

LOUISVILLE SOUTHERN INDIANA OHIO RIVER BRIDGES PROJECT

MAY 26, 2011

ENVIRONMENTAL ANALYSIS METHODOLOGY

The original Environmental Impact Statement (EIS) for the Project was prepared between 1998 and 2003, and resulted in the issuance of a Final EIS (FEIS) on April 8, 2003 and a Record of Decision (ROD) on September 6, 2003. The Federal Highway Administration (FHWA), in cooperation with the Indiana Department of Transportation (INDOT) and the Kentucky Transportation Cabinet (KYTC) (collectively, the Project Sponsors) propose to evaluate the environmental impacts of revising several elements of the Selected Alternative from the FEIS in a Supplemental Environmental Impact Statement (SEIS). The SEIS will discuss the social, economic and environmental impacts associated with changes in the Project area since the publication of the ROD in September 2003 and proposed modifications to the Selected Alternative. Consistent with Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the following discussion summarizes the environmental data collection process. It is intended that this process undergo review by the local, state and federal resource agencies prior to the definition of the associated environmental impacts.

I. Water Resources

A Baseline Report and Executive Summary for jurisdictional water resources will be prepared in accordance with the *KYTC Ecological Study Format Guidance and Accountability Forms* (June 2005) and the *INDOT Procedural Manual for Preparing Environmental Studies* (2008). (The *KYTC Ecological Study Format Guidance and Accountability Forms* are located at the following website: [http://transportation.ky.gov/EnvAnalysis/GAF Ecological Study.pdf](http://transportation.ky.gov/EnvAnalysis/GAF%20Ecological%20Study.pdf) and the *INDOT Procedural Manual for Preparing Environmental Studies* is found at the following website:

[http://www.in.gov/indot/files/Procedural Manual for Preparing Environmental Studies 2008.pdf](http://www.in.gov/indot/files/Procedural%20Manual%20for%20Preparing%20Environmental%20Studies%202008.pdf).) Jurisdictional wetland delineations will be performed in accordance with the *U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual Technical Report (Y-87-1, January 1987)* and *Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region (Version 2.0)*. At least three exhibits will be created for the ecological baseline report: an aerial map, a topographical map, and a soils map. Resources and potential impacts will be shown on these maps as feasible. The *KYTC Ecological Study Format Guidance and Accountability Form* will be completed for the baseline report.

- Surface Water – Streams, Lakes, Special Status Waters, Impaired Waters and Water Quality

Surface water resources in the Project area were identified through reviews of mapping, available databases and reports, including water quality reports prepared by the Louisville Metropolitan Sewer District (MSD), the state of Indiana, and resource agency consultation. Stream sampling was conducted for fish, macro invertebrates, and water quality throughout the Project area in the spring, summer, and fall of 1999 and the spring and summer of 2000. Water samples were evaluated to determine pH, conductivity, total dissolved solids, temperature, alkalinity, and other water quality indicators. All samples were in compliance with current water quality standards but showed elevated levels of nitrates, sulfates, and conductivity. Water chemistry data has not significantly changed. To assess current habitat quality within the right of way of the FEIS Selected Alternative, identified streams were sampled and updated habitat descriptions of streams were prepared in 2011.

- Groundwater – Aquifers, Water Wells and Wellhead Protection Zones

Groundwater resources were identified for the Project area through mapping, literature, and records review complemented by resource agency consultation. Currently, two well head protection areas (WHPAs) occur in the project area. One is in Indiana containing the Hertzsch well field and the Babb well field and bounded by Utica Pike, the Ohio River, Main Street in Jeffersonville and the access road just west of the Nugent Sand and Gravel quarry. The other is in Kentucky bounded by Harrods Creek, the Oldham County/Jefferson County line, the Kentucky shore of the Ohio River and a rock ledge east of Brownsboro Road. No streams in the Project area are identified as “wild” or “scenic”. The US Environmental Protection Agency (USEPA) has not identified any principal or sole source aquifers within the Project area. At this time, no information is available about the future plans of the groundwater regulators in Kentucky and Indiana.

