The USFWS recommends that culverts placed in streams and wetlands be placed to allow free movement of aquatic fauna. Also, on projects that include plans to use riprap for channel protection, the USFWS recommends using native vegetation to control erosion, or, at a minimum, using native vegetation in combination with rock. In summary, USFWS recommends the use of natural channel design techniques where applicable.

The greatest impact to aquatic resources will affect the Ohio River. The new bridge structure will require the placement of two piers in the river, approximately 35 feet closer to the river banks than the piers of the existing bridge. The USFWS understands that ODOT and KYTC are coordinating with the US Coast Guard to determine placement of these piers.

For all aquatic resources, the USFWS recommends that existing riparian habitat zones be maintained to the maximum extent possible and that in-water work be avoided from April 15 to June 15 to reduce impacts to spawning fish. In addition, all temporary and permanent impacts to the Ohio River should be appropriately mitigated.

The *Brent Spence Bridge Rehabilitation/Replacement Conceptual Alternatives Study* (April 2009) states that potential habitat areas for the Indiana bat and running buffalo clover were not identified in Ohio during a 2006 survey. However, the Kentucky project area contains one area with potential habitat for running buffalo clover and 10 woodlots that include potential habitat for the Indiana bat. The running buffalo clover habitat was surveyed in 2006, and no individuals of the species were found. Therefore, no further surveys should be required for running buffalo clover within the overall project area described in the *Conceptual Alternatives Study* (April 2009). If trees will be cleared within the potential Indiana bat habitat areas in Kentucky, further coordination with the Frankfurt, Kentucky Field Office will be required to determine whether cutting date restrictions, emergence counts, or mist–net surveys will be needed.

The USFWS stated that several federally listed mussel species could potentially occur within the project area. Eight federally endangered species are listed for Kenton County, Kentucky: purple catspaw pearly mussel (*Epioblasma o. obliquata*), clubshell (*Pleurobema clava*), fanshell (*Cyprogenia stegaria*), northern riffleshell (*Epioblasma Torulosa rangiana*), orange pimpleback (*Plethobasus cooperianus*), pink mucket (*Lampsilis abrupta*), ring pink (*Obovaria retusa*), and rough pig toe (*Pleurobema plenum)*. In addition, two mussel species, federal candidate sheepnose and federal species of concerns snuffbox (*Epioblasma triquetra*), are also listed for both Kenton County, Kentucky and Hamilton County, Ohio. Although consultation with USFWS on candidate species and species of concern is not required, the sheepnose and snuffbox mussels may become officially proposed as federally endangered species under the Endangered Species Act (ESA) during the project's development process. Once such

proposal has been published in the Federal Register, conferencing with the USFWS may be required under Section 7 of the ESA.

The USFWS noted that several of the above listed mussel species could occur in the Ohio River at the project site. Therefore, surveys would be needed to determine whether one or more of these species is present. The USFWS recommended that one transect survey be conducted under the proposed alternative sites and under the existing Brent Spence Bridge, if any in-water work will be required for the rehabilitation of that structure. With the results of the survey, the USFWS will be able to provide direction as to whether additional surveys will be need for the preferred alternative; formal consultation will be necessary; or concurrence can be provided for a "*may affect not likely to adversely affect"* determination without additional survey work.

The USFWS stated that additional impacts resulting from utility relocations, staging and borrow areas and other activities would need further coordination. Once a preferred alternative is approved, additional informal consultation will be necessary and formal consultation may be necessary if adverse effects to the above listed species will occur. Specific measures to avoid and minimize impacts to listed species may also be necessary pending the USFWS's review of the specific level and types of impacts associated with the preferred alternative.

2.2.2 Ohio Department of Natural Resources

The ODNR stated in a letter dated December 22, 2005 (Appendix I), that six state protected species have known occurrences within a one-mile radius of the project area (Table 1). The letter identified two parks, Burnet Woods and Eden Park, within one mile of the study area. However, neither of these parks is located within the study area, and thus, will not be impacted by the project. The ODNR further stated that no existing proposed state nature preserves, scenic rivers, unique ecological sites, geologic features, breeding or non-breeding animal concentrations, state parks, forests, or wildlife areas were identified in the project vicinity.

2.3 Ohio River

The Ohio River is approximately 1,300 feet wide at the existing Brent Spence Bridge location. The normal pool elevation of the Ohio River in the area of the bridge is approximately 455 feet above mean sea level (msl) and the ordinary high water mark is approximately 468.5 feet above msl.

In the Northern Kentucky/Greater Cincinnati area, the Ohio River is used as a source of drinking water for over one million people in two states and is the site of increasingly intensive recreational use. Within the region, the Ohio River receives discharges from over 100 square miles of urban watershed, and other non-point sources associated with a major metropolitan area. The river's water quality and its suitability for contact recreation in particular, is subject to rapid changes, particularly during and after precipitation events (ORSANCO, 2002).

The Ohio River is designated as a Warm Water Habitat by the Ohio Environmental Protection Agency. Hamilton County, Ohio, lies within the central lowlands physiographic province of the Ohio River (ORSANCO, 2006). This basin is the direct result of several glaciations, which covered most of the area depositing soils that are some of the richest agricultural land in the Ohio River watershed. The flat to slightly

rolling topography has significantly altered the pre-glacial conditions and in some instances, also buried pre-glacial streams that provide groundwater resources today (USFWS, 2006).

Common fish species in the Ohio River include black redhorse (*Moxostoma duquesnei*), bluegill (*Lepomis macrochirus*), smallmouth buffalo (*Ictiobus baubalus*), common carp (*Cyprinus carpio*), channel catfish (*Ictalurus punctatus*), emerald shiner (*Notropis atherinoides atherinoides*), flathead catfish (*Pylodictis olivaris*), gizzard-shad (*Dorsoma cepadianum*), golden redhorse (*Moxostoma erythrurum*), largemouth bass (*Micropterus salmoides salmoides*), logperch darter (*Percina caprodes*), longear sunfish (*Lepomis megalotis*), paddlefish (*Polyodon spathula*), and quillback (*Carpiodes cyprinus*) (taxonomic nomenclature from ODNR, 2006).

Common mussel species in the Ohio River include buttercup (*Ellipsaria lineolata*), elephant's ear (*Elliptio crassidens*), giant floater (*Anodoata grandis*), mucket (*Alasmidonta ligamentina*), pistolgrip (*Tritogonia verrucosa*), and three-ridge (*Amblema plicata*) (taxonomic nomenclature from Parmalee and Bogan, 1998).

3.0 METHODS

The ecological survey of the study area consisted of preliminary in-house research and a field survey of the study area. In-house research included a review of relevant sources, such as agency correspondence (Appendix I), USGS topographic map (Exhibit 1), aerial photography (Exhibit 2A-2D), NWI data (Exhibit 3), and soil survey information (Exhibit 4) for the study area. This information was used to become familiar with the site and identify areas potentially containing features of interest, including endangered species habitat, wetlands, or other waters, that would require more thorough examination during the field survey.

The initial field survey was performed on October 9 to 12, 2006. The weather during the time of the survey was mostly cloudy and dry. A follow-up visit was conducted on November 29, 2006, and February 8, 2007, to confirm data used in the land use/habitat classification system and further identify potential Indiana bat habitat within the survey area. The methods used to conduct the survey are presented below by subject: aquatic field investigation, terrestrial field investigation, state and federal threatened/endangered species, wetland delineation, and land use/habitat classification.

3.1 Aquatic Field Investigation

Identification and delineation of open waters, such as streams and ponds, was determined based on the presence/absence of an ordinary high water mark (OHWM), defined bed and bank features, and flow regimes. Based on site conditions, existing land use, and approved scope of the ecological study, no fish, mussel, macroinvertebrate, or water quality sampling of streams was conducted. Man-made drainage ditches, including those lined with rip/rap and primarily located within the existing interstate right-of-way, were not evaluated as part of this survey.

