Chapter 7 — Mitigation and Commitments

For purposes of this chapter, Preferred Alternative 8 that was identified in the Draft Environmental Impact Statement (DEIS) will be referred to as "Alternative 8." The Preferred Alternative for the Final Environmental Impact Statement (FEIS) will be referred to as the "Refined Preferred Alternative 8."

Since the publishing of the DEIS, the following substantive changes have occurred to this chapter:

- **Table 7-1** was updated to reflect current status of Major Mitigation Initiatives.
- Additional information was added pertaining to Context Sensitive Solutions, Wetland Mitigation, and Biological Surveys on Wildlife and Plants in **Section 7.2**, *Major Mitigation Initiatives*.
- Updated information regarding the I-69 Community Planning Program was added in **Section 7.2,** *Major Mitigation Initiatives,* and **Section 7.3.1,** *Land Use.*
- Added information regarding commitments for billboards and utilities to **Section 7.3.1**, *Land Use.*
- **Section 7.3.2**, *Social and Neighborhood* – information was added regarding "Item 4: Fire, Police, and Emergency Medical Services Provider Coordination," and "Item 5: Bicycle and Pedestrian Accommodations." **Table 7-2** was added to this section to describe bike and pedestrian accommodations for Refined Preferred Alternative 8.
- **Section 7.3.4**, *Construction* – Information was added to "Item 1: Construction Plans," "Item 2: Erosion Control," "Item 4: Air Quality," "Item 7: Emerald Ash Borer," "Item 10: Heavy Blasting," "Item 11: Abandoned or Dry Petroleum Wells," "Item 12: Maintenance of Traffic," "Item 13: Construction Noise," "Item 18: Borrow Sites/Waste Disposal," and "Item 20: Training of Construction and Maintenance Personnel." Previous Item 8: "Eastern Box Turtle" was removed.
- **Section 7.3.5**, *Historic and Archaeological Resources*, was updated to include the most current information.
- **Section 7.3.7**, *Hazardous Material Impacts*, added two sites for further evaluation (Hoosier Energy and former Amoco), and updated sites that require confirmation in final design for Phase I and Phase II Environmental Site Assessments (ESAs).
- **Section 7.3.7**, *Hazardous Material Impacts*, commitments made to prevent drainage from increasing above existing drainage SR 37 levels for Lemon Lane Landfill/ILCS recharge and Bennett's Dump to address United States Environmental Protection Agency (USEPA) and Indiana Department of Environmental Management (IDEM) concerns

regarding changes in existing groundwater flow. In addition, a commitment was added that the Indiana Department of Transportation (INDOT) will continue to coordinate with USEPA and IDEM, and the agencies will be provided design plans for review in these areas and provided a two-week comment period.

- **Section 7.3.8**, *Floodplain Impacts*, added information regarding the Construction in a Floodway Permit.

- **Section 7.3.9**, *Wetland Impacts*, updated acreage types of wetlands in Section 5 corridor; additional information regarding mitigation sites was added to "Item 3: Revised Tier 1 Conceptual Forest and Wetland Forest Mitigation Plan"; additional information was added to "Item 5 – Wetland Mitigation and Monitoring Plans."

- **Section 7.3.12**, *Stream and Water Body Modification Impacts*, "Item 3: Stream Relocations," – additional information regarding agency coordination was added to item; additional information added for "Item 8: Erosion Control."

- **Section 7.3.13**, *Ecosystem Impacts*, "Item 5: Mitigation Measures for Wildlife," updated information regarding wildlife crossings.

- **Section 7.3.15**, *Managed Lands* – additional information was added regarding the Wapehani Mountain Bike Park and mitigation for impacts to it from Refined Preferred Alternative 8.

- **Section 7.3.16**, *Threatened and Endangered Species* – Information added regarding the Section 5 Tier 2 Biological Assessment (BA) (**Appendix LL1**, *Redacted Section 5 Tier 2 Biological Assessment*), the Section 5 Tier 2 Biological Opinion (BO) (**Appendix LL2**, *Redacted Section 5 Tier 2 Biological Opinion*), and Amendment 2 of the revised Tier 1 BO (**Appendix BB**, *Revised Tier 1 Biological Opinion and Amendments*). Additional information was added regarding potential mitigation sites and a letter that INDOT will send to property owners within the right-of-way regarding the Indiana bat and tree clearing. Conservation measure status/updates were also revised with current information.

- **Section 7.3.17**, *Karst* – additional information was added regarding blasting. Added information regarding step 14 of Karst MOU. Additional information was added regarding commitments for Lemon Lane Landfill/ILCS and Bennett's Dump Superfund Sites.

- **Section 7.4**, *Environmental Mitigation Costs* – Information was updated for Refined Preferred Alternative 8. Noise abatement costs were removed from mitigation costs, as it is included in the construction costs. Access rights costs were removed because other mitigation costs are anticipated to include them if necessary. Community Planning Program grant costs were removed, as those grants have already been distributed by

INDOT. Mitigation costs for Wapehani Mountain Bike Park were added. The contingency was removed from the mitigation costs.

This chapter discusses the mitigation and environmental commitments for the preferred alternative. Refined Preferred Alternative 8 would use the existing SR 37 right-of-way, with additional adjacent acreage required based on design requirements and topography. Interchanges are proposed at Fullerton Pike, Tapp Road/SR 45/2nd Street, SR 48/3rd Street, SR 46, Walnut Street, Sample Road, and Liberty Church Road. In addition, overpasses would be located at Rockport Road, Vernal Pike, Arlington Road, Kinser Pike, and Chambers Pike. Local access roads and new connections to existing local roads would be provided in portions of the Section 5 corridor where drives and other roads currently connect to existing SR 37. These are located primarily north of Walnut Street to the northern project terminus located south of the SR 39 interchange in Martinsville.

7.1 Introduction

Since the earliest phases of the Tier 1 study, efforts have been made to avoid human and natural resources. In particular, avoidance and the opportunity to minimize impacts were used in the decision-making process to identify a Tier 1 preferred alternative. After alternatives were identified, further efforts were undertaken to develop comprehensive mitigation measures. Environmental agencies, CACs, participating agencies, and the public were instrumental in providing assistance to avoid and minimize impacts upon both the human and natural environment and have helped develop many of the mitigation measures in this chapter.

This chapter is organized based upon the mitigation commitments made in Tier 1 FEIS and ROD for the Preferred Alternative 3C. These commitments have been retained, and additional commitments are being made in each of the Tier 2 EISs. **Section 7.2**, *Major Mitigation Initiatives*, discusses the major mitigation initiatives first presented in the Tier 1 EIS. These commitment initiatives have continued in Tier 2. **Section 7.3**, *Section 5 Mitigation Measures and Commitments*, lists specific mitigation measures and commitments for each environmental resource category for I-69 Section 5. **Section 7.4**, *Environmental Mitigation Costs*, provides mitigation costs and explains the methods used for estimating mitigation costs.

7.2 Major Mitigation Initiatives

Mitigation opportunities have been explored throughout the National Environmental Policy Act (NEPA) process. INDOT and the Federal Highway Administration (FHWA) coordinated with state and federal environmental agencies, environmental organizations, local communities, and the public to provide input on both creative and traditional approaches for replacement of environmental resources that may be impacted as a result of this project. Based on this consultation, FHWA and INDOT developed a number of major mitigation initiatives, including several initiatives that go beyond the requirements of the law or regulation. These initiatives are summarized in **Table 7-1**. Initiatives that apply to Section 5 are explained in greater detail in the text that follows.

Table 7-1: Major Initiatives

Major Initiatives	Description
Context Sensitive Solutions (CSS)/ Community Advisory Committees (CAC)	CSS is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist, which has been implemented during the Tier 1 and Tier 2 EIS development and will continue through subsequent design. Invited stakeholders become members of the Community Advisory Committee (CAC) for each section during the NEPA Phase and provide input and information to INDOT and FHWA regarding the project and resources in the study corridor.
Indiana Bat Hibernacula	INDOT and FHWA will attempt to purchase and protect hibernacula (winter habitat) for the Indiana bat. Some sites have already been secured.
Wetland Mitigation	INDOT and FHWA will replace wetlands impacted by the Refined Preferred Alternative 8 in accordance with INDOT's Wetlands Memorandum of Understanding (MOU). Sites have been secured, and mitigation construction has been completed or is underway for some sections.
Forest Mitigation	INDOT and FHWA will mitigate upland forests impacted by the Refined Preferred Alternative 8 at a ratio of 3:1. Multiple sites in other sections have been secured for this mitigation effort.
I-69 Community Planning Program	INDOT and FHWA developed and implemented a program that established a regional strategy for managing growth.
Geographic Information System (GIS)	INDOT and FHWA have developed a statewide GIS Atlas that is comprised of more than 170 different layers. This Atlas is available on the Indiana Map website.
Update County Historic Surveys	INDOT and FHWA will provide financial and technical assistance to the Indiana Department of Natural Resources (IDNR), Division of Historic Preservation and Archaeology (DHPA) to support the completion of field surveys and publication of County Interim Reports.
Biological Surveys on Wildlife and Plants	INDOT has worked with resource agencies to conduct biological surveys for threatened and endangered species. Follow-up surveys for the Indiana bat are also being made prior to and during construction.
Bridging of Floodplains	INDOT and FHWA agreed to bridge the Patoka Rivers and Flat Creek floodplains in Section 2. This bridging was incorporated into the construction plans. There are no floodplains in Section 5 which are anticipated to be bridged in their entirety. Floodplain crossings in Section 5 are primarily at existing bridge crossings.
Distance Learning	INDOT and FHWA have and will continue to support distance-learning opportunities for students in Southwest Indiana as part of the public outreach for transportation projects.

Context Sensitive Solutions (CSS)/Community Advisory Committees (CAC)—CSS is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist. INDOT

has adopted the following policy endorsing the use of CSS in transportation project development:[1]

> It is the policy of the Indiana Department of Transportation (INDOT) to incorporate context sensitive solutions into the development, construction and maintenance process for improvements to the state jurisdictional transportation system. The process for incorporating context sensitive solutions is intended to establish a basis for the development, construction, and maintenance process to incorporate a community's character and desires in transportation improvements. The context sensitive solution process is intended to be a flexible approach in allowing for latitude and to enhance environmental, scenic, historic, and unique community elements into a transportation improvement. INDOT believes that the implementation of context sensitive solutions will allow transportation officials, with input from community stakeholders to strike a balance between providing safe, cost effective and efficient highway facilities while protecting and enhancing community values.
>
> The establishment of context sensitive solutions incorporates accepted effective design practices. Context sensitive solutions allow ideas such as preservation of historic places, scenic and natural environmental enhancement, and community values to be considered within the objectives of mobility, safety and economics.