- Floodplains/Floodways

The Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP) maps were used to identify 100-year floodplains within the Project area. Updates were performed in 2011 for the FEIS Selected Alternative indicating floodplains are identified with the following bodies of water: Ohio River, Harrods Creek, and Tributary to Harrods Creek, Lancassange Creek, Lentzier Creek, and tributaries to Lentzier Creek.

- Wetlands

Biologists reviewed existing wetland data, consulted with US Army Corps of Engineers, Louisville District (USACE) personnel and conducted field delineations in July, August, and October, 1999 and March, 2000 for the Project area. Eighty-two wetlands, including headwater streams, were determined to be potentially jurisdictional in the original Project area. When the right-of-way is determined for the FEIS Selected Alternative and the Modified Selected Alternative by the respective Section Design Consultants (SDCs), further wetland investigations and determinations will be made. Updated agency coordination has been initiated and Project permitting will be conducted for the FEIS Selected Alternative and the Modified Selected Alternative in conjunction with the development of Project plans.

II. Biological Resources

A Baseline Report and Executive Summary for significant ecological resources will be prepared in accordance with the *KYTC Ecological Study Format Guidance and Accountability Forms* (June 2005) and the *INDOT Procedural Manual for Preparing Environmental Studies* (2008). (The *KYTC Ecological Study Format Guidance and Accountability Forms* are located at the following website: http://transportation.ky.gov/EnvAnalysis/GAF_Ecological_Study.pdf and the *INDOT Procedural Manual for Preparing Environmental Studies* is found at the following website:

http://www.in.gov/indot/files/Procedural_Manual_for_Preparing_Environmental_Studies_2008.pdf.) At least three exhibits will be created for the ecological baseline report: an aerial map, a topographical map, and a soils map. Resources and potential impacts will be shown on these maps as feasible. The *KYTC Ecological Study Format Guidance and Accountability Form* will be completed for the baseline report.

- Soils and Geology

Identified from literature and records search. No change from FEIS.

- Terrestrial Habitat and Wildlife

Plant and animal surveys were conducted during spring, summer, and fall of 1999, and the spring and summer of 2000. Field observations were compiled into a comprehensive list of plants and animals observed in the Project area. Subsequent to these surveys, a literature and records review was performed in 2007 to identify known species specific to the FEIS Selected Alternative. Seventeen federally protected species were identified as having the potential to occur within the Project area. As a follow up to the 2007 agency consultation, updated surveys for the FEIS Selected Alternative were coordinated with the US

Fish and Wildlife Service (USFWS) consisting of live surveys for running buffalo clover in Indiana and Kentucky in 2007; mussel surveys in 2007 for the two proposed Ohio River crossings and the crossing of Harrods Creek; and a 2007 survey for Interior least tern and piping plover. Agency consultation will be initiated to further update plant and animal species specific for the FEIS Selected Alternative and the Modified Selected Alternative. Habitat determinations will be finalized for the FEIS Selected Alternative and the Modified Selected Alternative in conjunction with the development of Project plans.

- Threatened and Endangered Species

The USFWS has documented seventeen federally protected species with the potential to occur within the Project impact area: gray bat, Indiana bat, running buffalo clover, Short's goldenrod, nine federally listed mussel species, American burying beetle, Louisville cave beetle, Interior least tern, and piping plover. A Biological Assessment (BA) for the Project was completed in January 2003, and USFWS issued a finding on March 13, 2003 stating that the Project is “Not Likely to Adversely Affect” the above-listed endangered species. Subsequently, as stated by the USFWS in their letter of July 16, 2010, “in compliance with the FHWA NEPA process, an amended BA... (prepared and submitted to the USFWS on June 15, 2009) ...to re-evaluate potential effects on federally listed species and to consider any Project modifications that were not considered during the original informal consultation”. Further analysis of threatened and endangered species will be conducted in compliance with Section 7 of the Endangered Species Act.