3.2 Terrestrial Field Investigation

A survey of the intensively developed, urban area was conducted primarily by driving the project area. Areas that were inaccessible by vehicle were surveyed through pedestrian

methods, to the extent that access permitted. An inventory of plants observed within the project area was compiled as part of the survey. Plant species not recognized in the field were collected and later identified using the *Manual of Vascular Plants of Northeastern United State and Adjacent Canada* (Gleason and Cronquist, 1991). As previously determined by the project scope, no formal mammal, bird, or herpetofaunal surveys were conducted. Terrestrial habitat in the study area was limited to small urban parks, grass/scrub roadside rights-of-way, and a narrow, wooded buffer along the Ohio River. Assessment of terrestrial habitat included visual observations of plant and animal species, and a survey of potential habitat for protected species, as discussed below.

3.3 State and Federal Threatened/Endangered Species Investigations

The study area was surveyed for potential habitat for the federally-endangered Indiana bat and running buffalo clover, based on habitat preferences described in Section 2.2, and for state-listed species identified by ODNR (Table 1). This survey was performed concurrently with the Terrestrial Field Investigation, and was conducted through walking and driving the project area. No survey of the Ohio River was conducted.

3.4 Wetland Delineation

Wetland evaluation was based on the presence/absence of hydric soils, wetland hydrology and hydrophytic vegetation per the guidelines of the 1987 U.S. Army Corps of Engineers (USACE) Manual (Environmental Laboratory, 1987).

3.5 Land Use and Habitat Classification

The study area consists predominantly of intensively-developed urban area and the Ohio River. A land use/habitat type classification system for the project was developed based on field observations of the study area. Land uses and habitat types in the classification system within the study area include: commercial, single-family residential, multi-family residential, industrial, commercial-residential, commercial-industrial, maintained grass, transportation, the Ohio River, and a narrow riparian fringe consisting of young trees and shrubs was observed along portions of the Ohio River.

4.0 AQUATIC ECOLOGY

Aquatic features in the study area are limited to the Ohio River, as no other streams or bodies of water were identified. Any tributaries that may have historically existed have been filled or incorporated into the underground storm sewer network. No surveys of the Ohio River were conducted as part of this analysis.

There are no designated wild and scenic rivers, outstanding resource waters, high quality fishing streams or spawning areas in the study area.

5.0 TERRESTRIAL ECOLOGY

The vast majority of the study area is occupied by intensively developed urban land, including commercial, residential, and industrial areas; highways and streets; and maintained lawn (see Photographs 3 through 7 for examples of land use within study area).

Terrestrial habitats are limited to a narrow (approximately 20-foot wide), wooded riparian zone consisting of young trees and shrubs located along portions of the Ohio River (Photographs 9 and 10) and scrub areas along the existing interstate right-of-way (Photograph 8). These areas provide very limited habitat for birds, small mammals, reptiles, and amphibians. Plant species observed in these areas are listed in Table 2.

6.0 ENDANGERED SPECIES

The presence of potential habitat for protected species is summarized in Table 1. No endangered species were observed during the field survey.

No potential habitat for the federally endangered running buffalo clover was observed during the field survey. The wooded riparian area along the Ohio River is not considered potential habitat for the species due to the thick cover of invasive species, such as bush honeysuckle (*Lonicera spp.*) and lack of filtered sunlight.

The vast majority of the study area is occupied by intensively developed urban land, including commercial, residential, and industrial areas, highways and streets and is located entirely within the GIS mapped urbanized area of Ohio as created by ODOT and USFWS. These areas provide very limited habitat for Indiana bats. Plant species observed in these areas are listed in Table 2.

Indiana bat habitat within the project corridor was assessed by looking for roost trees, maternity roost trees, and isolated maternity roost trees according to their definition provided in the USFWS 2006 Programmatic Agreement with FHWA and ODOT (USFWS 2006)[1]. In general, terrestrial habitats are limited to a narrow (approximately 20-foot wide), wooded riparian zone consisting of young trees and shrubs located along portions of the Ohio River and scrub areas along the existing interstate right-of-way. A variety of isolated trees that included American sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), and red oak (*Quercus rubra)* (Table 2) that are larger than eight inches diameter at breast height (dbh) were observed during the February 8, 2007, field visit. However, these trees did not possess the characteristics of potential roost trees or potential maternity roost trees as defined by USFWS (2006 and 2007). Most trees possessed tight bark with no exfoliations, splits or crevices and were not part of a foraging/flight corridor. Indiana bats are not anticipated to roost in isolated trees (i.e., trees that are not part of, or connected to, a larger forested area via a tree-lined linear flight corridor (Murray and Kurta 2004; Gardner et al. 1991; Verboom and Huitema 1997; Carter 2003; Chenger 2003; Winhold et al. 2005; USFWS 2006). Most of the potential habitat along the Ohio River was also found to lack the necessary exfoliating bark, spits, and/or crevices in order to classify them as roost trees or maternity trees. Understories along the right of way were very dense with honeysuckle and other climbing vines and small invasive plant species. Representative photographs of various areas along the roadway corridor are provided in Photographs 11 through 25.

Trees that are within the project footprint that will be removed do not exhibit Indiana bat roost tree characteristics. The project area is not within five miles of a known Indiana

[1] "Potential roost trees" (8 inches dbh or greater), "potential maternity roost trees" (including "isolated"; 16 inches dbh or greater) are defined as any species of living trees, standing dead trees, or snags (trees with less than 10% live canopy) with exfoliating, peeling or loose bark, split trunks and/or broken branches, or cavities.

bat summer capture record. The closest capture record is from the Fernald Department of Energy site near Ross, Ohio (USFWS unpublished data). Also, there are no records of known or suspected hibernaculm within five miles of the project area (USFWS unpublished data).

The federally species of concern bald eagle (*Haliaeetus leucocephalus*) is protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. No eagle nests were identified during a survey of the study area and the only known nesting location for this species within Hamilton County is located approximately 15 miles northeast of the proposed project area along the Great Miami River.

The federally endangered fanshell mussel (Cyprogenia stegaria) prefers medium to large rivers with gravel in relatively deep water with moderate current. Historically this species was known to occur within the Ohio River near Cincinnati. However the only known reproducing population in Ohio is located within the Muskingum River in Washington County (Watters, et. al. 2009). Potentially suitable habitat for this species is likely present within the Ohio River.

The federally endangered pink mucket pearly mussel (*Lampsilis abrupta*) prefers large rivers with strong currents in shallow to deep water with boulders; gravel, sand, or silt substrates. This species is currently known to inhabit the Ohio River mainstem, however, no live or fresh dead records for this species have been found within Hamilton County since 1980 (Watters, et. al. 2009). Potentially suitable habitat for this species is likely present within the Ohio River.

The federal species of concern snuffbox mussel (*Epioblasma triquetra*) can be found in a variety of habitats including small to medium sized streams, larger rivers, and lakes. This species occurs in swift currents of riffles and shoals, and wave washed lake shores over gravel and sand with occasional cobble and boulders. Within Hamilton County, this species is known to be within the Ohio River. Potentially suitable habitat for this species is likely present in the study area within the Ohio River.

The sheepnose mussel (*Plethobaus cyphyus*) is a federally candidate species, which can be found in large streams and rivers. It prefers shallow shoal habitats with moderate to swift currents over coarse sand and gravel. Some evidence indicates sheepnose mussels are limited to the Muskingum River drainage (Watter, 1995). However, the USFWS Ohio River Valley Ecosystem Team reports that the species is known to occur in the Ohio River, upstream of Cincinnati (undated report). Potentially suitable habitat for this species is likely present in the study area within the Ohio River.

The river darter (*Percina shumardi*) is a state threatened species found in very large rivers. It is typically found in areas of swift current. Its preferred habitat is along unsilted rocky, cobble and gravel river bottoms in deep water. This species is known to be within the Ohio River and potentially suitable habitat for this species is likely present in the study area.