To design and construct a freeway that is truly sensitive to the environment through which it will be traversing, FHWA and INDOT will seek the continued assistance from the communities near the corridor through Tier 2 design and construction phases of the project. Early in Tier 2, INDOT and FHWA worked with the local officials, metropolitan planning organizations (MPOs), and others to identify specific representatives from neighborhood groups, emergency response personnel, schools, local advocacy groups, etc., to be members of each CAC. In addition, for Section 5, an additional group consisting of local government representatives was established as participating agencies to provide input and early data exchange similar to the CACs and reviewing agencies. Section 5 participating agencies included representatives from Bloomington, Ellettsville, Martinsville, Monroe County, and Morgan County. FHWA and INDOT met with the Section 5 CACs and participating agencies to describe the status of the project, to ask them to distribute information to their constituents, and to also seek feedback from them and their constituents. In addition, FHWA and INDOT also conducted public information meetings and a public hearing about the project at key project milestones (see **Figure 7-1**, located at the end of this chapter).

The specific outcome of CSS depends, in part, on input from the CACs, participating agencies, and the public. The use of CSS may result or has resulted in the following modifications to the alternatives:

- Generally constraining all of the alternatives to the general SR 37 location and elevation to reduce overall impacts and traffic disruptions.

[1] *Statement of INDOT Policy for Context Sensitive Solutions* (approved March 3, 2003).

- Use of existing transportation right-of-way, pavement, and infrastructure where appropriate by utilizing minimal impact design criteria to maximize return on capital investments. All of the build alternatives used some existing features of SR 37 to minimize costs and impacts. However, Alternatives 6, 7, 8, and Refined Preferred Alternative 8 were designed using minimal impact design criteria. For further information, refer to **Chapter 3**, *Alternatives*.

- Improving the aesthetics of the highway by planting native wildflowers (see **Figure 7-2**, located at the end of this chapter), minimizing riprap on side slopes and in ditches, and using attractive structures (e.g., bridges, retaining walls, signs, etc.). There is also community interest in gateway treatments for Bloomington and Martinsville approaches. INDOT has committed to include context sensitive solution measures, which may include plantings, gateways, and other enhancements within constraints of available right-of-way, impacts, and cost, as further discussed with the cities and counties during final design.

- Terminating the Fullerton Pike connection on the west side of the mainline to avoid impacts to a deep valley with karst features, a historic cemetery, and a private hospital. Alternatives 4, 5, 6, 7, and 8 would follow the existing alignment of Fullerton Pike on the west side of the mainline and connect to the existing roadway. Refined Preferred Alternative 8 would shift Fullerton Pike slightly north to straighten a curve in the existing roadway, and tie into the existing Fullerton Pike alignment.

- Providing Tapp Road access to I-69 via a split-interchange (reduced collector-distributor[2] [CD] system) in Alternatives 5, 7, 8, and Refined Preferred Alternative 8 to provide access for congestion reduction, the large investment in Tapp Road improvements to the east of SR 37 by the City of Bloomington, and planned development.

- Northern shift of the west side Tapp Road expansion for a turning lane (Alternative 4) away from tightly spaced housing.

- Elimination of a CD system with two mainline travel lanes and two CD lanes for access to Tapp Road, SR 45/2nd Street, and SR 48/3rd Street with Alternative 2 (described in Preliminary Alternatives Analysis and Screening dated May 2007, revised April 2012). Local government officials and public participants who provided comments as part of the July 2005 Public Information Meeting thought that it would not keep with the community feel, described as being too metropolitan or big city, and too much required right-of-way.

- Elimination of Alternative 1 where the entire highway was shifted to the west side of the bifurcation (described in Preliminary Alternatives Analysis and Screening dated May 2007, revised April 2012), and the inclusion of guardrail in order to maintain existing bifurcation to preserve forest, streams, and view shed for the remaining alternatives.

[2] Collector-Distributor (CD) Lanes – A one-way road next to a freeway that is used for some or all of the ramps that would otherwise merge into or split from the main lanes of the freeway. It is similar to a local access road, but is built to freeway standards. It is used to eliminate or move weaving from the main lanes of the freeway.

- Reconnection of existing local access roads in lieu of increased residential, business, and farm impacts associated with construction of new local access roads immediately adjacent to I-69.

- Use of existing partial interchange, Monroe County Bridge No. 913, and locally viewed gateway at Walnut Street in Alternative 7, 8 (Option B), and Refined Preferred Alternative 8. The use of the existing partial interchange was approved by FHWA February 2013 (more information can be found in **Appendix RR**, *Walnut Street Interchange Selection Report*.)

- Use of a single folded interchange type at Fullerton Pike, Sample Road, and Liberty Church Road to match terrain and development patterns. All alternatives would incorporate a single folded interchange type in at least one of these locations. However, the specific interchange type for each location will be determined during final design for the final alignment, but will stay within the right-of-way footprint for the Refined Preferred Alternative 8.

- Treatment of a parcel outside of the Maple Grove Road Rural Historic District (as described in the National Register of Historic Places [NRHP] nomination form) as potentially eligible, and avoided by holding all alternatives to the west side right-of-way.

- Reuse of existing Arlington Road overpass by lowering mainline I-69 elevations to reduce traffic disruptions and maintain east/west connectivity. Alternatives 6, 7, 8 and Refined Preferred Alternative 8 incorporate this feature.

- Grade separator walls, steepened side slopes, and/or benched rock cuts have been committed to in order to reduce direct impacts and neighborhood encroachment (at Yonkers Drive), as well as to avoid a multi-family complex (at 2nd Street), churches (Prow Road), utility distribution center (at Ellis Drive), and IWPA dam (at Stonebelt Drive).

- Accommodation of bicycle and pedestrian traffic at new interchanges, and further consideration of these accommodations where existing infrastructure is reused, as appropriate. Bicycle and pedestrian facilities across I-69 have been incorporated into the Refined Preferred Alternative 8 (see **Table 7-2**). Ongoing consideration of possible teaming with the City of Bloomington as part of a local project to provide a separate crossing of I-69 between 2nd Street and 3rd Street for use as part of local bicycle/pedestrian plans.

- Inclusion of an overpass type grade separator to maintain the eastside connection at Crescent Road at Vernal Pike/W. 17th Street to provide community access and reduce impacts to a housing development. Alternatives 7, 8, and Refined Preferred Alternative 8 would have an overpass of W. 17th Street to maintain east/west connectivity.

Indiana Bat Hibernacula— Indiana bat hibernacula (caves where Indiana bats overwinter) are present within the Section 5 Winter Action Area (WAA). Per the revised Tier 1 BO, opportunities will be investigated to purchase, at fair market value, from "willing sellers," an

Indiana bat hibernaculum(a) including associated autumn swarming/spring staging habitat. After purchase and implementation of all management efforts, hibernaculum(a) and all buffered areas will be turned over to an appropriate government conservation and management agency for protection in perpetuity via conservation easements. INDOT and FHWA purchased a conservation easement for two Priority 1A hibernacula. In 2009, these two hibernacula showed approximately 37,000 wintering Indiana bats. A third hibernaculum within the WAA was also purchased, and it had approximately 50 to 60 wintering Indiana bats in 2010. INDOT and FHWA have also purchased a mitigation property outside of the WAA, including one Priority 3 hibernacula that (in 2009) showed over 800 wintering Indiana bats, as well as containing over 350 acres of autumn swarming/spring staging habitat.

Wetland Mitigation—Wetlands are an important natural resource because they support rich biological communities and provide floodplain protection. The construction of this project will impact wetlands of varying types. For the I-69 Evansville to Indianapolis project as a whole, the majority of impacted wetlands are expected to be forested wetlands. To mitigate for these wetland losses, INDOT and FHWA will follow the mitigation ratios listed in their Wetlands MOU (signed January 28, 1991), as supplemented by United States Army Corps of Engineers (USACE) mitigation requirements. See **Appendix V**, *Wetlands Memorandum of Understanding*, which was provided as Appendix T in the Tier 1 FEIS. The MOU was developed to ensure that wetland impacts are avoided, minimized, and mitigated to compensate for the loss of wetland functions and values. See **Section 7.4**, *Environmental Mitigation Costs*, for estimated wetland mitigation acreages.

Wetland mitigation sites are preferred in areas connected to existing wetlands and forests that currently provide habitat for both federal- and state-listed threatened and endangered species. It is INDOT's intention to restore wetlands in areas that have the greatest opportunity to develop into naturally functioning wetlands and provide habitat for threatened and endangered species. Such mitigation sites will be designed, constructed, monitored, and maintained (for example, invasive species control). Once a site has become established, the site may be donated to an appropriate local or governmental agency or non-profit resource management groups. All mitigation sites will have deed restrictions identifying them as mitigation sites and protecting them in perpetuity from future disturbance. Each site will be designed with the assistance of appropriate environmental review agencies to include habitat and structures (e.g., nesting boxes, platforms, water control, etc.) for specific wildlife species. Signage will be erected along the boundary of mitigation sites to protect these areas from mowing and herbicide spraying.

Tier 1 Conceptual Mitigation Plan

For Section 5, two potential mitigation sites were identified in the *Revised Tier 1 Conceptual Forest and Wetland Mitigation Plan & Comparison of Tier 1 Plans.* Morgan-Monroe State Forest in Morgan County was identified as a secondary site, but was not discussed in detail in the Plan. See **Appendix S** for this Plan and a comparison to the original *Tier 1 Forest and Wetland Mitigation and Enhancement Plan*, which was provided as Appendix NN in the Tier 1 FEIS. The following is a description of the two sites.

- The West Fork White River (Bryant Creek) mitigation area is located along Bryant Creek just east of the confluence of Bryant Creek with the West Fork White River, directly south of Paragon. During the original bat surveys in 2004-2005, there were six Indiana bat roost trees identified in the proposed mitigation area. One tree was a primary roost with bat numbers reaching up to 128 per night. A second primary roost was identified in the area during surveys in 2012. This roost showed a maximum emergence count of 74 individuals. The area is a mix of bottomland and upland hardwood forest with interspersed grazing. Opportunities for mitigation in this area are excellent for creating riparian buffers along the West Fork White River and/or Bryant Creek. It would also reestablish bottomland woods with riparian buffers along the White River and/or Bryant Creek. Such habitat could be used by the Indiana bat and bald eagle and improve the water quality of the White River from enhanced soil and bank stabilization, vegetative filtering and uptake, and flood control. Improving the water quality may reduce siltation and improve water conditions for mussels in this area of the White River. In addition, this replacement of riparian habitat could enhance the White River flyway for the Indiana bat.