On July 16, 2010, in their letter of comments on the amended BA, the USFWS stated that they agreed with the analysis and believed the information supporting the “Not Likely to Adversely Affect” determinations for all of the aforementioned species was adequate with the exception of the gray bat and Indiana bat. Regarding the gray bat, USFWS indicated that it was unclear if the avoidance and minimization measures proposed within the amended BA would be adequate and/or would support the “Not Likely to Adversely Affect” determination. They requested additional discussion of the avoidance, minimization, conservation, and protective measures linked back to specific effects on the species. Regarding the Indiana bat, USFWS indicated that they could not concur with a determination of “Not Likely to Adversely Affect” the species. They also requested that KYTC commit to survey any suitable nesting areas for the Interior least tern during subsequent nesting seasons prior to construction and to coordinate the results of such surveys with USFWS to determine if further consultation is required. If bridge construction is not to begin within five years (no date for the commencement of the five years is given), USFWS should be contacted to assess the need for reevaluation of the

potential to adversely affect federally listed mussel species. USFWS also indicated that if the proposed Project requires the use of waste sites, those areas should also be addressed within the amended BA.

In a letter of response to the USFWS dated August 17, 2010, KYTC indicated that the amended BA would include:

- (1) A commitment to a survey of suitable nesting areas for the Interior least tern within the Project area during subsequent nesting seasons and prior to construction
 - (2) USFWS will be contacted to assess the need for re-evaluation of the potential to adversely affect federally endangered mussel species, if the bridge construction does not begin in five years (no date for the commencement of the five years is given; the date of the KYTC response to the USFWS of August 17, 2010 could be assumed)
 - (3) The BA will be revised to define avoidance and minimization measures for specific effects of the Project on the gray bat, including all stream corridors on a cumulative basis
 - (4) The BA will be revised to modify the effect determination for the Indiana bat to “May Affect- Is Likely to Adversely Affect”, and KYTC will pursue entering into a Conservation MOA for the incidental take of Indiana bats
 - (5) If the Project proposes the use of waste sites, the BA will be amended to analyze potential effects of these sites on federally listed species.
- KYTC indicated that USFWS concurrence in the BA and subsequent issuance of the Biological Opinion (BO) is dependent upon the definition of any waste sites.

In September 2010, KYTC and USFWS entered into an Indiana Bat Conservation MOA for geotechnical drilling (rock bores) on a portion of the Project. The geotechnical information and analysis obtained from the drilling will assist in the design of the proposed twin tunnel bores under US 42 and the design of the structures involved with the Kentucky approach to the East End Bridge.

In March 2011, the USFWS, commenting by letter on the Notice of Intent for the SEIS, stated that “...the FHWA is in the process of re-evaluating the BA for the proposed Project and has not provided a final BA and determination of effect for listed species that may occur within the Project area. The final BA should consider any Project modifications that occur as a result of the SEIS; additional informal consultation will be necessary and formal consultation may be required if adverse effects to listed species will occur. Specific measures to avoid and minimize impacts to listed species may also be necessary, pending

review of the specific level and type of impacts associated with the preferred alternative.” Therefore, to finalize compliance with Section 7, the requested informal consultation would be initiated with the USFWS by the FHWA. As part of this consultation, a BA would be prepared. This informal consultation would determine if formal consultation was required, if adverse impacts to the listed species are anticipated, and would result in the issuance of a BO by the USFWS.

Additional post-2000 surveys were conducted specifically for Federal endangered and threatened species, as follows:

An additional survey of the alignments in Indiana was conducted on May 10 – 11, 2007 for running buffalo clover by two botanists with JF New, Inc. Zach Couch with the Division of Environmental Analysis, Kentucky Transportation Cabinet conducted a running buffalo clover survey of the C-1 and A-15 alignments in Kentucky during the spring of 2008.

To supplement the 1999-2000 brailing surveys, mussel surveys were conducted on September 4-10, 2007. The primary objectives of this survey were to determine presence/absence of mussels, suitability of substrates for mussel colonization, the presence of mussel beds, and the general species diversity upstream, downstream and within the disturbance area of the proposed bridge piers. The USFWS, Kentucky Field Office was consulted and assisted in the development of the survey methodology. A self-contained underwater breathing apparatus (SCUBA) mussel survey was designed and conducted at the two proposed crossings of the Ohio River and one proposed crossing of Harrods Creek.