Habitat for Kirtland's snake (*Clonophis kirtlandii)* (state threatened) includes urban backyards, which are located in the northern portion of the study area. The narrow wooded riparian area along the Ohio River may provide marginal habitat for the black-crowned night heron (state threatened). Marginal habitat for riverbank paspalum

(*Paspalum repens*) (state potentially threatened) is limited to unimpacted portions of the Ohio River bank. Habitat for Virginia mallow (*Sida hermaphrodita*) (state potentially threatened) is potentially present along the bank of the Ohio River in areas of loose, sandy soil. Habitat for the state-listed (potentially threatened) smooth buttonweed (*Spermacoce glabra*) was not identified in the study area.

7.0 WETLANDS

An in-house review of the USGS topographic map, NWI map, and aerial photography of the study area revealed no wetlands in the study area. According to the USDA Soil Survey Geographic Database for Hamilton County (Exhibit 4), no hydric soils are located within the study area; however, a band of Urban Land-Huntington complex, which is listed as hydric-by-inclusion, is located along the Ohio River. However, no wetlands (adjacent or isolated) were identified in the study area during the field investigation.

8.0 IMPACTS

Since terrestrial and aquatic habitats within the study area are limited to the Ohio River and its northern bank, and each feasible alternative includes the construction of a new bridge, potential impacts from each alternative are similar in nature and extent.

Potential impacts to terrestrial habitats are limited to the narrow, wooded riparian zone along the Ohio River. Temporary impacts include removal of trees necessary to provide access for equipment during construction. Permanent impacts include bridge pier construction on the bank, which could result in the permanent loss of wooded riparian habitat and a resulting adverse affect on any plants or animals inhabiting the area of impact. The potential impact acreage for each alternative is undetermined since the locations of the bridge piers for each alternative have not been designed.

Potential impacts to aquatic habitats within the study area are limited to the construction of bridge piers within the Ohio River. No surveys of the Ohio River were conducted as part of the investigation.

Potential impacts to federally protected species are limited to the fanshell, sheepnose, pink mucket pearly, and snuffbox mussels. Surveys for these species or their preferred habitat may be required, in coordination with the USFWS, to determine the potential impacts on these species by the project.

Impacts to state protected species are limited to marginal habitat for Kirtland's snake, black-crowned night heron, riverbank paspalum, Virginia mallow, and river darter. However, these impacts are considered minimal due to the existing disturbed nature of the on-site natural areas within a major interstate system and the small size of the potential disturbance.

No wetlands (adjacent or isolated) will be impacted by this project.

9.0 LITERATURE CITED

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TABLES

Table 1. Summary of State and Federal Threatened/Endangered Species Hamilton County, Ohio

Scientific Name	Common Name	Federal Status	ODNR Status	General Habitat Type	Potential Habitat Within Study Area
Clonophis kirtlandii	Kirtland's Snake	N	T	Moist meadows, edges, open woods, urban backyards	Yes
Cyprogenia stegaria	Fanshell mussel	E	N	Large rivers	Ohio River Only
Epioblasma triquetra	Snuffbox mussel	SC	N	Large rivers and tributaries	Ohio River Only
Haliaeetus leucocephalus	Bald eagle	SC	N		Yes
Lampsilis abrupta	Pink mucket pearly mussel	E	N	Large rivers	Large rivers and tributaries
Myotis sodalis	Indiana Bat	E	N	Dead or live trees with exfoliating bark; split tree trunks	No
Nycticorax nycticorax	Black-crowned Night Heron	N	T	Wooded riparian areas, wetlands	Yes; Ohio River Bank
Paspalum repens	Riverbank Paspalum	N	PT	Shallow water, wet muddy soils, margins of temporary pools, riverbanks and riverine woodlands	Ohio River Only
Percina shumardi	River Darter	N	T	Large rivers and tributaries	Ohio River Only
Plethobasus cyphyus	Sheepnose Mussel	C	N	Large rivers	Ohio River Only
Sida hermaphrodita	Virginia Mallow	N	PT	Loose sandy or rocky soils of scoured riversides or floodplains	Yes; Ohio River Bank
Spermacoce glabra	Smooth Buttonweed	N	PT	Swamps and wet woods	No
Trifolium stoloniferum	Running Buffalo Clover	E	N	Old trails, grazed bottomlands, streambanks; filtered to partial light	No

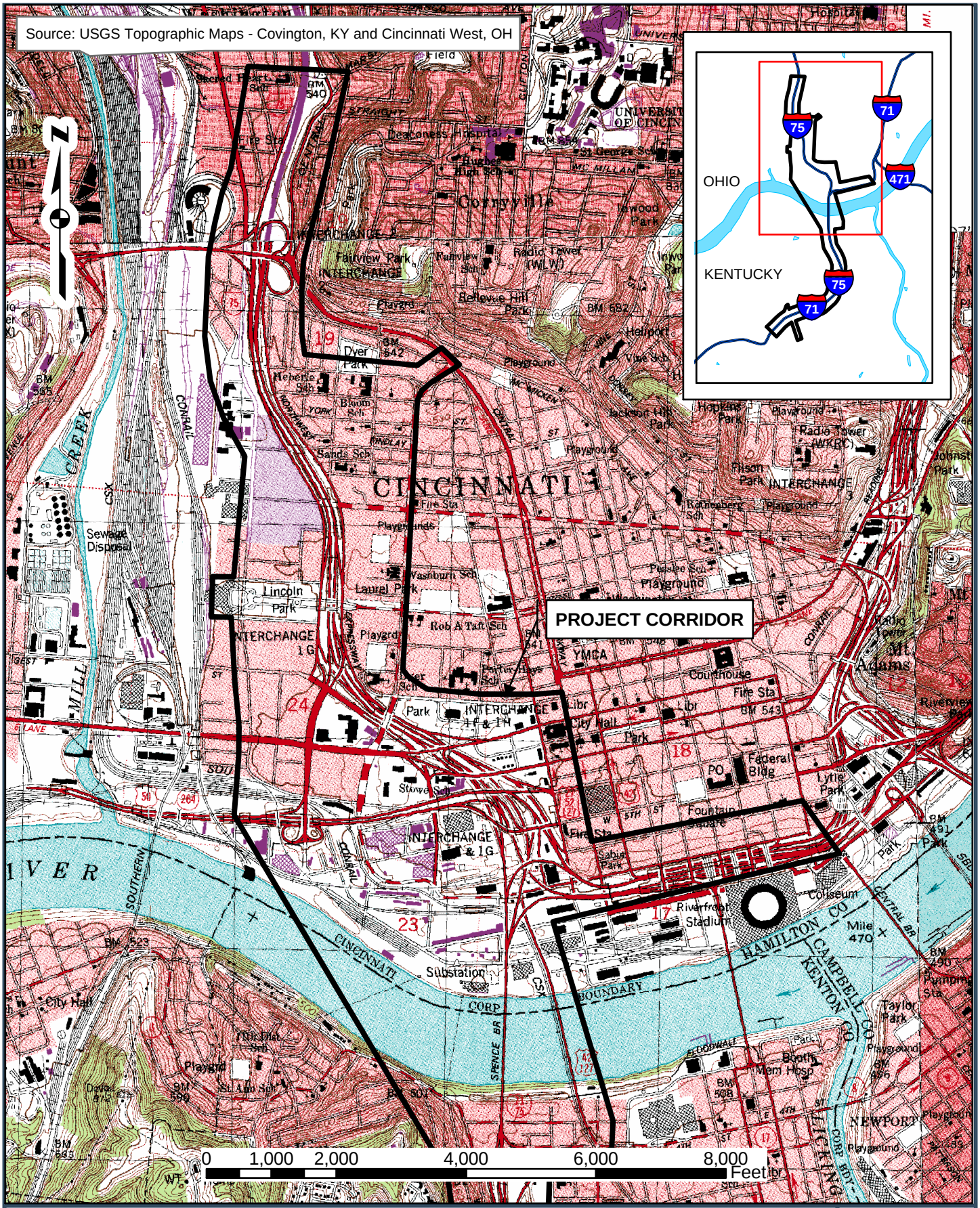
US Fish & Wildlife Service Status:
N = None
C = Candidate
T = Listed as Threatened
E = Listed as Endangered
SC=Species of Concern