- Beanblossom Bottoms mitigation area is a secondary mitigation site near the Beanblossom Bottoms wetland complex. The Beanblossom Bottoms area includes a complex of high quality hardwood wetlands that harbor many unique plants and animals. Mitigation in this area would provide habitat for the bald eagle, Indiana bat, bobcat, and many species of amphibians and reptiles. The proposed design of this mitigation site could be shallow water, slough-like habitat. Such a habitat would attract ducks, geese, and wading birds. Of special interest would be sandhill cranes. Bottomland woods of oak and hickory would provide, as appropriate, for isolation and protection for some species. This mitigation site would increase summer roosting habitat for the Indiana bat; increase bald eagle nesting and feeding habitats; and, improve the water quality of the White River from improved soil and bank stabilization, vegetative filtering and uptake, and flood control. It is expected that the Beanblossom Bottoms mitigation area would be similar to the existing Muscatatuck Refuge in the Beanblossom Bottoms.

Mitigation for the Indiana bat is focused in the Summer Action Area (SAA) and WAA. Indiana bat summer habitat will be created and enhanced in the Action Area through wetland and forest mitigation focused on riparian corridors and existing forest blocks to provide habitat connectivity. The mitigation plan noted that the mitigation sites identified in the plan were conceptual, and that specific mitigation sites would be determined during or after Tier 2, and further noted that INDOT would acquire mitigation sites only from willing sellers at fair market value.

Subsequent mitigation planning for Section 5 included the refinement of mitigation focus areas based on Indiana bat maternity colony areas, review of existing managed lands, and existing habitat blocks that could be expanded and/or preserved. In consultation with the environmental resource agencies, these refined mitigation focus areas have been reviewed and landowner contacts made to identify willing sellers and determine specific parcels which could be acquired for mitigation purposes. In December 2012, INDOT submitted a Tier 2 Section 5 Biological Assessment (BA) that provided additional details on the mitigation plans in Section 5. The Section 5 Tier 2 BA identifies a total of 20 properties for mitigation. Seven focus areas were

targeted for Section 5 mitigation: West Fork (Bryant Creek) Maternity Colony, Lambs Creek Maternity Colony, Beanblossom Bottoms Nature Preserve Maternity Colony, Crooked Creek Maternity Colony (Section 6), Morgan-Monroe State Forest, Beanblossom Creek, and Maple Grove Road Rural Historic District. The 20 sites include properties to be acquired for preservation as well as those to be acquired for future restoration and replanting activities. These 20 sites are expected to provide a total of more than 1,500 acres of mitigation lands. Additional detail on these sites is presented in the Section 5 Tier 2 BA (see **Appendix LL1)**.

Forest Mitigation—Forests are a large and important resource in Indiana. Indiana's forests make significant environmental and economic contributions, including timber, employment, outdoor recreation, protection of soil and water resources, and habitat for many plant and animal species, including threatened and endangered species. Prior to European settlement, forests covered about 85% of the State. Forested land was converted to farmland as farming became a central part of Indiana's economy. The acreage of forested land reached its low during the early 1900s, but increased until the 1990s. Today, forested land in Indiana appears to have reached a plateau. Approximately 20% of Indiana is forested, and most of the forested land is located in the southern half of the State.

For the I-69 Evansville to Indianapolis project as a whole, FHWA and INDOT committed to mitigate impacts to upland forests at a 3 to 1 ratio. Mitigation goals are to replace direct forest impacts at a minimum 1 to 1 ratio and provide up to a 2 to 1 ratio of forest preservation. The 3 to 1 ratio will be achieved for the overall I-69 Evansville to Indianapolis project; the ratio for an individual Tier 2 section could be higher or lower than 3 to 1. See **Section 7.4**, *Environmental Mitigation Costs*, for estimated forest mitigation acreages.

In Section 5, the proposed conceptual forest mitigation sites are the same as those described above for wetland mitigation. This mitigation will be accomplished either by purchasing and protecting existing tracts of forests or by planting trees. Preference will be given to areas contiguous to large forested tracts that have recorded sites for federal- and state-listed threatened and endangered species. Coordination with resource agencies will assure that these forest mitigation sites are strategically situated in biologically attractive ecosystems. All forest mitigation lands will be protected in perpetuity via conservation easements or other appropriate measures. The species to be planted and the long-term management of these mitigation sites will be coordinated with the agencies relative to the conditions of the necessary permits and authorizations.

INDOT will be the long-term manager of these sites unless they are turned over to another agency or land steward for long-term management. As long as INDOT is the long-term manager of the mitigation sites, it will be INDOT's responsibility to cover any required costs to correct any misplaced actions/inactions by the easement-granting landowners. If the mitigation site(s) that are owned in fee simple by INDOT are turned over to another long-term management agency or land steward, the receiving agency or land steward would be taking on the responsibility to cover this cost and this will need to be included in the land transfer documentation from INDOT to the long-term manager. INDOT will not be able to turn over properties with conservation easements to other agencies because INDOT will not own the land. When INDOT has a conservation easement on a mitigation site, that conservation easement and

associated restrictions will remain in force, even if the land owner transfers the land to someone else.

I-69 Community Planning Program—The I-69 Community Planning Program set in place a regional strategy for providing resources to local communities to manage the growth and economic development associated with I-69. The program provided grants for local communities (cities, towns, and counties) to prepare plans to manage potential new developments along with the I-69 corridor. Under this approach, INDOT's role was to provide technical and financial assistance to communities that desire to develop plans for growth related to I-69. No local community was required to participate in the program. The eligible communities in Section 5 were Morgan and Monroe counties, and the cities/towns of Bloomington, Ellettsville, and Martinsville. The total cost of this program was budgeted at $2 million. The I-69 Community Planning Program was a two-phase effort:

- **Phase 1** was a regional planning assessment and development of regional planning strategies and resources for the entire I-69 corridor impact area. It included establishing partnerships, inventories, review of regulations and legislation, identification of needs, preparation of processes and models, identification of environmentally sensitive areas, farmland protection strategies, workshops, and providing technical planning support.

- **Phase 2** provided for the actual grants to local communities for the preparation of local plans and growth management ordinances. It included public involvement activities, planning framework and corridor land use planning, economic development strategies, model planning ordinances, and developing a plan implementation program.

On October 29, 2007, INDOT awarded $950,000 in grants to communities located along the I-69 corridor in Southwest Indiana. Within Section 5, Morgan County, the Town of Mooresville, and the City of Martinsville together were awarded a grant for $150,000. On February 1, 2008, Monroe County submitted an application for a $50,000 grant. The City of Bloomington was eligible for this program but chose not to participate. Monroe County was awarded a $50,000 grant, and the Town of Ellettsville was also awarded a grant for $50,000. Local communities used these grants to prepare transportation land use plans, zoning and subdivision ordinances, and special highway corridor "overlay zones" for development. In the second phase of the program, on July 30, 2008, a $100,000 grant was awarded to Monroe County and the Town of Ellettsville. This grant was used for the preparation of the Monroe County Comprehensive Plan (2012). A transportation corridor plan for SR 37/I-69 also was developed by Monroe County in 2010 as a result of the grant program. Grants awarded in this second round of grants brought the total grant awards to $1,500,000 in both rounds. For further details, please see **Appendix T**, *I-69 Planning Grant Program Update*.

Geographic Information System (GIS)—A GIS is an interactive network of maps (i.e., layers) that depict various environmental, social, and economic resources. Each set of resources (e.g., wetlands, forests, historic resources) is mapped on a different layer, which can be overlain on other layers for purposes of determining the impacts of project alternatives on specific resources. INDOT and FHWA, along with the Indiana Geological Survey (IGS), developed a comprehensive GIS dataset covering the entire Tier 1 26-county Study Area in southwest Indiana

to assist in assessing impacts of the I-69 Evansville to Indianapolis project. This GIS for southwest Indiana is comprised of approximately 170 different layers of aquatic, terrestrial, mineral, social, and economic information for the 26 counties. Most of the information contained in these layers was obtained from other state and federal agencies including the USEPA, the United States Census Bureau, IDNR, IDEM, IGS, and the Federal Emergency Management Agency (FEMA). With the publication of the I-69 Tier 1 Draft Environmental Impact Statement (DEIS), the IGS made this information available to all agencies and the public on its website. Building on the southwest Indiana GIS, INDOT and FHWA subsequently developed a statewide GIS Atlas, known as IndianaMAP, that consists of layers for similar resources for each county throughout the State of Indiana.[3]

Update County Historic Surveys—IDNR-DHPA, manages the Indiana Historic Sites and Structures Inventory (IHSSI) and performs the duties of the State Historic Preservation Officer (SHPO) in the Section 106 process. Many of the publications upon which it relies to assemble its Inventory are older and require updating. In addition, publication costs associated with the printing of additional documents may also be underwritten. INDOT and FHWA will provide financial and technical assistance to the SHPO to support the completion of field surveys and publishing of County Interim Reports for the Inventory.[4] Also, INDOT and FHWA will cooperate with the IDNR-DHPA to provide the most current information on historic structures in counties that the selected alternative traverses or is near (i.e., Gibson, Pike, Daviess, Martin, Greene, Monroe, Morgan, Johnson, and Warrick counties, and the portion of Marion County that includes Decatur, Perry, and Franklin Townships). This commitment was developed through the Tier 1 Section 106 process. The Section 106 process requires federal agencies to consider impacts to historic and archaeological resources when undertaking major federal actions. See Appendix P of the Tier 1 FEIS for the Section 106 Memorandum of Agreement (MOA), which contains these commitments.

As part of this commitment, IDNR-DHPA will be provided with GIS data and the IHSSI survey forms when they are completed following the completion of this study. The survey for Monroe County can begin after the FEISs in Sections 4 and 5 are published, followed by Morgan County after the FEISs in both Sections 5 and 6 are published. Note that these surveys are outside the Area of Potential Effects (APE) studied as part of the Section 106 process to identify impacts by the project on historic resources.

Biological Surveys on Wildlife and Plants—The Endangered Species Act requires federal agencies to consult with the United States Fish and Wildlife Service (USFWS) and to ensure that their actions do not jeopardize any federally-listed threatened or endangered species or significantly impact or adversely modify any critical habitat of those species. Therefore, during Tier 1 studies, formal and informal consultation with USFWS was conducted. The consultation provided for INDOT and FHWA to submit a Tier 1 BA of potential impacts of the Evansville-to-Indianapolis project on threatened and endangered species. Within the counties through which

[3] Known as the IndianaMap, this site is hosted by the Indiana Geographic Information Council, and can be accessed at http://inmap.indiana.edu/viewer.htm. (Last accessed 3/28/13).