On August 30, 2007, a field survey was conducted for the Interior least tern and piping plover. The primary focus area included exposed sand and gravel bars near the Downtown Bridges at the Selected Alternative location; in the vicinity of the Selected Alternative crossing of the Ohio River in the East End; and near the water settlement ponds of the Louisville Water Company in the East End.

State Species

Fifty-eight state-listed species were found, through consultation, to have the potential to occur within the Project area. State endangered species include any species whose prospects for survival or continued existence within the state are in immediate jeopardy and are in danger of disappearing entirely from the region. Through coordination with USFWS, IDNR, KSNPC and the Kentucky Department of Fish and Wildlife Resources, the plant and animal species listed as threatened or endangered on federal or state lists,

and which historically occurred within the project area, were identified. Existing records, USGS topographic mapping, recent aerial photography, and National Wetlands Inventory (NWI) maps were also reviewed in an effort to identify potential habitat for the various species.

In 1999 and 2000, biological surveys were conducted within the project area to search for evidence of the listed plant and animal species and to collect samples of those species. For avian species that occur near streams, stream bank surveys were performed both on foot and by boat. Gravel and sandbars were searched and riparian vegetation was observed for nests. For fish species, archival data for the Ohio River, Beargrass Creek and Harrods Creek was reviewed. Fish species were sampled in Goose Creek, Little Goose Creek, Wolf Pen Branch, Hunting Creek and Muddy Fork (of Beargrass Creek) in Kentucky; Lancassange Creek and Lentzier Creek were sampled in Indiana.

Additionally, as part of the field surveys, the general habitat in the survey area was recorded. For example, while surveying streams for fish, observations of birds in the area, surrounding tree canopy, and understory plants were recorded.

III. Historic/Cultural Resources

In September 2003, a Memorandum of Agreement (MOA) was prepared by FHWA to mitigate the adverse effects of the Project on historic properties in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA). Since execution of the MOA, the FHWA, INDOT and KYTC have worked to satisfy various stipulations of the MOA. Additionally, some historic properties have undergone change or have been re-evaluated. Further consultation will be undertaken in accordance with Section 106 of the NHPA and will evaluate the Area of Potential Effect (APE) to identify any additions or changes to the historic properties in the APE, including properties or effects that may not have been evaluated previously. Consulting parties will be given an opportunity to submit information and provide comments on this assessment as part of the Section 106 consultation process and to consult regarding mitigation measures, if required.

Existing MOA

The Project is currently moving forward under the stipulations listed in the existing MOA, which was executed on April 1, 2003 and signed by FHWA, the Advisory Council on Historic Preservation (ACHP), the Indiana State Historic Preservation Officer (IN SHPO), the Kentucky State Historic Preservation Officer (KY SHPO), INDOT, and KYTC. Since the existing MOA was executed, the Project team has implemented and completed several of its stipulations. Efforts to satisfy several other stipulations are

underway. The existing MOA and a list of the completed stipulations may be found on the Project website at www.kyinbridges.com.

Section 106 Process for the SEIS

In accordance with Section 106 of the NHPA and the existing MOA Stipulation X, Project Modification, the Project team will reinitiate the Section 106 process. FHWA will consult with the SHPOs and other consulting parties to utilize the expedited consultation process as discussed in 36 CFR 800.3, Initiation of the Section 106 Process, Part (g). In consultation with the SHPOs, FHWA will redetermine and document the APE. By definition, the boundary of the APE is determined through the consideration of the effect of the undertaking in respect to visual and audible intrusions, changes in traffic patterns and alterations in land use or public access. This will take into account modifications to the Project and the extent of its potential impacts/effects; identify any additional historic properties potentially affected by the undertaking and any modifications to existing historical properties; and assess effects and seeking ways to avoid, minimize or mitigate any additional adverse effects on historic properties. The existing MOA may be amended to accommodate changes in effects that may occur due to the modified alternative.