Ohio Department of Natural Resources Status
N = None
E = Endangered
T = Threatened
PT = Potentially Threatened

Table 2. Plant Species Identified in the Study Area
Hamilton County, Ohio

Scientific Name	Common Name	Stratum
Acer negundo	Box elder	Tree/Shrub
Acer saccharinum	Silver maple	Tree
Ailanthus altissima	Tree-of-Heaven	Tree/Shrub
Celtis occidentalis	Hackberry	Tree/Shrub
Echinochloa crusgalli	Barnyard grass	Herbaceous
Eupatorium rugosum	White snakeroot	Herbaceous
Lonicera tatarica	Bush honeysuckle	Shrub
Morus rubra	Red mulberry	Tree/Shrub
Parthenocissus quinquefolia	Virginia creeper	Herbaceous/Vine
Platanus occidentalis	American sycamore	Tree
Populus deltoides	Eastern cottonwood	Tree/Shrub
Quercus rubra	Red oak	Tree
Robinia pseudoacacia	Black locust	Tree/Shrub
Solidago sp.	Goldenrod	Herbaceous
Toxicodendron radicans	Poison ivy	Herbaceous/Vine
Vitis sp.	Wild grape	Vine

EXHIBITS



U.S. Department of Transportation
Federal Highway Administration

Kentucky
UNBRIDLED SPIRIT

USGS TOPOGRAPHIC MAP OF STUDY AREA
BRENT SPENCE BRIDGE
REPLACEMENT/REHABILITATION PROJECT
LEVEL ONE ECOLOGICAL SURVEY REPORT

EXHIBIT

1

End Project Limits
KY SLM 186.7

Fort Mitchell

Park Hills

Fort Wright

Ohio River

Match Line

Dixie Highway

Dixie Highway

Dixie Highway

Kyles Lane

Devou Drive

Western Avenue

Philadelphia Street

4th Street

5th Street

6th Street

7th Street

8th Street

8th Street

Pike Street

Pike Street

Covington

Regional Rail
Plan Corridor

Highland Avenue

16th Street

St. Elizabeth
Development

12th Street
Improvement

75 71

LEGEND

- Interstate 75
- Interstate 71
- Collector - Distributor
- Local Road
- Existing Right of Way
- Potential Impact Limits
- St. Elizabeth Development (NOT part of this project)
- 12th Street Improvement (NOT part of this project)
- Regional Rail Plan Corridor (NOT part of this project)

Base: 2004 Aerial Photograph

0 400 800 1,200 Feet

U.S. Department of Transportation
Federal Highway Administration

ALTERNATIVE C/D (KENTUCKY)

SHEET (1 OF 2)

EXHIBIT 2A

Prepared by:
PARSONS BRINCKERHOFF

Match Line

Ohio River

Queensgate South Development

Linn Street

Mehring Way

3rd Street

Brent Spence Bridge

Clay Wade Bailey Bridge

Western Hills Viaduct

End Project Limits
OH SLM 2.7±

Spring Grove Avenue

Colerain Avenue

Central Parkway

McMillan Street

Fairview Avenue

Freeman Avenue

Winchell Avenue

Western Avenue

Dalton Avenue

Kenner Street

Gest Street

8th Street

Findlay Street

Liberty Street

Poplar Street

York Street

Dayton Street

Bank Street

Central Avenue

McMicken Avenue

Ezzard Charles Drive

Court Street

9th Street

7th Street

6th Street

5th Street

4th Street

2nd Street

1st Street

Cincinnati

LEGEND

- Interstate 75
- Interstate 71
- Collector - Distributor
- US 50
- Local Road
- Existing Right of Way
- Potential Impact Limits
- Queensgate South Development (NOT part of this project)
- Regional Rail Plan Corridor (NOT part of this project)

Base: 2004 Aerial Photograph

0 400 800 1,200 Feet

N

SHEET
(2 OF 2)

U.S. Department of Transportation
Federal Highway Administration

**ALTERNATIVE C/D
(OHIO)**

EXHIBIT
2B

Prepared by:
PARSONS BRINCKERHOFF

End Project Limits
KY SLM 186.7

Fort Mitchell

Park Hills

Fort Wright

Covington

Ohio River

Match Line

Dixie Highway

Dixie Highway

Dixie Highway

Kyles Lane

Pike Street

Pike Street

Devou Drive

Western Avenue

4th Street

5th Street

6th Street

7th Street

8th Street

9th Street

Philadelphia Street

16th Street

Highland Avenue

75 71

Regional Rail
Plan Corridor

St. Elizabeth
Development

12th Street
Improvement

LEGEND

- Interstate 75
- Interstate 71
- Collector - Distributor
- Local Road
- Existing Right of Way
- Potential Impact Limits
- St. Elizabeth Development (NOT part of this project)
- 12th Street Improvement (NOT part of this project)
- Regional Rail Plan Corridor (NOT part of this project)

Base: 2004 Aerial Photograph

0 400 800 1,200
Feet

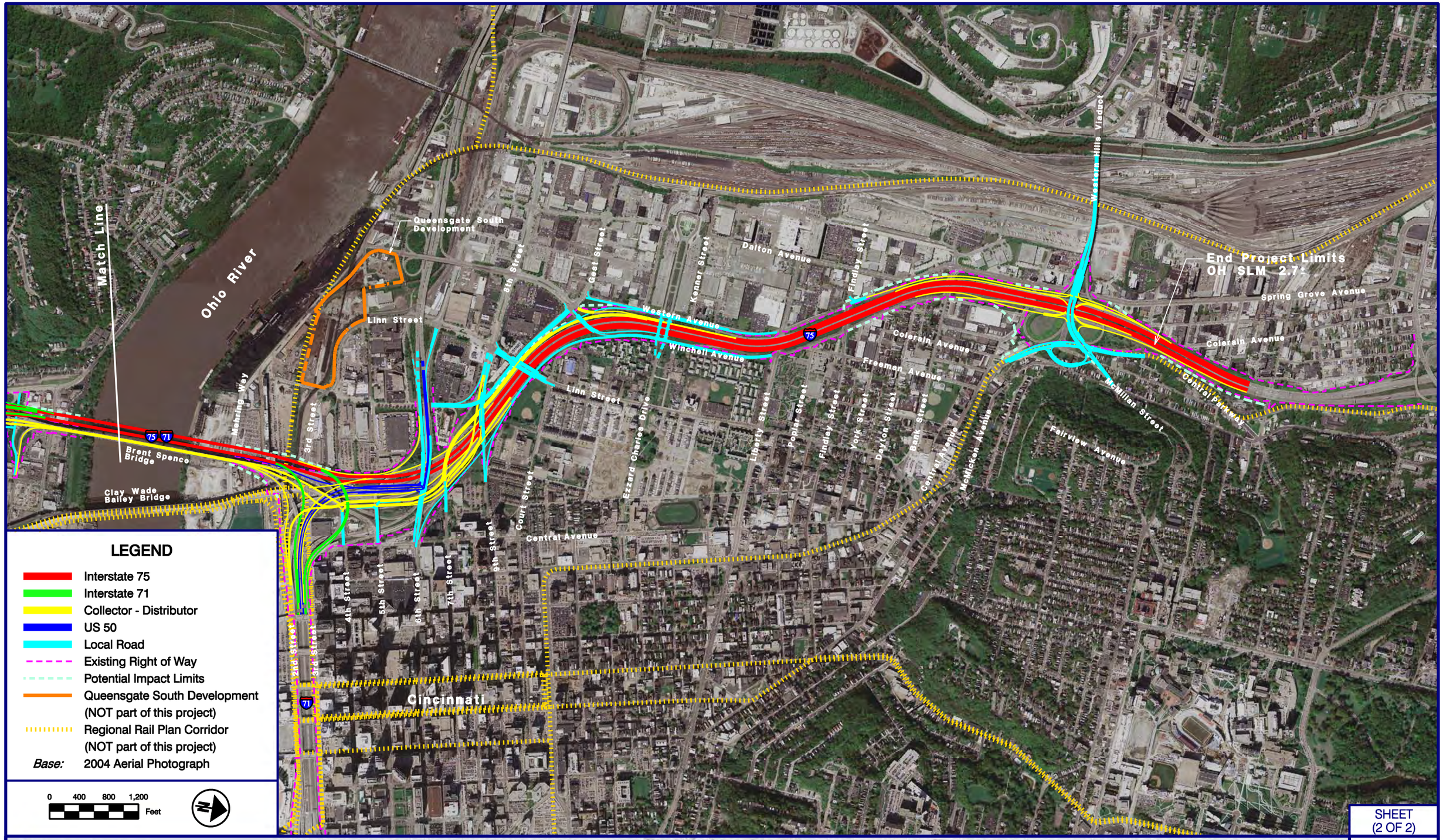
U.S. Department of Transportation
Federal Highway Administration