[4] These surveys will be completed in accordance with a Memorandum of Agreement following approval of the Record of Decision for the section(s) located within or near each specific county.

the alternatives traverse, there are two federally-listed endangered species—the Indiana bat and the Eastern fanshell mussel, and one federally-protected species—the bald eagle.[5] The conclusion of the consultation process included the issuance of a Tier 1 Biological Opinion (BO) by USFWS on December 3, 2003.

Coordination with USFWS during the Tier 2 studies resulted in the re-initiation of Tier 1 formal consultation for the Indiana bat in July 2005. Additional information provided by Tier 2 bat surveys completed in 2004 and 2005 prompted USFWS to re-examine the effects of the project as a whole on this species. One bald eagle nest site was identified within the riparian corridor of Beanblossom Creek, approximately 0.5-mile from existing SR 37 and approximately 0.4-mile from an existing interchange. This is outside of the recommended 660-foot radius for activities as described in the USFWS National Bald Eagle Management Guidelines. No impacts to the nest sites are anticipated by the proposed action. Thus, there has been no re-initiation of formal consultation on the bald eagle or Eastern fanshell mussel.

The re-initiation of formal consultation resulted in the preparation of an Addendum to the Tier 1 BA which was provided to the USFWS on March 7, 2006. The BA Addendum detailed information gathered on the Indiana bat during Tier 2 studies and after the original BO was issued. Upon completion of its review of the Addendum, USFWS submitted a revised Tier 1 BO, including an Incidental Take Statement, to FHWA and INDOT on August 24, 2006. In the revised Tier 1 BO, USFWS confirmed its original opinion that the I-69 project is "not likely to adversely affect the Eastern fanshell mussels" (p. 37); and "is not likely to jeopardize the continued existence of either the Indiana bat or the bald eagle." Regarding the Indiana bat, USFWS concluded "the proposed extension of I-69 from Evansville to Indianapolis will have greater impacts to Indiana bats than were originally considered," but the project "is not likely to jeopardize the continued existence of the Indiana bat and is not likely to adversely modify the bat's designated Critical Habitat."

On April 11, 2011, the FHWA reinitiated Tier 1 consultation for the second time based on new maternity colony information, as well as documentation of the disease White Nose Syndrome (WNS) within the action area. On May 25, 2011, the USFWS issued an Amendment to the August 24, 2006 revised Tier 1 BO, including a revised Incidental Take Statement. The Amendment to the revised Tier 1 BO addresses each of the sections of the revised Tier 1 BO dated August 24, 2006, that required new analysis for effects to the Indiana bat; otherwise the revised Tier 1 BO remains in effect.

On May 20, 2013, the FHWA reinitiated Tier 1 consultation for the third time for the Indiana bat based on new maternity colony information, exempted levels of forest and wetland take, and documentation on private property tree clearing in Section 4 for the following reasons:

[5] Note: On July 9, 2007, the USFWS removed the bald eagle from the list of endangered and threatened species under the Endangered Species Act. Since that time; however, the bald eagle has been protected by the Bald Eagle and Golden Eagle Protection Act (16 U.S.C. §§ 668-668d). On May 20, 2008, the USFWS issued regulations governing permits under the Bald and Golden Eagle Protection Act for the projects that obtained an incidental take permit under the ESA (50 C.F.R. Part 22). On June 25, 2009, the USFWS issued INDOT and FHWA a permit under the Bald and Golden Eagle Protection Act for the I-69 Evansville to Indianapolis project based on the incidental take permit under the ESA (50 C.F.R. Part 22). FHWA and INDOT will comply with the Bald and Golden Eagle Protection Act permit requirements established by the USFWS, which include the Terms and Conditions associated with the Incidental Take Statement.

- Indiana bat presence surveys in 2012 captured a pregnant female Indiana bat in Section 5. Radio-telemetry showed this bat roosting in two snags. Roost tree emergence counts showed these snags to be primary roosts. As recommended by USFWS, FHWA and INDOT established the Lambs Creek Maternity Colony at this location which is west of Martinsville. In addition to the bat surveys that were completed for I-69, USFWS conducted a bat survey for the Sycamore Land Trust at the Beanblossom Bottoms Nature Preserve. Three Indiana bats were captured and tracked to three different roosts. As recommended by USFWS, FHWA and INDOT included the Beanblossom Bottoms Nature Preserve Maternity Colony in the Section 5 Tier 2 BA. The addition of these two new maternity colonies in Section 5 brings the entire I-69 total to 16 Indiana bat maternity colonies along the project.

- In addition to the two newly identified Indiana bat maternity colonies, INDOT and FHWA requested increases in the exempted level of take for habitat impacts. Exempted levels of take for forest and wetlands were developed in Tier 1 based on right-of-way impact estimates at that time. These exempted levels of take were included in the revised Tier 1 BO and the Amendment to the revised Tier 1 BO. Based on more up-to-date information on project impacts, some of these exempted levels of take are being approached or exceeded. This is primarily due to estimated impacts associated with relocations of utilities and billboards which were not included in the original revised Tier 1 BO thresholds. The levels of take requested provide a more refined estimate that takes into account the additional utility and billboard impacts. FHWA requested the increases in exempted level of take for the following habitat impacts: Tier 1 (project-wide) non-forested wetland impacts, Section 5 total forest impacts, and individual hibernacula WAA circles (5-mile radius) forest impacts.

- Finally, prior to INDOT's land acquisition activities for the Section 4 project, some private landowners chose to harvest trees on their land. This harvest activity occurred both within the area to be acquired by INDOT as part of the right-of-way for the project and some activity occurred outside of the planned right-of-way. Neither FHWA nor INDOT approved, consented to, or condoned harvesting activities on the private land involved. Documentation of this activity and estimates of private property tree harvesting are also included in the May 20, 2013 Tier 1 reinitiation letter.

In response to FHWA's May 20, 2013 reinitiation request, on July 24, 2013, the USFWS issued Amendment 2 to the August 24, 2006 revised Tier 1 BO, including a revised Incidental Take Statement. Amendment 2 to the revised Tier 1 BO addresses each of the sections of the revised Tier 1 BO dated August 24, 2006 that required new analysis for effects to the Indiana bat; otherwise the revised Tier 1 BO (as previously amended May 25, 2011) remains in effect.

In addition, a Tier 2 BA specific to Section 5 was submitted to USFWS on December 19, 2012, and USFWS issued the Section 5 Tier 2 BO on July 25, 2013. USFWS concurred with FHWA and INDOT's determinations, and noted "The effects associated with the proposed construction, operation, and maintenance of Section 5 of I-69 are within the scope of effects contemplated in the recently amended Tier 1 Revised Programmatic Biological Opinion (2013). Upon evaluation of the proposed project, we believe incidental take of Indiana bats in the Section 5 Action Area is

likely, but the impact of such taking is not likely to jeopardize the continued existence of the Indiana bat and is not likely to adversely modify the bat's designated Critical Habitat" (p. 1).

Pursuant to the Tier 1 BO and subsequent revision and amendments, INDOT, FHWA and USFWS have developed a Memorandum of Agreement (MOA) to complete the following:

- biological surveys for rare and endangered species;
- surveys of known Indiana bat hibernacula (i.e., caves);
- funding of research for discovery of new hibernacula;
- funding of research on autumn and spring habitat for the Indiana bat;
- funding for captive-rearing research on mussels; and,
- funding for the writing and printing of informative pamphlets on bats, bald eagles, and mussels in Indiana.

Field studies in Section 5 included generalized pedestrian surveys during project field work; fish, unionid, and crayfish community characterization; harp and mist netting for Indiana bats with radio telemetry and Anabat; bridge habitat surveys; and cave fauna survey. Tier 2 studies related to the Indiana bat began in the summer of 2004 and continued through the winter of 2006. These survey results have been included as an Addendum to the previous Tier 1 BA. In addition, mist netting was conducted for Section 5 in the summer of 2012 at the request of USFWS. The results of this mist netting were included in a separate report which was provided to USFWS. FHWA and INDOT agreed to commitments and mitigation documented in the revised Tier 1 BO, which incorporates by reference the *Revised Tier 1 Conceptual Forest and Wetlands Mitigation and Enhancement Plan* (see **Appendix S**). Proposed mitigation for the Indiana bat includes providing additional forested and wetland habitat for this species, purchasing Indiana bat hibernacula, and installation of bat friendly gates at hibernacula.

Conservation measures were jointly developed by the FHWA, INDOT, and USFWS during informal consultation and were subsequently incorporated into the Tier 1 BA and the Tier 1 BA Addendum as part of the official proposed action for the I-69 project. Since conservation measures are part of the proposed action, their implementation is required under the terms of the consultation. These measures were specifically designed to avoid and minimize impacts of the proposed action on Indiana bats and bald eagles and to further their recovery. **Section 7.3.16**, *Threatened and Endangered Species*, presents the conservation measures applicable to Section 5. **Section 5.17**, *Threatened and Endangered Species*, and **Appendix BB**, *Revised Tier 1 Biological Opinion and Amendments*, provide a history of the Section 7 consultation for this project. The revised Tier 1 BO contains the complete list of conservation measures for the I-69 project as a whole. **Appendices LL1** and **LL2** contain the Section 5 Tier 2 BA and the Section 5 Tier 2 BO, respectively (as redacted).

Bridging of Floodplains—Floodplains are a vital part of a river or stream ecosystem. They are important because they act as flood buffers, water filters, and nurseries, and are major centers of

biological life in the river or stream ecosystem. Floodplains help maintain water quality since they provide fresh water to wetlands and backwater areas, dilute salts and nutrients, and improve the overall health of the habitat of many species of birds, fish, and plants. In addition, they are important biologically because they represent areas where many species reproduce and are important for breeding and regeneration cycles.

The complete bridging of a floodplain avoids and minimizes habitat impacts and maintains wildlife corridors. Similarly, it minimizes any floodplain encroachments, reduces significantly the loss of wetlands, forests, and farmland, and minimizes impacts to threatened and endangered species. Although it is not anticipated that any floodplains in Section 5 will be bridged in their entirety, floodplain encroachments will be minimized by rehabilitating existing bridges or replacing them at their existing locations. In addition to consideration of all major crossings, there are four FEMA-mapped floodplains crossed in Section 5: the 100-year floodplain in the Beanblossom Valley (approximately 5,000 feet wide where crossed by existing SR 37); the 100-year floodplain of Bryant Creek valley (approximately 700 feet wide where crossed by existing SR 37); the 100-year floodplain of the broad valley of Little Indian Creek (approximately 1,780 feet wide where crossed by existing SR 37); and, the 100-year floodplain of Indian Creek (approximately 5,000 feet wide where crossed by existing SR 37) that is only slightly encroached by the northern termini of the alternatives. A final hydraulic design study will be completed during the design phase to determine the length of the spans, and a summary of this will be included with the Field Check Plans and Design Summary.