The evaluation of impacts to historic and cultural resources will be prepared in accordance with guidance provided by the Commonwealth of Kentucky (*KYTC Cultural and Historic Baseline Guidance and Accountability Form* [June 2005]) and the State of Indiana (*INDOT Cultural Resources Manual* [January 2008]). Kentucky Historic Council survey forms will be prepared. The *KYTC Cultural and Historic Baseline Guidance and Accountability Forms* can be found at http://transportation.ky.gov/EnvAnalysis/GAF_CUL_HIST.pdf. The *INDOT Cultural Resources Manual* can be found at http://www.in.gov/indot/files/January_2008_Manual.pdf.

Section 112(a) (1) (A) of the NHPA requires each Federal agency responsible for the protection of historic resources, including archeological resources, to ensure that all actions taken by employees or contractors of the agency shall meet professional standards under regulations developed by the Secretary.

These evaluations will utilize updates to the historic resource inventories and surveys already conducted in accordance with the stipulations of the existing MOA as well as other existing information. Because of the passage of time since the original Section 106 process, potential resources that have recently become, or may soon become, eligible for inclusion in the National Register of Historic Places (NRHP) will also be evaluated. Information will be sought, as appropriate, from consulting parties, and other individuals and organizations likely to have knowledge of, or concerns with, historic properties in the area, and identify issues relating to the undertaking's potential effects on historic

properties. Likewise, information will be gathered from any Indian tribe organization identified pursuant to 36 CFR 800.3(f) to assist in identifying properties, including those located off tribal lands, which may be of religious and cultural significance to them and may be eligible for the NRHP.

The following updates have been completed:

- Historic Properties – Buildings, Districts

- Indiana Resources:

A partial update to the Clark County Interim Report (per MOA Stipulation II.G.1 of the Project) was completed in early 2011. This information was disseminated through the Indiana State Historic Architectural and Archaeological Research Database (SHAARD) and identified several properties within the Indiana Downtown and East End APEs as “Outstanding” resources that were not listed in the previous Interim Report (published, 1988). This “Outstanding” designation would likely qualify them as individually-eligible for the National Register of Historic Places (NRHP). Once these resources were located within the Indiana APE, qualified historic preservation specialists from the CTS-GEC team conducted a site investigation to verify their location and photograph/document their condition. The qualified historic preservation specialists of CTS-GEC meet the Secretary of Interior’s Professional Qualification Standards as codified in 36 CFR Part 61, Appendix A and satisfy the policy established on March 1, 2007 by the FHWA and INDOT to only accept Section 106 documentation prepared by these professionals. Following these site visits, a brief description was developed relevant to each historic resource identified as “Outstanding”.

- Kentucky Resources:

The Jefferson County Inventory and Survey of Historic Sites update (Report # 181) was completed and approved in November 2010. This survey, entitled “*A Survey Update of Butchertown, Phoenix Hill, Downtown Louisville and River Road*” was conducted to satisfy MOA Stipulation II.G.2 of the Project. It was completed through a joint effort between the Kentucky Heritage Council and University of Kentucky - Department of Anthropology staff. The purpose of this survey update was to identify additional historic resources located within the Alternative Specific APE of the Project in Kentucky that may be eligible for listing on the NRHP. Once these resources were located within the Kentucky APE, qualified historic preservation specialists from the CTS-GEC team conducted a site investigation to verify their location and

photograph/document their condition. Following this site visit, a brief description was compiled relevant to each NRHP-eligible historic resource.

- **Archaeological**

Should additional archaeological investigations be required, the services of personnel who meet the Secretary of Interior's Professional Qualification Standards as codified in 36 CFR Part 61, Appendix A and in accordance with the policy established on March 1, 2007 by the FHWA to only accept Section 106 documentation prepared by professionals who meet the Secretary of Interior's Professional Qualification Standards, will be employed.