ALTERNATIVE E
(KENTUCKY)

SHEET
(1 OF 2)

EXHIBIT
2C

Prepared by:
PARSONS BRINCKERHOFF



LEGEND

- Interstate 75
- Interstate 71
- Collector - Distributor
- US 50
- Local Road
- Existing Right of Way
- Potential Impact Limits
- Queensgate South Development (NOT part of this project)
- Regional Rail Plan Corridor (NOT part of this project)

Base: 2004 Aerial Photograph

0 400 800 1,200 Feet

N

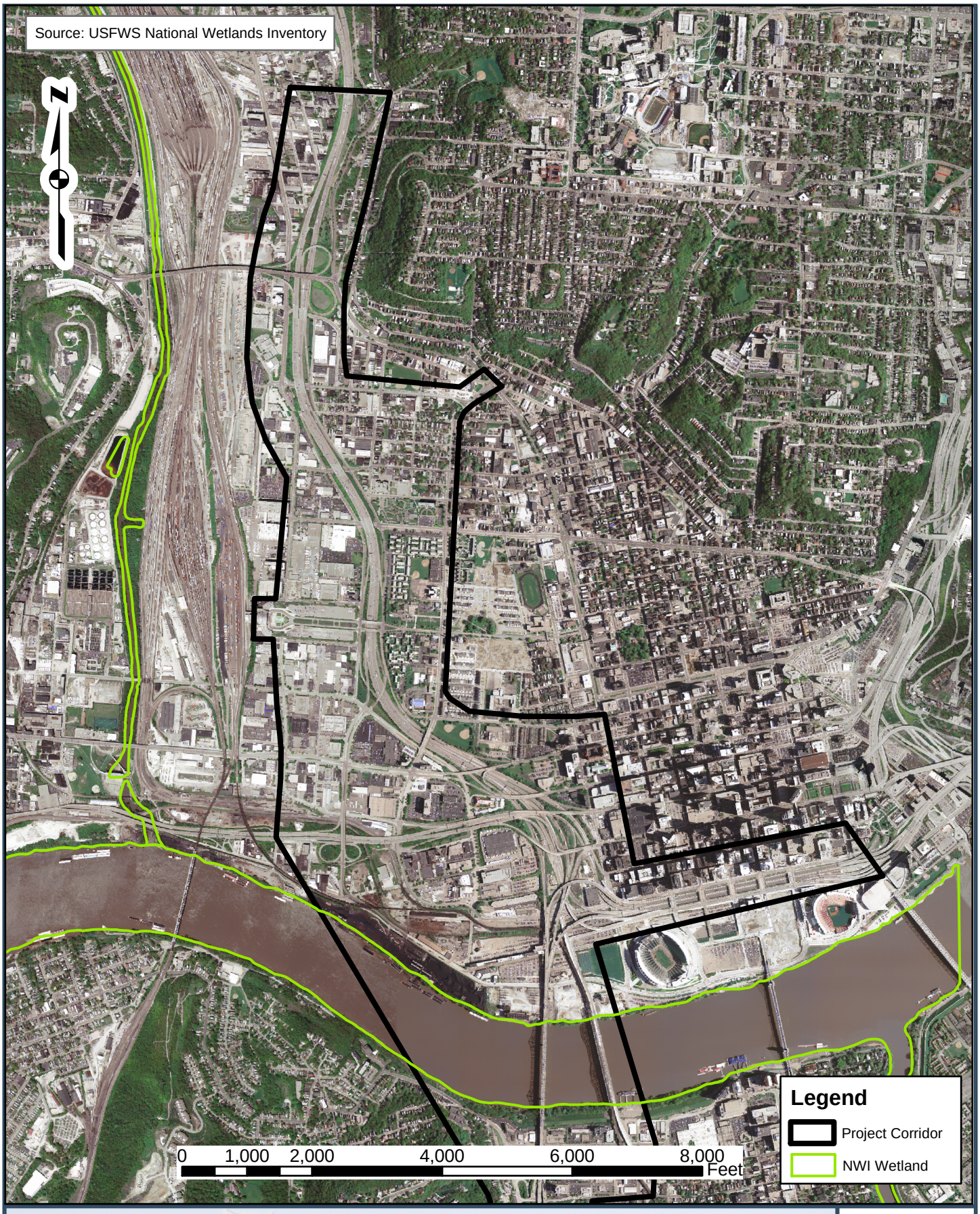
U.S. Department of Transportation
Federal Highway Administration

ALTERNATIVE E (OHIO)

SHEET (2 OF 2)

EXHIBIT 2D

Prepared by: PARSONS BRINCKERHOFF



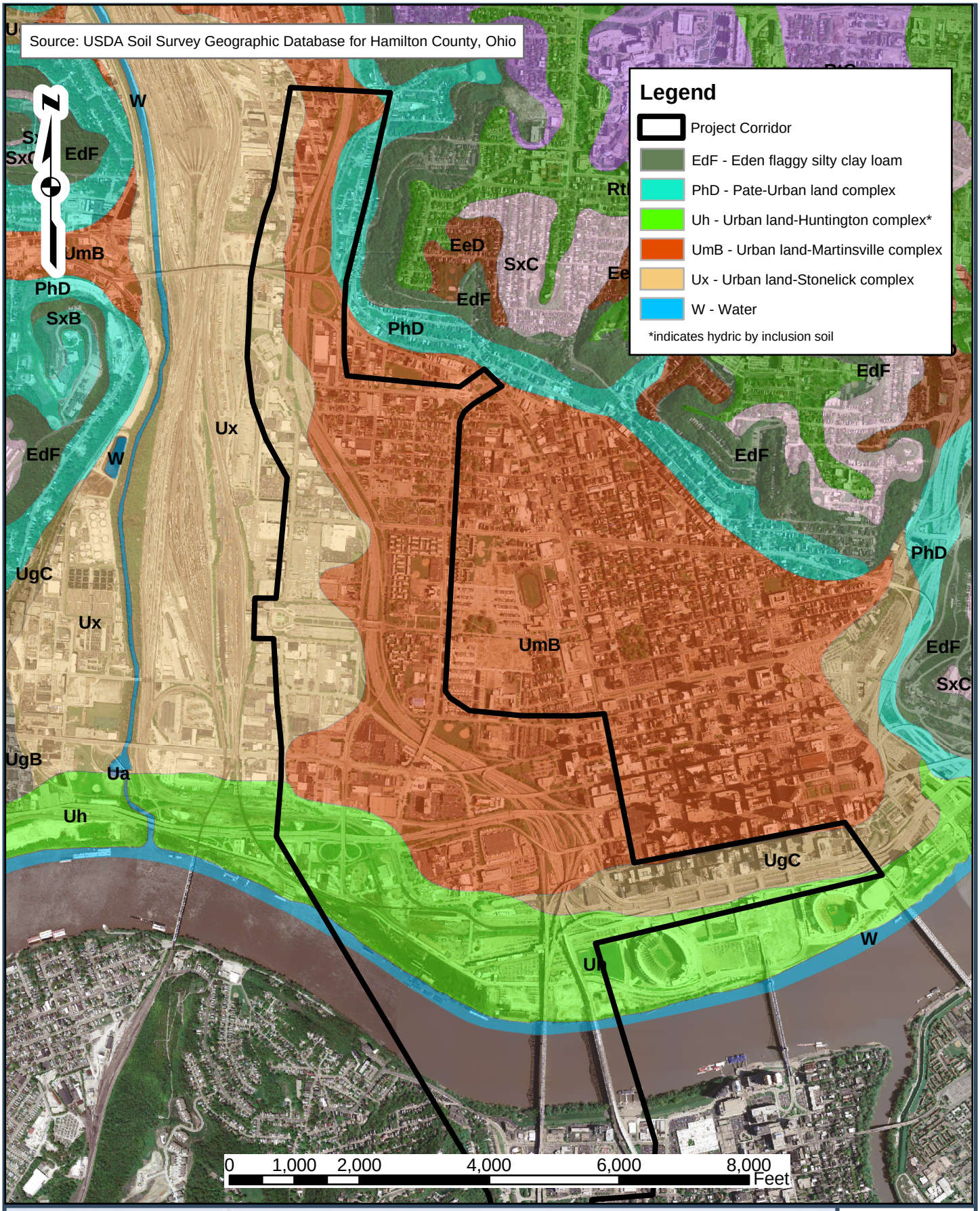
U.S. Department of Transportation
Federal Highway Administration