Distance Learning—Distance-learning opportunities for students in Southwest Indiana continue to be available. One such opportunity is by means of GIS maps and databases developed and compiled for use in proposed I-69 planning. Digital data and online maps are being made available from a server accessed on the Indiana Map website.[6]

[6] Indiana Geographic Information Council, "IndianaMap," http://inmap.indiana.edu/viewer.htm, (Last accessed 3/28/13).

7.3 Section 5 Mitigation Measures and Commitments

This section lists specific proposed mitigation measures and commitments for each resource category in Section 5. An overall I-69 mitigation tracking method has been developed in consultation with permitting agencies and the USEPA. The mitigation tracking is accomplished using a database with a GIS component. INDOT has coordinated with agencies to identify agency-specific information to be included in the database for tracking. Information on purchased, constructed, and potential mitigation sites, as well as the anticipated natural resource mitigation required and available credits of I-69 are continually being updated within the tracking system. The first annual tracking report was issued on February 22, 2010. The most recent annual tracking report was provided to these agencies in March 2013.

INDOT and FHWA have developed two types of commitments, including those that are required and those which are for additional consideration. All commitments associated with mitigation measures to address regulatory requirements and permit conditions are identified as required. These include items such as wetland and stream mitigation to address Section 404/401 permit requirements and habitat mitigation measures to address the terms and conditions of the incidental take statement provided in the Section 5 Tier 2 BO (including by reference the conservation measures incorporated into the Tier 1 BO as revised and amended). In addition, other mitigation measures which address general recommendations by review agencies, but are not associated with regulatory requirements are in some instances identified as for further consideration. These measures often require final design level information to determine feasibility of implementation in various portions of the project and for final cost evaluation to determine cost benefit considerations. INDOT's mitigation tracking system monitors the status of all commitments, including those identified as "for consideration." The tracking system flags each of these commitments to require that it be affirmatively considered during post-NEPA design. If it cannot be implemented, then the requestor is informed as to why it could not be implemented. The mitigation tracking system will designate any instances where a stakeholder has identified a specific commitment as critical and INDOT (for that reason) identifies that commitment as required and not "for consideration."

Commitments identified as for further consideration (such as access roads for parcels landlocked by the project) require final design level information to determine the cost effectiveness of the specific measures at specific locations. Such information includes final anticipated construction cost, residual parcel appraised value, etc. As noted above, these measures will be tracked in post-NEPA design through INDOT's commitments tracking database to document whether they are implemented.

In the event of any differences of wording between the commitments listed below and the final conditions of a regulatory action (existing biological opinions, anticipated permits, etc.), the final wording of the condition of the regulatory action takes precedence over the EIS.

7.3.1 Land Use

Section 5 is urban with large commercial areas, subdivisions, and multi-unit residences in the southern one-third of the study area in western Bloomington and transitions to rural as the

Section 5 corridor heads north toward Martinsville, Indiana. North of Bloomington, residences are generally located in smaller subdivisions and widely scattered sites through the northern two-thirds of the project area. The following measures will be utilized to mitigate the potential impacts of this project on land-use patterns:

1. **I-69 Community Planning Program**—The I-69 Community Planning Program helped set in place a regional strategy for providing resources to local communities to manage the growth and economic development associated with I-69. Morgan and Monroe counties and the cities/towns of Ellettsville, Bloomington, Martinsville, and Mooresville were eligible for grants.

   The I-69 project website provides a link to the Community Planning Program website.[7] The Website contains information including a concise description of the program, examples of planning "toolbox" features that could be used to help local communities plan for I-69, a summary of the kick-off meetings with agencies and communities, and other information about the program. Included in the meeting summaries are a list of communities that were represented at the Section 5 meetings in October 2006 and feedback received from community representatives at the meeting regarding issues of local importance, their vision for the future 20 years hence, questions about the grant program, and features of the toolbox that they might consider using.

   Eligible communities in attendance at the Section 5 October 2006 meetings were Monroe County, Bloomington, and Ellettsville. Issues of local importance included preservation of access, concerns over uncontrolled growth, annexations, and maintaining downtown vibrancy. Economic development and increased tourism were identified as the most important elements in the 20-year vision of all communities represented. The grant applications were made available to communities beginning in August 2007.

   On October 29, 2007, INDOT awarded $950,000 in grants to communities located along the I-69 corridor in Southwest Indiana. Within Section 5, Morgan County, the Town of Mooresville, and the City of Martinsville together were awarded a grant for $150,000. On February 1, 2008, Monroe County submitted an application for a $50,000 grant. The City of Bloomington was eligible for this program but chose not to participate. Monroe County was awarded a $50,000 grant, and the Town of Ellettsville was also awarded a grant for $50,000. Local communities used these grants to prepare transportation land use plans, zoning and subdivision ordinances, and special highway corridor "overlay zones" for development. In the second phase of the program, on July 30, 2008, a $100,000 grant was awarded to Monroe County and the Town of Ellettsville. This grant was used for the preparation of the Monroe County Comprehensive Plan (2012). A transportation corridor plan for SR 37/I-69 also was developed by Monroe County in 2010 as a result of the grant program. Grants awarded in this second round of grants brought the total grant awards to $1,500,000 in both rounds. For further details, please see **Appendix T**, *I-69 Planning Grant Program Update*.

[7] INDOT, "I-69 Planning Toolbox," *I-69 Community Planning Program*, http://www.i69indyevn.org/CommunityPlanningProgram (Last accessed 4/2/13).

2. **Context Sensitive Solutions (CSS)** is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist. CACs were developed in the fall of 2004 to facilitate communication between project team members and representatives of key constituent groups in the project area. Through a series of seven meetings (as of August 1, 2012), committee members learned details of the project and provided feedback on such subjects as local needs and plans, community issues, and the development of alternatives.

   Local access, traffic, farmland impacts, residential and economic development, and the potential impact of the project on emergency response times were the issues most frequently raised by CAC members as important considerations in planning the interstate's location and design features. The information they provided regarding travel patterns, local development plans, and critical emergency response routes helped guide the development of alternatives that would avoid or minimize farmland severances and maintain the connectivity of many local roads. The local access measures proposed in the project as part of the CSS process were listed above.

   In addition, Alternatives 6, 7, 8, and Refined Preferred Alternative 8 utilized a set of minimal impact design criteria that minimizes the environmental footprint of the interstate. The minimal impact design criteria help the roadway to make better use of the existing SR 37 pavement, structures, right-of-way, and general use of existing SR 37 ground contours.

   Another CSS measure addresses resource agency concerns with respect to wildlife crossings and the interstate. Section 5 includes six wildlife crossings, based on field reconnaissance, habitat and landscape connectivity, and sizes of existing bridges (as many bridges are anticipated to be rehabilitated in place), that provide opportunities for wildlife movement across existing SR 37 and the subsequent interstate. Refer to **Section 7.3.13**, *Ecosystem Impacts*, for additional information.

   Section 7.2, *Major Mitigation Initiatives*, discusses additional CSS issues or options that have been identified at this time. Further public input will be received during the final design stage. Other CSS may be incorporated as the study process continues for this project.

3. **Billboards and Utilities**—Billboards are located along the existing SR 37 roadway in various locations throughout the study corridor. Regarding billboards, as I-69 Section 5 is developed, INDOT will comply with provisions of federal requirements in 23 CFR Part 750, the 1972 agreement between the Governor of Indiana and the United States Department of Transportation, and Monroe County's zoning ordinance for signs. As part of the early coordination activities during the design phase, coordination will occur with outdoor advertising and utility companies. Utility relocation plans are a function of final design, which means coordination with utility companies involved in this phase of the project will continue during the final design phase of the project. A comprehensive GIS layer showing utility locations and (where appropriate) sizes will be prepared for use in the final design of the highway.

7.3.2 Social and Neighborhood

Section 5 has 83 residential subdivisions, apartments, and mobile home parks located within the study corridor, as listed below:

Morgan County

Subdivisions

Turkey Track	Liberty Valley	Lynn Drive
Old SR 37 (north)	Lands End	Legendary Hills
Hacker Creek		

Monroe County

Subdivisions

Mosswood Estates	Oakdale Square	Stone Hedge Manor
Squirrel Run Estates	Highland Village	Shelburne Estates/ Forest
Rolling Glen Estates	Fair Meadows	Muirfield
Farmers Field Acres	Cory Lane Estates	Bell Road / Kinser Pike
Archers	Shady Acres	Showers
Stanisfer	Maple Grove / Kimble Drive	Stonebelt / Purcell
Baily West	Waterman	Wayport Road
Eagleview	Forest Homes	Canyon Estates
Clear Creek	Dryer	Sample Road
Highlands	Arlington Place	Natures Haven
Batchelor Heights	Chandlersville	Green Cedar Hills
Hays	Stonelake Park	Windsor Private
Somorsbe	Cascade Park	Fox Hill Estates
Willow Creek	Fritz Terrace	Crossover/ Dittemore
Country Club Hills / Manor	Norwest Woods	Dittemore Road
Homestead	Stoneybrook	Chambers Pike
Garden Acres	Northwood Estates	Sylvan Lane
Woodhaven Estates	Marlin Hills	Ralston Woods
Van Buren Park	Kinser Pike / Acuff	Burma Road
Poplar Hill	Westwood	Bryant Creek
Leonard Springs	Arlington Park	Lancaster Park / Cambridge Spring

Apartments

Woodland Springs Apts.	Bradford Ridge Apts.	Forest Ridge / Copper Beech Apts.
Wapehani Hills Apts.	Park Square Apts.	Arlington Park Apts.
Oakdale Square Apts.	Canterbury House Apts.	Basswood Apts.

Mobile Home Parks

Hickory Heights MHP	Unnamed MHP	Garden Hill MHP
Longview MHP	E & N MHP	

In addition to the neighborhoods associated with the unincorporated communities and subdivisions, other rural residential clusters are located along many of the county roads within the Section 5 corridor. The following measures will be utilized to mitigate impacts on residential areas or local communities:

1. **Local and Access Roads**—Where reasonable and cost effective, local access roads (e.g., local access roads and road relocations) will be used to maintain accessibility for residences, farm operations, businesses, churches, schools, and other land uses. The determination of whether access roads to potentially landlocked parcels will be constructed or whether the landlocked parcels will be acquired due to the cost of providing access will be made during final design.