IV. Section 4(f) Resources

If applicable, a Section 4(f) evaluation shall be prepared under Section 774.3(a) and include sufficient supporting documentation to demonstrate why there is no feasible and prudent avoidance alternative and shall summarize the results of all possible planning to minimize harm to the Section 4(f) property. The documentation shall comply with 23 CFR 774.

Section 6(f) Resources

The Project area will be assessed for the presence of public recreation facilities that have received a grant from the Land and Water Conservation Fund (as per Section 6(f) of the Land and Water Conservation Fund Act of 1965, codified in Federal law at 59 U.S.C. 36). If present, these areas will be avoided whenever possible. Impacts that cannot be avoided will be minimized to reduce the effect of the impact as much as possible. Mitigation would be required for any unavoidable impacts, including the conversion of property with reasonable equivalent usefulness and location and of, at least, equal fair market value.

V. Social, Community and Economic Resources

A Baseline Report and Executive Summary for socioeconomic conditions will be prepared, along with exhibits and the *KYTC Socioeconomic Baseline Guidance and Accountability Form* (June 2005) located at http://transportation.ky.gov/EnvAnalysis/GAF_Socio.pdf. The socioeconomic analysis will also be conducted in accordance with the *INDOT Procedural Manual for Preparing Environmental Studies* (2008) which can be found at http://www.in.gov/indot/files/Procedural_Manual_for_Preparing_Environmental_Studies_2008.pdf.)

Tasks involved with this item include gathering data and analyzing the following: land use impacts; community resource impacts; relocations and displacements; farmland impacts; bicycle and pedestrian impacts; visual impacts; construction impacts and economic impacts.

Cumulative and Indirect Impacts

Indirect and Cumulative Impacts Analysis will be conducted following definitions and methods described in the *AASHTO Practitioner's Handbook*, Chapter 12: *Assessing Indirect Effects and Cumulative Impacts under NEPA* (AASHTO, 2011). This handbook takes into consideration the methods and guidance from the following sources:

- *FHWA Interim Guidance: Indirect and Cumulative Impacts in NEPA* (FHWA, 2003)
- *FHWA Position Paper on Secondary and Cumulative Impact Assessment* (FHWA, 1992)
- *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis* (Council on Environmental Quality (CEQ), 2005)
- *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ, 1997)
- *Consideration of Cumulative Impacts in EPA Review of NEPA Documents* (EPA, 1999)

This section will detail the likely stresses induced by indirect and cumulative impacts as well as opportunities for avoidance, minimization, and appropriate mitigation for these impacts.

Indirect Effects

Indirect effects are “caused by the project or plan, but are separated from direct effects by time and/or distance. Indirect effects include induced growth and related environmental impacts”. The Project will assess potentials for indirect effects to resources that were not addressed in the FEIS. These may include effects based on changes in the Indirect and Cumulative Effect Assessment (ICEA) area (as noted in the FEIS) since the FEIS and potentials for indirect effects that were not discussed in the FEIS. A re-evaluation of regional trends and local/metropolitan economic goals will be required.

Cumulative Impacts

Cumulative impacts are “the aggregate result of the incremental direct and indirect effects of a project or plan, the effects of past and present actions, and effect of reasonably foreseeable actions by others on resources of concern”. The Cumulative Impact Analysis will assess the impacts of the Project combined with the effects of “Other Actions” that have, will, or will likely occur within the ICEA area (regardless of the Project) that were not addressed in the FEIS. These include past and future actions that have had or could

have either an adverse or positive impact on resources. “Actions” may include (but, are not limited to) residential development, commercial development, infrastructure projects, transportation projects, farmland conversion, restoration projects, conservation/preservation projects, mitigation projects, economic incentive programs and the like. Past actions will be assessed by analyzing developments/projects that have occurred within the project area since the FEIS that are not related to the Project. Future actions will be assessed by analyzing projects that will or will likely occur within a reasonable foreseeable future.