Kentucky
UNBRIDLED SPIRIT

NATIONAL WETLANDS INVENTORY MAP
BRENT SPENCE BRIDGE
REPLACEMENT/REHABILITATION PROJECT
LEVEL ONE ECOLOGICAL SURVEY REPORT

EXHIBIT

3



U.S. Department of Transportation
Federal Highway Administration

Kentucky
UNBRIDLED SPIRIT

SOIL SURVEY MAP
BRENT SPENCE BRIDGE
REPLACEMENT/REHABILITATION PROJECT
LEVEL ONE ECOLOGICAL SURVEY REPORT

EXHIBIT
4

PHOTOGRAPHS

Photograph 1: General view of I-75/I-71 project corridor in northern Kentucky, facing northeast, with Cincinnati in background left portion of frame. Brent Spence Bridge Replacement and Rehabilitation Project. November 29, 2006

Photograph 2: Ohio River and existing Brent Spence Bridge (view from Ohio). Brent Spence Bridge Replacement and Rehabilitation Project. October 11, 2006.

Photograph 3: Typical view of mixed commercial/residential area in downtown Cincinnati portion of the study area. Brent Spence Bridge Replacement and Rehabilitation Project. November 29, 2006.

Photograph 4: Typical view of commercial area in northern portion of study area. Brent Spence Bridge Replacement and Rehabilitation Project. November 29, 2006.

Photograph 5: Residential area in northern portion of study area, with vegetated I-75 right-of-way in foreground. Brent Spence Bridge Replacement and Rehabilitation Project. November 29, 2006.

Photograph 6: Industrial portion of study area along Ohio River, facing south. Coal processing facility shown in center of frame. Brent Spence Bridge Replacement and Rehabilitation Project. October 11, 2006.

Photograph 7: Sand and gravel processing facility along Ohio River, adjacent to existing Brent Spence Bridge. Brent Spence Bridge Replacement and Rehabilitation Project. October 11, 2006.

Photograph 8: Typical view of scrub-vegetated I-75 right-of-way. Brent Spence Bridge Replacement and Rehabilitation Project. November 29, 2006.

Photograph 9: Wooded riparian zone along north bank of Ohio River beneath the Bailey Bridge. View from Kentucky. Brent Spence Bridge Replacement and Rehabilitation Project. October 11, 2006.

Photograph 10: Wooded riparian zone along north bank of Ohio River, downstream of existing Brent Spence Bridge. View from Kentucky. Brent Spence Bridge Replacement and Rehabilitation Project. October 11, 2006.

Photograph 11: Representative photograph of trees growing along Central Parkway east of the Western Hills Viaduct (facing northeast). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 12: Representative photograph of trees growing within the right-of-way between Central Parkway and the Western Hills Viaduct (facing northwest). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 13: Representative photograph of trees growing within the right-of-way between Spring Grove Avenue and I-75 just north of the Western Hills Viaduct (facing east). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 14: Representative photograph of trees growing along the right-of-way between Winchell Avenue and I-75 just south of Ezzard Charles Drive (facing northeast). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 15: Representative photograph of trees growing along the right-of-way between Winchell Avenue and I-75 just south of Ezzard Charles Drive (facing north). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 16: Representative photograph of trees growing within the right-of-way between Winchell Avenue and I-75 just south of Ezzard Charles Drive (facing north). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 17: Representative photograph of trees growing between CSX railroad and West 6th Street Expressway (facing southeast). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 18: Representative photograph of trees growing between CSX railroad and West 6th Street Expressway (facing south). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 19: Representative photograph of trees growing between CSX railroad and West 6th Street Expressway (facing southwest). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 20: Representative photograph of trees growing between West 6th Street Expressway and West 6th Street (facing north). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 21: Representative photograph of trees growing between West 6th Street Expressway and West 6th Street (facing northeast). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 22: Representative photograph of trees growing along 5th Street (facing southwest). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 23: Representative photograph of trees growing along the CSX railroad behind Longworth Hall (facing north). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 24: Representative photograph of trees along the Ohio River facing east (Clay Wade Bailey Bridge in the background). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

Photograph 25: Representative photograph of trees along the Ohio River facing west (Brent Spence Bridge in the background). Brent Spence Bridge Replacement and Rehabilitation Project. February 8, 2007.

APPENDIX I – CORRESPONDENCE WITH STATE/FEDERAL AGENCIES

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
6950 Americana Parkway, Suite H
Reynoldsburg, Ohio 43068-4127

(614) 469-6923/Fax: (614) 469-6919

FILE COPY

August 16, 2006

TAILS: 31420-2006-TA-0837

Dennis A. Decker
Federal Highway Administration
Ohio Division Office
200 North High Street
Columbus, OH 43215

Dear Mr. Decker:

This is in response to your August 2, 2006 letter requesting our participation in the environmental review process for the Brent Spence Bridge Replacement/Rehabilitation project on I-75 between Covington, Kentucky and Cincinnati, Ohio. We understand that this project is in the preliminary development process and at this time you are initiating an Environmental Impact Statement (EIS). We accept the invitation to participate in this process and will serve as the lead FWS Field Office on this project.

Your red flag summary includes the federally listed species that may occur in the project area and that should be addressed during the planning process. Below we have provided you standard information on each of these species.

ENDANGERED SPECIES COMMENTS:
The proposed project lies within the range of the **Indiana bat** *(Myotis sodalis)*, a Federally-listed endangered species. Since first listed as endangered in 1967, their population has declined by nearly 60%. Several factors have contributed to the decline of the Indiana bat, including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, and the loss and degradation of forested habitat, particularly stands of large, mature trees. Fragmentation of forest habitat may also contribute to declines. Summer habitat requirements for the species are not well defined but the following are considered important:

1. Dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas.

2. Live trees (such as shagbark hickory and oaks) which have exfoliating bark.

3. Stream corridors, riparian areas, and upland woodlots which provide forage sites.

The Service recommends that project designs maintain as many trees and forested habitat shrub/scrub habitat as possible along all property lines and along edges of developed areas by minimizing footprint of graded areas, roads, and staging areas to the maximum extent practicable. Should the proposed site contain trees or associated habitats exhibiting any of the characteristics listed above, we recommend that the habitat and surrounding trees be saved wherever possible. If the trees must be cut, further coordination with this office is requested to determine if surveys are

warranted. Any survey should be designed and conducted in coordination with the Endangered Species Coordinator for this office.