2. **Changes in roads used** by school bus routes will be discussed with the school systems well in advance of when they actually take place so the school systems can adjust routes in a timely manner. Where roads are severed, provisions for turnarounds will be included during the final design phase of the project.

3. **Road Closures**—Efforts have been made to minimize the disruption of local crossroads to minimize impacts to school bus and emergency provider routes. The alternatives were developed to avoid closure of local roads where possible; in some locations the interstate will overpass the county roads, while in other instances the county roads will bridge the interstate. Whether overpasses in these areas need wider shoulders or less steep grades will be investigated during the design phase of the project. With the exception of Acuff Road where local plans would not require one, any roads terminated at the interstate will be provided a cul-de-sac or other means to allow large vehicles such as school buses or county maintenance vehicles sufficient turn around space. Appropriate signing will be placed at the nearest intersection to warn that the road does not provide for through traffic. For further information about local road access closures, please refer to **Section 5.3.4.2**, *Travel Patterns and Local Public Road Connectivity*.

4. **Fire, Police, and Emergency Medical Services Provider Coordination**—The Section 5 study area includes 11 fire, police, and emergency medical service (EMS) providers. INDOT acknowledges that converting SR 37 to I-69 as a limited access facility would affect emergency and law enforcement response throughout the study area. Coordination has been ongoing with these service providers and is documented in **Appendix Z**, *Emergency Responder Coordination*. As a result of this coordination, INDOT has made the following commitments:

    - INDOT will continue to coordinate with emergency response and law enforcement personnel as the project progresses into final design, construction, and operation.
    - INDOT will work with fire response, township, and county governments regarding potential intergovernmental agreements for managing response based on I-69 Section 5 access changes.
    - Median emergency crossover locations will be confirmed by INDOT during final design, in coordination with emergency and law enforcement agencies.

5. **Bicycle and Pedestrian Accommodations**—Bicyclists regularly use secondary roads to cross SR 37 that are not officially designated as a bike route, such as Rockport Road, Tapp Road, SR 45/2nd Street, SR 48/3rd Street, Vernal Pike, and Arlington Road. Public outreach and comments received on the DEIS supported the incorporation of bicycle and pedestrian facilities into the project. Refined Preferred Alternative 8 would incorporate bicycle/pedestrian accommodations as described in **Table 7-2**.

Table 7-2: Refined Preferred Alternative 8 - Bicycle / Pedestrian Facility Commitments

Overpass	Existing Facility	Requested By Local Government	Proposed Facility							
			North Side of Road				South Side of Road			
			Bench Width[a]	Sidewalk/ Multi-Use Path Width	Curb (Y/N)	Bike / Shoulder Width	Bike / Shoulder Width	Curb (Y/N)	Sidewalk / Multi-Use Path Width	Bench Width[a]
That Road	NONE Uncurbed No Shoulder No Sidewalk	Monroe Co: On-street 5' bike lane adjacent to roadway.	0'	0'	N	5'	5'	N	0'	0'
Rockport Road	NONE Uncurbed No Shoulder No Sidewalk	Monroe Co: On-street 5' bike lane adjacent to roadway.	10'	0'	Y	5' (plus 2' gutter)	5' (plus 2' gutter)	Y	0'	10'
Fullerton Pike	NONE Uncurbed No Shoulder No Sidewalk	Monroe Co: South - 5' Sidewalk with grass setback from curb; North - 10' Multi-use path.	15'	10'	Y	N/A	N/A	Y	5'	10'
Tapp Road	West of SR 37 Uncurbed Sidewalk on South Side East of SR 37 Curbed Wide Outside Lane 10' Bench with 5' Sidewalk Both Sides	Monroe Co: South - 5' Sidewalk with grass setback from curb; North - 10' Multi-use path. City of Bloomington: South - 5' Sidewalk with grass setback from curb; North - 10' Multi-use path.	15'	10'	Y	N/A	N/A	Y	5'	10'
SR 45 / 2nd Street[b]	Curbed 10' Shoulder across bridge No Shoulder beyond bridge No Sidewalk	Monroe Co: South - 5' Sidewalk with grass setback from curb; North - 10' Multi-use path. City of Bloomington: South - 5' Sidewalk with grass setback from curb; North - 10' Multi-use path. Facilities should extend from W. of Basswood Dr. to W. of Liberty Dr.	10'	10'	Y	N/A	N/A	Y	5'	10'
SR 48 / 3rd Street[c]	Curbed 10' Shoulder across bridge No Shoulder beyond bridge West of SR37 North No Sidewalk South 11' Bench with 5' Sidewalk East of SR 37 No Sidewalk	Monroe Co: Same request as City. City of Bloomington: South - 10' Multi-use path with 6" curb and 5' Shoulder; North - 10' Multi-use path with 6" curb and 5' Shoulder. Facilities should extend from W. of Franklin Dr. to W. of Liberty Dr.	10'	10'	Y	5' (includes 2' gutter)	5' (includes 2' gutter)	Y	10'	10'

Table 7-2: Refined Preferred Alternative 8 - Bicycle / Pedestrian Facility Commitments

Overpass	Existing Facility	Requested By Local Government	Proposed Facility							
			North Side of Road				South Side of Road			
			Bench Width[a]	Sidewalk/ Multi-Use Path Width	Curb (Y/N)	Bike / Shoulder Width	Bike / Shoulder Width	Curb (Y/N)	Sidewalk / Multi-Use Path Width	Bench Width[a]
Vernal Pike/17th Street[d]	Vernal Pike North 10' Bench South 20' Bench with 5' Sidewalk 17th Street 10' Bench with 5' Sidewalk both sides	Monroe Co: North - 8' Multi-use Path; South - 5' Sidewalk. City of Bloomington: South - 6" curb with 10' Bench and 5' Sidewalk; North - 6" curb with 13' Bench and 8' Multi-use Path.	13'	8'	Y	N/A	N/A	Y	5'	20'
SR 46	10' Shoulder No Sidewalk	Monroe Co: No comment.	No Change to Existing Facility							
Arlington Road	5' Shoulder No Sidewalk	Monroe Co: No comment.	No Change to Existing Facility							
Kinser Pike	NONE No Shoulder No Sidewalk	Monroe Co: On-road 5' bike lane adjacent to roadway.	0'	0'	N	5'	5'	N	0'	0'
Walnut Street	North 4' Shoulder No Sidewalk South 8' Shoulder No Sidewalk	Monroe Co: No comment.	No Change to Existing Facility							
Sample Road	NONE No Shoulder No Sidewalk	Monroe Co: On-road 5' bike lane adjacent to roadway.	0'	0'	N	8'	8'	N	0'	0'
Chambers Pike[d]	NONE No Shoulder No Sidewalk	Monroe Co: On-road 5' bike lane adjacent to roadway.	0'	0'	N	8'	8'	N	0'	0'
Liberty Church Road	NONE No Shoulder No Sidewalk	Morgan County: No DEIS comment. Requested 8' shoulders across bridge as part of participating agency meetings to allow width for future expansion.	0'	0'	N	8'	8'	N	0'	0'

Notes:
[a] Bench width includes the sidewalk/multi-use path width.

[b] Lane configuration across bridge will need to be modified. In southeast quadrant of interchange, 2:1 slopes should be used to avoid impacts to adjacent access road for apartment complex. Handrail along sidewalk will be necessary in this area.

[c] Existing bridge widened on both sides to accommodate requested facilities. Project limits along 3rd Street extend from Gates Drive to Franklin Drive; therefore, INDOT will only build bike/pedestrian facility within this area (local officials requested extension to Liberty Drive). Bike/pedestrian facilities will be constructed from Franklin Drive, extending to Gates Drive on south side of 3rd Street, and extending to just west of Gates Drive and connecting into existing sidewalk on the north side of 3rd Street.

[d] Resting platforms may be necessary for sidewalk to comply with ADA requirements; maximum grade of sidewalk should not exceed 5%.

6. **Relocations**—The total number of potential displacements for Refined Preferred Alternative 8 include 119 residences (including apartment/duplex units), 17 businesses (including one combined residence and business (Wayport Kennels), and one church (Bloomington Holiness Church). Refined Preferred Alternative 8 was developed to minimize and avoid displacement impacts to the extent practicable based on anticipated construction limits. Displacements will be finalized in design. Under Refined Preferred Alternative 8, the following residences and businesses are not considered potential displacements in the FEIS; nevertheless, the use of final design elements may be necessary to avoid impacting these structures. Right-of-way limits at these locations, and possibly other locations, will be further adjusted based on final design:

   Residential:

   - A residence east of existing SR 37 near the northern terminus of Section 5 (Parcel #: 55-13-18-405-001.000-020)
   - A residence west of existing SR 37 south of Norm Anderson Road (Parcel #: 53-02-21-100-004.000-017)
   - A residence west of existing SR 37 south of Vernal Pike and Packinghouse Road (Parcel #: 53-05-31-101-010.000-004)

   Business:

   - Monroe Hospital Administration and Billing building (located west of existing SR 37 and south of Fullerton Pike). (Parcel #: 53-09-24-100-007.000-015)

   All acquisitions and relocations required by this project will be completed in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended, 49 CFR Part 24, and Title VI of the Civil Rights Act of 1964. No person displaced by this project will be required to move from a displaced dwelling unless comparable replacement housing is available to that person. INDOT will take required actions to ensure fair and equitable treatment of persons displaced as a result of this project up to and including providing replacement housing of last resort as defined in 49 CFR §24.404. Relocation resources for this project are available to residential and business relocatees without discrimination. Advisory services will be made available to farms and businesses in advance of acquisition, with the aim of minimizing the economic harm to those businesses and farm establishments. The Wayport Kennels property represents a unique relocation situation as it serves as a residence and a business.

   If a displaced resident cannot be relocated due to the unavailability of comparable housing, or because comparable housing is not available within the statutory limit of the Uniform Act, then housing of last resort will be made available to these persons. Last resort housing includes, but is not limited to, rental assistance, additions to existing replacement dwellings, construction of new dwellings and dwelling relocation. Replacement dwellings must meet the requirements of decent, safe, and sanitary standards as established by FHWA.

Relocation resources would be available to all relocatees without regard to race, creed, color, sex, national origin, or economic status, as required by the Uniform Act and Title VI of The Civil Rights Act of 1964. Financial assistance will be available to eligible persons displaced by this project. Payments received are not considered as income under the provisions of the Internal Revenue Code of 1954; or for the purposes of determining any person's eligibility, or the extent of eligibility, for assistance under the Social Security Act or any other Federal law.