Environmental Justice

In accordance with Executive Order 12898, FHWA Directive 6640.23 and DOT Order 5610.2, the Project will be evaluated for potential disproportionate impacts to minority and low-income populations (i.e., Environmental Justice populations). The 2000 U.S. Census data will be utilized to identify Environmental Justice (EJ) populations by census blocks within the Louisville Metropolitan Area (LMA). The population in a census block will be defined as an EJ population if any of the following criteria are met:

The minority or low-income population equals or exceeds 50 percent of the population in that block group.

The percentage of minority or low-income population is at least 10 percentage points higher than the minority or low-income population percentage for the LMA.

The percentage of minority or low-income population is at least 10 percentage points higher than the minority or low-income population percentage for the county in which the block is located.

Once the EJ populations have been identified and mapped, potential impacts will be determined based on three primary factors:

Direct impacts – This represents any impacts to EJ populations in the study area directly associated with the construction and use of the Selected Alternative, such as residential relocations, right-of-way acquisition, noise impacts, access, and the like.

Tolling Impacts –The annual cost of tolls based on weekday commutes will be calculated. The percent of annual income that would be used for tolls will then be calculated for low-income and median-income populations and the percentages compared. EJ populations on either side of the Ohio River within the LMA will be examined in order to determine any cross-river commuting patterns that would be affected by tolls. Alternative non-toll routes will be identified and the

potential impacts and costs associated with EJ populations utilizing these routes will be evaluated. Finally, the availability and costs associated with using public transportation as an alternative to using the tolled highway will also be evaluated. Transit services may see an increase in ridership. A comparison would be made of the percent of income dedicated to tolls against the benefit of improved travel times on the new facility.

Diverted Traffic Impacts – Traffic modeling will be utilized to determine where and to what extent traffic may be diverted outside the study area to adjacent local roadways as a result of people avoiding the tolls. Diverted traffic could result in increased congestion and delays on untolled routes or heavy truck traffic in urban areas not typically traveled by these vehicles. Once these routes have been identified, it will be determined if any EJ populations are located along these routes and to what extent any increase in congestion and traffic may result in disproportionate impacts to these populations.

VI. Hazardous Materials

Following the 2004 ROD, the Selected Two Bridges/Highway Alternative was divided into six Design Sections. For each section, INDOT/KYTC selected a Section Design Consultant (SDC) to begin design work. These consultants were also responsible for completing Phase II Environmental Site Assessments (ESAs) that were recommended in the original Phase I ESA Baseline Reports that were conducted in 2000 and in the 2003 FEIS.

To date, all recommended Phase II ESAs have been completed: 17 Phase II ESAs for Section 1 (Kennedy Interchange/Alternative C-1) and eight Phase II ESAs for Section 3 (Downtown Indiana Approach/Alternative C-1). No Phase II ESAs were recommended for the remaining four sections. For Section 1, although 17 Phase II ESAs were conducted, they were based on information from the 2000 Phase I ESA Baseline Report. As a result, an updated database search for hazardous substances will be conducted for Section 1 that will cover both the In-Place and Relocated South Kennedy Interchange Alternatives using Environmental Data Resources, Inc. (EDR). For Section 3 (Downtown Indiana Approach/Alternative C-1), the Phase I ESA information and Phase II ESA recommendations were re-evaluated and updated in 2010. This re-evaluation led to the same eight sites that were originally recommended for Phase II ESAs for Section 3. In addition, because the findings and recommendations for Sections 4 (East End Kentucky Approach/Alternative A-15) and 6 (East End Indiana Approach/Alternative A-15) were based on the 2000 Phase I ESA Baseline Report, an updated database search for hazardous substances will also be conducted for these sections using EDR. The results of the updated database search will be compared to the 2000 Phase I ESA

Baseline Reports to determine if there have been any changes regarding hazardous substances that would warrant further study. No further studies are recommended for Sections 2 (Downtown Bridge/Alternative C-1) and 5 (East End Bridge/Alternative A-15).