The proposed project lies within the range of the **running buffalo clover** (*Trifolium stoloniferum*), a Federally-listed endangered species. This species can be found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails. Running buffalo clover requires periodic disturbance and a somewhat open habitat to successfully flourish, but cannot tolerate full-sun, full-shade, or severe disturbance. If suitable habitat is present, we recommend that surveys for this species be conducted by a trained botanist in May or June when the plant is in flower.

The proposed project lies within the range of the **sheepnose mussel** *(Plethobasus cyphyus)*, a Federal candidate species. The sheepnose is primarily known from larger streams and rivers. It typically occurs in shallow shoal habitats with moderate to swift currents over coarse sand and gravel. Habitats with sheepnose may also have mud, cobble, and boulders. Should the proposed project directly or indirectly impact any of the habitat types described above, we recommend that a survey be conducted to determine the presence or probable absence of sheepnose mussels in the vicinity of the proposed site.

This technical assistance letter is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C.661 et seq.), the Endangered Species Act of 1973, as amended, and is consistent with the intent of the National Environmental Policy Act of 1969, and the U.S. Fish and Wildlife Service's Mitigation Policy. Please note that consultation under section 7 of the ESA may be warranted for this project if suitable habitat for listed species may be impacted by this project. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

If you have any questions regarding our response or if you need additional information, please contact Sarena Selbo at extension 17.

Sincerely,

Mary Knapp

Mary Knapp, Ph.D.
Field Supervisor

cc: ODNR, DOW, SCEA Unit, Columbus, OH

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994

June 19, 2009

Timothy M. Hill
Office of Environmental Services
Ohio Department of Transportation
P.O. Box 899
Columbus, OH 43216-0899

TAILS: 31420-2009-TA-0605 (PID 75119)

Attn: Keith Smith (District 8)
Donald Rostofer

RE: **HAM-71/75-0.00/0.22 (PID 75119)**
Conceptual Alternatives Study

Dear Mr. Hill,

This is in response to your May 1, 2009 letter received in our office on May 5, 2009, requesting our review and comments on the Conceptual Alternatives Analysis for the Brent Spence Bridge Replacement/Rehabilitation Project (HAM-71/75-0.00/0.22, PID 75119) in Hamilton County, Ohio and Kenton County, Kentucky. We appreciate the opportunity to provide comments throughout the project development process. This project proposes to improve capacity and safety and correct design deficiencies along I-71, I-75, and the Brent Spence Bridge in the Greater Cincinnati/Northern Kentucky region. In a letter from our office to Dennis Decker at the Federal Highway Administration (FHWA) dated August 16, 2006, the U.S. Fish & Wildlife Service (Service) Ohio Field Office (formerly the Reynoldsburg Ohio Field Office) agreed to participate in the environmental review process and to serve as the lead Service Field Office for this project. In that same letter, we provided general species and habitat surveying information and recommendations for federally listed Threatened (T), Endangered (E), and Candidate (C) Species in Ohio: Indiana bat (*Myotis sodalis*) (E); running buffalo clover (*Trifolium stoloniferum*) (E); and sheepnose mussel (*Plethobasus cyphyus*) (C).

As the lead office for the Service on this project review, we have coordinated with the Frankfort Kentucky Field Office (FKFO) and incorporate their comments below. Please note that, due to an oversight, the FKFO had not received a copy of this Conceptual Alternatives Study from the Ohio Department of Transportation (ODOT) or the Kentucky Transportation Cabinet (KYTC). Please ensure that the Kentucky Field Office is provided with all relevant environmental review documents in the future so that we can more efficiently coordinate our comments. These documents should be sent to:

J. C. Watts Federal Building
330 West Broadway, Suite 265
Frankfort, KY 40601
Attn: Phil DeGarmo, Wildlife Biologist/Transportation Liaison

It is our understanding that the Conceptual Alternatives Study (CAS) has resulted in the recommended elimination of all previous alternatives, except Alternatives C, D, and E. ODOT and KYTC, working as partners on this project, are recommending that some hybrid form of Alternatives C and D, as well as a revised Alternative E be carried forward for consideration in a study of feasible alternatives. It was also recommended in the CAS that some design elements of Alternative G be incorporated into both of these re-worked alternatives (the C/D hybrid alternative and Alternative E). Both of these alternatives will involve the construction of a new bridge approximately 120 feet west of the existing Brent Spence Bridge and rehabilitation of the existing bridge to carry 4 to 5 lanes of traffic.

WATER RESOURCES COMMENTS: Several aquatic resources will be impacted by this project, including the Ohio River, three streams (two intermittent and one ephemeral), and three wetlands (2 jurisdictional and one isolated, totaling 0.59 acres). All the streams and wetlands are located in Kenton County, Kentucky. The Service recommends that culverts placed in streams and wetlands be placed to allow free movement of aquatic fauna. Also, on projects that include plans to use riprap for channel protection, we recommend using native vegetation to control erosion, or, at a minimum, using native vegetation in combination with rock. To summarize, we recommend the use of natural channel design techniques where applicable.

The greatest impacts to aquatic resources will affect the Ohio River. The new bridge structure will require the placement of two piers in the river, approximately 35 feet closer to the river banks than the piers of the existing bridge. We understand that ODOT and KYTC are coordinating with the U.S. Coast Guard to determine placement of these piers.

For all aquatic resources, we recommend that existing riparian habitat zones be maintained to the maximum extent possible and that in-water work be avoided from April 15 to June 15 to reduce impacts to spawning fish. In addition, all temporary and permanent impacts to the Ohio River should be appropriately mitigated.

ENDANGERED SPECIES COMMENTS: Land use in the project area is primarily urban and suburban, composed of mainly commercial, industrial, residential, institutional, and right-of-way properties. There is no farmland in the Ohio project area. The wooded areas in Ohio include shrub/scrub growth along the interstate and narrow stands of young trees and shrubs along the Ohio River. The Kentucky project area is also primarily urban and suburban but does contain some farmland, parks, and golf courses, including some mixed-age wooded areas that appear to have not been cleared for 30-40 years. The CAS states that potential habitat areas for the Indiana bat and running buffalo clover were not identified in Ohio during a 2006 survey. However, the Kentucky project area contains one area with potential habitat for running buffalo clover and 10 woodlots that include potential habitat for the Indiana bat. The running buffalo clover habitat was surveyed in 2006, and no individuals of the species were found. Therefore, no further surveys should be required for running buffalo clover within the overall project area described in the CAS. If trees will be cleared within the potential Indiana bat habitat areas in Kentucky, further coordination with the Frankfort Kentucky Field Office will be required to determine whether cutting date restrictions, emergence counts, or mist-net surveys will be needed.

Several federally listed mussel species could potentially occur within the project area. Eight Federally Endangered Species are listed for Kenton County in Kentucky: purple catspaw pearly mussel (*Epioblasma o. obliquata*); clubshell (*Pleurobema clava*); fanshell (*Cyprogenia stegaria*); northern riffleshell (*Epioblasma torulosa rangiana*); orangefoot pimpleback (*Plethobasus cooperianus*); pink mucket (*Lampsilis abrupta*); ring pink (*Obovaria retusa*); and rough pigtoe (*Pleurobema plenum*). In addition, two mussel species, Federal Candidate sheepnose (*Plethobasus cyphyus*) and Federal Species of Concern snuffbox (*Epioblasma triquetra*), are also listed for both Kenton County, Kentucky and Hamilton County, Ohio. Please note that although consultation with the Service on Candidate Species

and Species of Concern is not required, the sheepnose and snuffbox mussels may become officially proposed as Federally Endangered Species under the ESA during this project's development process. Once such a proposal has been published in the Federal Register, conferencing with the Service may be required under section 7 of the ESA.