7. **Cemeteries** – Nineteen (19) cemeteries are recorded within the project's historic resources APE. Of the cemeteries, three could not be field verified. Eight cemeteries are located in close proximity to at least one of the alternatives that were considered as part of the Section 5 project. They are Fullerton Cemetery, Parks/Bell/Wampler Cemetery, Griffith Cemetery, Tourner/Ridge/Wylie Cemetery, Carlton/Huff/Kendrick Cemetery, Simpson Chapel Cemetery (New), Simpson Chapel Cemetery (Old), and Stitt-Maxwell Cemetery. This project would be developed in accordance with Indiana Code regulating construction near cemeteries (IC 14-21-1-26.5) and (IC 23-14-44-1). If disturbance of ground within 100 feet of a cemetery gravesite is proposed, a development plan will be completed and submitted to IDNR-DHPA during the design phase of project development as per the Indiana Historic Preservation and Archaeology Act (IHPAA).

7.3.3 Noise

Section 5 transitions from urban with dense, single to multi-unit residences in the southern project area to rural in nature with residences generally located on widely scattered sites throughout the central and northern project area. The Refined Preferred Alternative 8 would result in 419 noise impacts at receptors in the Section 5 study corridor. These predicted exterior impacts are comprised of 396 residences, four churches, one cemetery, one hospital, one hotel (with 12 units), and five non-retail commercial buildings (offices, restaurants, etc.). The residential locations include 145 single-family units and 251 multi-family units at five apartment complexes (Basswood, Bradford Ridge, Copper Beach, Forest Ridge, and Oakdale Square). The following measures will be considered to mitigate noise impacts of the project on noise-sensitive receptors:

1. **Noise Abatement Measures**—Noise abatement measures have been analyzed. These included roadway geometrics (see next point) and noise barriers. Collectively, noise barrier analyses were conducted at 65 locations for the six alternatives. Three barriers were found to be both feasible and reasonable for this preliminary analysis (**Figures 5.10-2** and **5.10-3**, located at the end of **Section 5.10**, *Highway Noise*). Barrier 1 involves impacted receptors along southbound I-69 between Fullerton Pike and Tapp Road. Barrier 3 involves impacted receptors along northbound I-69 between Tapp Road and SR 45/2nd Street. Barrier 4 involves impacted receptors along northbound I-69 between SR 45/2nd Street and SR 48/3rd Street. Potentially affected property owners and/or tenants at the three potential barrier locations that met INDOT feasible and reasonableness criteria were surveyed in accordance with the requirements set forth in the *INDOT Traffic Noise Analysis Procedure* to determine whether they do or do not want noise abatement. As a result of the responses that were collected, the majority of the responding residences voted in favor of noise barrier construction.

A final determination on noise abatement for Refined Preferred Alternative 8 will be made during the design phase. At such time, additional noise analysis will be performed to more accurately determine barrier performance, barrier characteristics (length and height), and the optimal barrier location for any potential noise barriers that may be recommended for noise abatement.

2. **Roadway Geometrics**—The final design of Refined Preferred Alternative 8 may include shifting the alternative both vertically and horizontally, wherever feasible, to minimize noise impacts where other factors are not prohibitive.

3. **Construction Noise**—Consideration will be made to provide reasonable and feasible noise abatement, including noise barrier walls, early in construction for the added benefit of mitigating construction noise. Construction vehicles will be required to follow INDOT *Standard Specifications*[8] on controlling noise. Blasting will be performed in accordance with the INDOT *Standard Specification* 203.15 for roadway construction or other blasting specifications developed for the project. Consideration will be given to the timing of blasting in order to minimize noise impacts to sensitive receptors during periods of occupancy.

4. **Coordination Among Local Planning Authorities**—Since most of the proposed project would be located on existing roadway, there is limited potential for local officials and developers to minimize adverse noise impacts. With regard to currently undeveloped land, the creation of a "buffer zone" or locating noise sensitive developments a reasonable distance away from the project would help minimize future noise impacts. Local planning authorities will be provided with information that generally identifies the limits of where 66 dBA and 71 dBA noise levels are predicted relative to the proposed facility and can be utilized to direct noise compatible land uses outside the 66 dBA and 71 dBA buffer zones along the highway. This information is provided in **Appendix W**, *Final Noise Technical Report*. Copies of this FEIS will be provided to local officials.

7.3.4 Construction

Section 5 will be constructed as a freeway, using Best Management Practices (BMPs). The following measures will be utilized to mitigate construction impacts:

1. **Construction Plans**—Prior to construction, 327 IAC 15-5 (Rule 5) requires that the contractor develop a construction plan for stormwater discharges from construction activities of one acre or greater. Environmentally-sensitive locations (e.g., wetlands, historic structures, archaeology sites, sinkholes) in the general area will be clearly shown on construction plans. Sites outside the construction limits within the right-of-way will be delineated. These sites will not be permitted for use as staging areas, borrow, or waste sites.

2. **Erosion Control**—As part of the construction plan required under 327 IAC 15-5 (Rule 5), an erosion control plan and storm water pollution prevention plan (SWPPP) will be developed and approved by INDOT and IDEM prior to construction. As part of the erosion control plan

[8] INDOT, "Department of Transportation Standard Specifications 2012," http://www.in.gov/indot/files/2012Master.pdf.

and SWPPP, BMPs and erosion and sediment control measures will be in place in accordance with Chapter 205 of the INDOT Design Manual and/or the IDEM Storm Water Quality Manual, whichever is more stringent for each situation. BMPs can include non-structural control measures such as prohibitions of certain practices or operation and maintenance procedures that would minimize erosion and sediment runoff into waters. Erosion and sediment control devices, such as burlap, jute matting, grading, seeding, and sodding, will be used to minimize sediment and debris from leaving the project site in stormwater runoff and minimize sediment and debris in tributaries crossed by the project. Timely revegetation after soil disturbance will be implemented and monitored for coverage and viability. When revegetating sites, the contractor will take into consideration the site's specific needs for water quality and karst protection. Erosion control measures will be put in place as a first step in construction and maintained throughout construction. Any riprap used below the ordinary high water mark will be of a large diameter in order to allow space for habitat for aquatic species after placement. Slopes will be designed that resist erosion. If slopes exceed 2 to 1, they will include stabilization techniques. Soil bioengineering techniques for bank stabilization will be considered where situations allow.

INDOT will complete contractor compliance inspections on a regular basis to help control erosion and sediment on the project.

3. **Groundwater and Karst**—BMPs will be implemented during construction to protect groundwater. Where groundwater from private, individual wells is the principal source of potable water, grassy swales or equivalent methods to divert stormwater from the road to ditches and streams, and construction methods to reduce turbidity that construction temporarily causes, will be among the measures employed to protect sources of potable water. Stormwater runoff protection measures will be installed at all karst features in the right-of-way at the initiation of construction and maintained until all stormwater drainage has been diverted away from the feature or until final permanent stormwater treatment measures are in place.

   Procedures to reduce the impacts to karst will be implemented in accordance with INDOT's *Standard Specifications* and the 1993 Karst MOU between INDOT, IDNR, IDEM, and USFWS.

   Based upon previous USEPA written comments in Section 4, if active groundwater flow paths are discovered, measures will be taken to perpetuate the flow and protect water quality as part of the karst mitigation efforts.

   USEPA Class V injection well permits may be required for various types of projects. Most of the Class V well permits anticipated within Section 5 would be authorized by rule because there will be measures in place as part of sinkhole mitigation under the Karst MOU. While the specific karst features requiring a Class V injection well are not known at the EIS stage of the Section 5 project, they are likely to be related to sinkholes if they are modified to receive Section 5 stormwater drainage as part of final design. For example, such a permit could be required by USEPA Region 5 if a Class V injection well is located within the karst region of the state; a sole source aquifer area; a state designated source water protection area for a

public water supply; or, anywhere untreated fluids discharged through a Class V well may otherwise endanger an underground source of drinking water. If there are measures in place to prevent contamination of groundwater, a Class V well could be authorized by rule rather than by a permit. A Class V Well Inventory Form would need to be provided to USEPA Region 5 prior to construction of a Class V injection well so that USEPA could determine if a Class V injection well permit will be required for any Class V wells. For the I-69 project, if the inventory information provided indicates that any injection well would likely contaminate any underground source of drinking water, a permit would be required. Any permits would need to be applied for and obtained prior to construction of the Class V well.

4. **Air Quality**—Construction equipment will be maintained in proper mechanical condition. MSAT and diesel emission reduction strategies may also be employed to limit the amount of diesel emissions from construction equipment, such as limiting idling times, or reducing the number of trips. These and other strategies are detailed in **Appendix J**, *Air Quality Technical Report.* Fugitive dust generated during land clearing and demolition procedures will be controlled by proper techniques as documented in INDOT's *Standard Specifications*. These include, but are not limited to, vegetative cover, mulch, spray-on adhesive, calcium chloride application, water sprinkling, stone, tillage, wind barriers, and construction of a temporary graveled entrance/exit to the construction site. All bituminous and Portland cement concrete proportioning plants and crushers will meet the requirements of the IDEM. For any portable bituminous or concrete plant or crusher, the contractor must apply for and obtain a permit-to-install from the Permit Section, Air Quality Division of IDEM. Dust collectors must also be provided on all bituminous plants. Dry, fine aggregate material removed from the dryer exhaust by the dust collector must be returned to the dryer discharge unless otherwise directed by the project engineer.

5. **Parking and Turning Areas**—Prior to construction, planning for parking and turning areas outside the construction limits but within the right-of-way for heavy equipment will be located to minimize soil erosion and impacts to identified resources.

6. **Tree Clearing**—The potential construction impacts to the Indiana bat's summer and winter habitat will be addressed in accordance with the requirements of the USFWS's revised Tier 1 BO for the I-69 Evansville to Indianapolis project, which was issued on August 24, 2006 and amended May 25, 2011 and July 24, 2013 (see **Appendix BB**, *Revised Tier 1 Biological Opinion and Amendments*), and any subsequent formal consultation conditions specific to Section 5. These measures include the following (with revisions based on USFWS's updated dates):

    - Tree and snag removal will be avoided or minimized.
    - No trees with a diameter of three or more inches will be removed between April 1 and November 15 within the WAA, and April 1 and September 30 within the SAA, to avoid any direct take of Indiana bats. Tree clearing will be allowed in the WAA from November 16 to March 31and from October 1 through March 31 in the SAA.
    - Tree clearing and snag removal will be kept to a minimum and limited to within the construction limits and calendar requirements. Tree clearing will be kept to a

minimum outside of the clear zone with woods kept in as much of a natural state as reasonable in bifurcated sections with widened medians.