Baseline analyses of the recognized environmental conditions will be conducted in accordance with the *KYTC Hazardous Materials/UST Guidance and Accountability Forms* (June 2005) and Section II.B.9 of the *INDOT Procedural Manual for Preparing Environmental Studies* (2008). (The *KYTC Ecological Study Format Guidance and Accountability Forms* are located at the following website: http://transportation.ky.gov/EnvAnalysis/GAF_HAZ_UST.pdf and the *INDOT Procedural Manual for Preparing Environmental Studies* is found at the following website: http://www.in.gov/indot/files/Procedural_Manual_for_Preparing_Environmental_Studies_2008.pdf.)

A Baseline Report and Executive Summary will be prepared. An exhibit of the Project area will be prepared for submittal with the baseline. Sites of specific concern will be mapped individually to demonstrate the alternative's location relative to the potential concern. The *Guidance and Accountability Form* will be completed.

VII. Air Quality

Air quality analyses will be conducted in accordance with the *KYTC NEPA Documentation - Air Quality* guidance (updated 2008) and the *INDOT 2008 Procedural Manual for Environmental Studies*.

The Carbon Monoxide (CO) "hot-spot" (intersection) analyses carried out as a part of the DEIS/FEIS for the Project analyzed 23 intersections with the highest traffic volumes. None of the receptors modeled within any of those intersections had predicted CO levels that would exceed the National Ambient Air Quality Standards (NAAQS) for either one hour or eight hour levels. The SEIS will (initially) concentrate modeling on the two highest intersections from the FEIS and model the CO levels based on updated traffic and models. Once intersection information for areas of diverted traffic is available, the traffic volumes would be analyzed to determine if they fall into the two highest intersections from the FEIS for modeling purposes. It is possible that traffic diversion would cause the selection of an intersection outside of the original study area in New Albany. MOBILE 6.2 will be utilized to generate emission factors and CAL3QHC will be utilized to predict CO levels at receptors located near the roadway for these two intersections. The results will be compared to previously calculated levels to determine the effects of changes in traffic, emission factor modeling, vehicle fleet aging and other factors on predicted CO

levels. FHWA guidance states that a project started under MOBILE 6.2/ CAL3QHC can be finalized under these models. It is not necessary to model CO under MOVES. CO is the only hot spot modeling to be performed.

An analysis was conducted to determine the potential effects on the PM_{2.5} levels from the Project. This analysis would be updated to include current traffic predictions and current PM_{2.5} monitoring location data.

The FEIS prepared for this project did not address the potential for Mobile Source Air Toxics (MSAT) effects from the project. The SEIS will address the potential for MSAT effects for the Project.

VIII. Traffic Noise

Highway traffic noise impacts will be assessed in accordance with the KYTC *Noise Policy (2011)* and the INDOT *Noise Policy (March 2011)* and in accordance with the procedures established for the abatement of highway traffic noise as outlined in Part 772 of Title 23 of the Code of Federal Regulations (CFR).

Noise receivers will be assessed to identify project impacts from noise levels on the human environment. Noise levels and impacts will be identified utilizing a combination of ambient field measurements and modeling utilizing the FHWA TNM 2.5 noise prediction model. The feasibility and reasonableness for barrier abatement will be investigated for each impacted noise receiver.

IX. Energy

The two build alternatives included in the SEIS (i.e., Selected Two Bridges/Highway Alternative, as approved in the ROD, with Tolls and the Modified Selected Two/Bridges Highway Alternative with Tolls) will be evaluated for construction, operational, and maintenance energy consumption.

The construction energy consumption for each build alternative will be calculated based on the latest British Thermal Unit (BTU) rates per lane mile of roadway, bridge, and tunnel. Operational energy consumption will be calculated based on vehicle miles traveled (VMT), the average operating speeds and the fuel consumption rates by type of vehicle adjusted by a fuel economy factor for the design year. The energy necessary to maintain the facility over the design life is comprised of many factors, including the direct energy consumed during the maintenance and repair activities and the energy consumed by vehicles experiencing greater delays due to lanes being closed. Maintenance energy requirements are also directly related to the length and number of

lanes of any new facilities. Based on these factors, a qualitative assessment will be made regarding maintenance energy consumption.

DRAFT