Several of the mussel species documented in the above paragraph could occur in the Ohio River at the project site. Therefore, surveys would be needed to determine whether one or more of these species is present. The Service recommends that one transect survey be conducted under the proposed alternative sites and under the existing bridge, if any in-water work will be required for the rehabilitation of that structure. With the results of such surveys, the Service will be able to provide direction as to whether a) additional surveys will be needed for the preferred alternative, b) formal consultation will be necessary, or c) concurrence can be provided for a *may affect not likely to adversely affect* determination without additional survey work.

The CAS indicates that ODOT and KYTC have coordinated with both the Ohio and Kentucky Departments of Natural Resources and the Kentucky Department of Fish & Wildlife Resources. We encourage and support continued coordination with those agencies regarding impacts to state listed species.

GENERAL COMMENTS AND CONCLUSION: In addition to the proposed work discussed above, we understand that 52 individual utilities will be impacted by this project, 45 below ground and 7 above ground. If the relocation of these utilities will require additional clearing or will impact other resources, further coordination with the Service should occur. Also, please coordinate with our office if additional impacts within or outside the project area will occur in association with staging and/or borrow and waste activities not discussed in this study.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act, of 1973, as amended, and are consistent with the intent of the National Environmental Policy Act of 1969, and the U.S. Fish and Wildlife Service's Mitigation Policy. At this time, the FHWA has not provided effects determinations for federally listed mussel species and the Indiana bat. The Service would like to clarify that, once a preferred alternative is approved, additional informal consultation will be necessary and formal consultation may be necessary if adverse effects to the aforementioned listed species will occur. Specific measures to avoid and minimize impacts to listed species may also be necessary pending our review of the specific level and type of impacts associated with the preferred alternative.

If you have questions, or if we may be of further assistance in this matter, please contact Karen Hallberg at extension 23 in this office.

Sincerely,

Mary Knapp

Mary Knapp, Ph.D.
Field Supervisor

cc: USFWS, Frankfort Kentucky Field Office
ODNR, DOW, SCEA Unit, Columbus, OH
Ohio Regulatory Transportation Office, Columbus, OH (with all attachments)

Ohio Department of Natural Resources

BOB TAFT, GOVERNOR

Division of Natural Areas and Preserves
Tom Linkous, Chief
2045 Morse Rd., Bldg. F-1
Columbus, OH 43229-6693
Phone: (614) 265-6453; Fax: (614) 267-3096

December 22, 2005

Jeff Brown
Parsons, Brinckerhoff, Quade & Douglas, Inc.
312 Elm St., Suite 2500
Cincinnati, OH 45202

Dear Mr. Brown:

I have reviewed our Natural Heritage maps and files for the Brent Spence Bridge project area, including a one mile radius, in Cincinnati, Hamilton County, and on the Covington Quad. The numbers/letters on the list below correspond to the areas marked on the accompanying map. Common name, scientific name and status are given for each species.

Cincinnati West/Covington/Newport Quads
A. Burnet Woods - City of Cincinnati
B. Eden Park - City of Cincinnati
1. *Clonophis kirtlandii* - Kirtland's Snake, threatened
2. *Clonophis kirtlandii* - Kirtland's Snake, threatened
3. *Clonophis kirtlandii* - Kirtland's Snake, threatened
4. *Nycticorax nycticorax* - Black-crowned Night-heron, threatened
5. *Paspalum repens* - Riverbank Paspalum, potentially threatened
6. *Sida hermaphrodita* - Virginia-mallow, potentially threatened
7. *Percina shumardi* - River Darter, threatened
8. *Spermacoce glabra* - Smooth Buttonweed, potentially threatened
9. *Percina shumardi* - River Darter, threatened

There are no existing or proposed state nature preserves or scenic rivers at the project site. We are also unaware of any unique ecological sites, geologic features, breeding or non-breeding animal concentrations or state parks, forests or wildlife areas in the project vicinity.

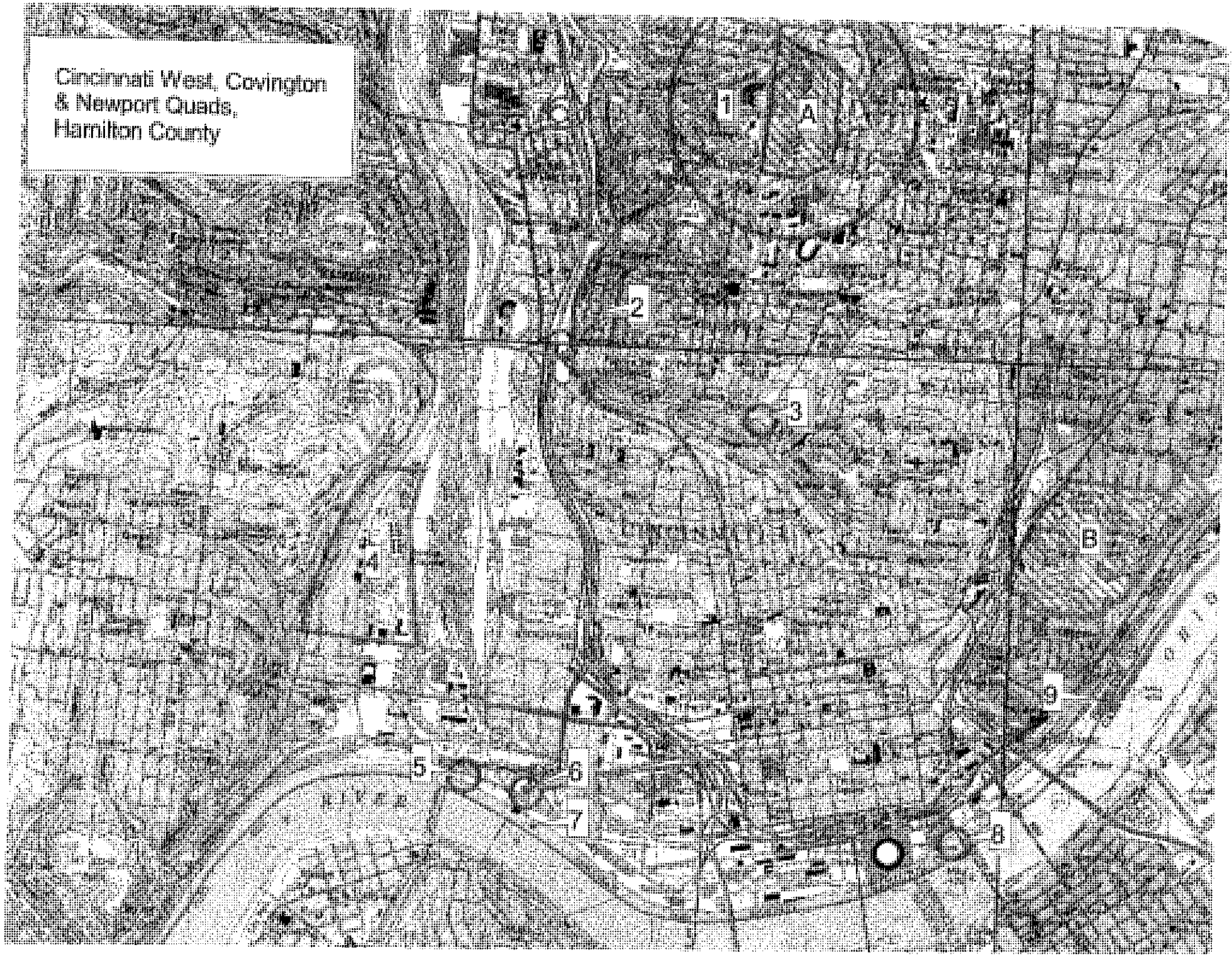
Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Please note that although we inventory all types of plant communities, we only maintain records on the highest quality areas. Also, we do not have data for all Ohio wetlands. For National Wetlands Inventory maps, please contact Madge Fitak in the Division of Geological Survey at 614-265-6576.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

Debbie Woischke

Debbie Woischke, Ecological Analyst
Natural Heritage Program


Cincinnati West, Covington
& Newport Quads,
Hamilton County