- Forested medians will be managed following the IDNR State Forest timber management plan.

7. **Emerald Ash Borer**—INDOT will comply with the requirements of 312 IAC 18-3-18 and Title 312 Natural Resources Commission Emergency Rule (LSA Document #12-195(E))[9] in regards to handling and transportation of cleared trees to prevent the spread of the emerald ash borer.

8. **Revegetation**—Revegetation of disturbed areas will occur in accordance with INDOT standard specifications. Woody vegetation will only be used a reasonable distance beyond the clear zone to ensure a safe facility. Revegetation of disturbed soils in the right-of-way and medians will utilize native grasses and native wildflowers as appropriate, such as those cultivated through INDOT's Roadside Heritage program.[10]

9. **Spill Prevention/Containment**—To fulfill Rule 5 (327 IAC 15-5) requirements, contractors will need to provide an acceptable spill response plan, as part of the overall construction plan required by 327 IAC 15-5. This response plan will include telephone numbers for emergency response personnel and copies of agreements with any agencies which are part of the spill-response effort. An emergency contact telephone number also is required.

10. **Heavy Blasting**—While heavy blasting is unlikely, in the event that it is required, strict blasting specifications will be followed.

    Blasting in karst areas will be completed following special provisions developed in consultation with limestone industry representatives as well as the IGS and other geology experts. It is anticipated that the Blasting Operations Specifications utilized during the Section 4 construction in karst areas will be utilized for the Section 5 activities. The specification was developed to protect karst and limestone resources.

    Blasting will be avoided between September 15 and April 15 in areas within 0.5-mile of known Indiana bat hibernacula. All blasting in the WAA will follow the specifications developed in consultation with the USFWS and will be conducted in a manner in attempt to avoid compromising the structural integrity or alter the karst hydrology of nearby caves serving as Indiana bat hibernacula.

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[9] Temporarily adds noncode provisions to amend 312 IAC 18-3-18, which provides standards and locations for the control or quarantine of emerald ash borers, to include all counties except Crawford County, Daviess County, Gibson County, Greene County, Knox County, Martin County, Perry County, Pike County, Posey County, Spencer County, Sullivan County, Vanderburgh County, and Warrick County in the areas of control or quarantine based upon inspections by the Division of Entomology and Plant Pathology of sites in Indiana where agricultural, horticultural, or sylvan products are being grown, shipped, sold, or stored, and where the director of the Department of Natural Resources has determined under IC 14-24-4-2 that emerald ash borers are present so as to warrant their quarantine and control. Effective May 1, 2012.

[10] INDOT's program was developed in cooperation with FHWA, IDNR, and IDEM and funded through a Federal Transportation Enhancement Project grant. The program promotes the use of native plants in state rights-of-way. The plants are grown on state-owned seed farms. The native plants not only provide aesthetic appeal along the highways, they also save the cost of frequent mowing, since the wildflower plantings are mowed only once a year, at the end of the growing season.

11. **Abandoned or Dry Petroleum Wells**—If an abandoned or dry petroleum well is encountered during construction, proper closure methods shall be implemented through coordination with the IDNR, Division of Oil and Gas, and IDEM.

12. **Maintenance of Traffic**—Traffic flow maintenance and construction sequences will be planned and scheduled to minimize traffic delays on existing public crossroads, where necessary. Coordination with local governments, emergency responders, and schools will take place during final design to ensure that appropriate access is maintained during construction with as little disturbance to emergency routes as possible. Local law enforcement officials, fire departments, and other emergency responders will be notified in advance of road closings and other construction-related activities that could affect their response times and routes so that they can plan alternative routes in advance. Early notice of detour routes will also be provided to the local communities. Signs will be used to notify the traveling public of road closures and other pertinent information, and the local news media will be notified in advance of road closings and other construction-related activities that could excessively inconvenience the community, so that motorists can be advised and plan alternative travel routes.

13. **Construction Noise**—Construction noise abatement measures may be required in areas where residences or other sensitive noise receivers are subjected to excessive noise from highway operations. Consideration will be made to provide reasonable and feasible noise abatement, including noise barrier walls, early in the construction phase for the added benefit of mitigating construction noise. Construction noise and vibration control measures may be required in areas where residences or other sensitive noise receptors are located, and will include those contained in INDOT's *Standard Specifications*. Noise impacts could be controlled through the regulation of construction time and hours worked, using noise-controlled construction equipment, limitations of construction vehicles during evening and weekend hours, and by locating equipment storage areas away from noise sensitive areas.

14. **Construction in a Floodway**—Construction in a Floodway permit(s) will be applied for before or during the design phase of this project.

15. **Surveys**—The undersides of existing bridges that must be removed for construction of I-69 will be visually surveyed and/or netted to determine their use as night roosts by Indiana bats during the summer. (Note: This work has been completed. Thirteen bridges and culverts in the Section 5 corridor were inspected for bats. No Indiana bats were found at any of the bridge locations within the Section 5 corridor.)

16. **Wetlands MOU**—Construction will adhere to the Wetlands MOU (dated January 28, 1991). The primary purpose of the Wetlands MOU is to fulfill water resource permitting requirements. In so doing, the Wetlands MOU serves to minimize impacts to the Indiana bat by mitigating for wetland losses and by creating bat foraging areas at greater ratios than that lost to the project.

17. **Equipment Maintenance**—Construction equipment will be maintained in proper mechanical condition. All servicing of construction equipment will take place in a

designated maintenance area away from environmentally-sensitive areas, such as streams, wetlands, karst features, and historic resources.

18. **Borrow Sites/Waste Disposal**—BMPs will be used during the construction of this project to minimize impacts related to borrow and waste disposal activities. Solid waste generated by clearing and grubbing, demolition or other construction practices will be removed from the location and properly disposed. All burning will be monitored. Burning of construction-related debris would be conducted in accordance with all local, state, and federal regulations, and INDOT's *Standard Specifications*. Contractors are required to follow safeguards established in INDOT's *Standard Specifications* (Section 203.08 Borrow or Disposal) that include obtaining required permits. Prior to their use, borrow sites will be assessed for impacts to resources such as archaeological resources, wetlands, etc., and appropriate measures taken to avoid or mitigate impacts to these resources. Special Provisions will include prohibiting tree clearing from April 1 to November 15 within the WAA of the Indiana bat, and from April 1 to September 30 in the SAA, as identified in the revised Tier 1 and Tier 2 BOs. Tree clearing will be allowed in the WAA from November 16 to March 31, and tree clearing will be allowed from October 1 through March 31 in the SAA. Special Provisions will also include prohibiting the filling or other damaging of wetlands within the right-of-way outside the construction limits.

19. **Wetlands Within the Right-of-Way**—Wetlands within the right-of-way that are not within the construction limits will be delineated and protected from construction impacts.

20. **Training of Construction and Maintenance Personnel**—All I-69 engineering supervisors, equipment operators, and other construction personnel and INDOT (and/or concessionaire) maintenance staff will attend a mandatory environmental awareness training that discloses where known bald eagle nests and sensitive Indiana bat sites are located in the project area, addresses any other concerns regarding bald eagles and Indiana bats, and presents a protocol for reporting the presence of any live, injured, or dead eagles or bats observed or found within or near the construction limits or right-of-way during construction, operation, and maintenance of I-69. Karst training will be developed for implementation during construction and is anticipated to include karst-specific field check meetings and a karst awareness video.

7.3.5 Historic and Archaeological Resources

The APE for the aboveground resources survey in Section 5 is centered on Alternative 3C, a primarily 2,000-foot wide corridor that was selected at the end of the Tier 1 Study as the preferred alternative to advance to the Tier 2 Studies. In Section 5, Alternative 3C primarily uses SR 37, an existing four-lane divided highway, for much of its right-of-way. In order to study all potential effects to historic properties by the undertaking, the length of the APE of Section 5 extends one mile beyond the termini of the approximately 21-mile long corridor. This results in areas of overlap with both Section 4 and Section 6. According to the Tier 1 MOA, "[t]his analysis is intended to ensure that decisions reached in one section do not prematurely limit consideration of avoidance alternatives for resources in adjacent sections." In general, the APE for the Tier 2, Section 5 Corridor is not less than 4,000 feet wide and is centered on existing SR 37, a four-lane divided highway. In some areas of relatively flat relief, the APE was expanded to

incorporate any potential physical, temporary and long term visual, atmospheric, or audible impacts or alterations to aboveground resources. The SHPO concurred with the APE in a letter dated May 25, 2005.

In the summer of 2011, the APE was enlarged in some areas to accommodate for additional potential effects. In some locations, due to the study of potential intersection improvements on other roads adjacent to SR 37, the APE was expanded to account for potential effects to resources within these areas. Primarily, the potential intersection upgrades would occur to serve traffic leading to and from the project area. Potential improvements may include road paving, restriping, and the addition of turn lanes. In the proposed intersection improvement areas, the APE was drawn to encompass the approximate project footprint, and to create a buffer around the intersection. In addition, the APE was expanded at potential highway interchanges located along Liberty Church Road, Paragon Road/Pine Boulevard, Sample Road, Walnut Street, and Kinser Pike. The APE now extends out from the center of those interchanges, incorporating any lands that may be visible from the interstate (by a person of average height), in consideration of existing tree stands and vegetation, field visits, and topographic mapping. The SHPO concurred with the expanded APE in a letter dated September 28, 2011. (See **Appendix N**, *Section 106 Documentation*, for a map of the APE).

For archaeological resources, the APE has been defined through consultation with the SHPO as the right-of-way for the preferred alternative. In Section 5, the right-of-way for the Refined Preferred Alternative 8 averages approximately 500 feet; however, the right-of-way widths vary from about 260 feet to over 790 feet depending upon the alignment, terrain features, and local access treatments.

For aboveground resources, the Daniel Stout House and the Maple Grove Road Rural Historic District are the only National Register of Historic Places (NRHP)-listed properties located within the Section 5 APE. In addition, 10 above-ground properties within the Section 5 APE were determined to be NRHP-eligible. These properties include: Monroe County Bridge No. 83, the Stipp-Bender Farmstead, the Philip Murphy-Jonas May House, the Maurice Head House, the North Clear Creek Historic Landscape District, the Hunter Valley Historic Landscape District, the Reed Historic Landscape District, Monroe County Bridge No. 913, Morgan County Bridge No. 161, and Morgan County Bridge No. 224. The Philip Murphy-Jonas May House is no longer extant. Alternatives 4 and 5 would have an adverse effect upon the North Clear Creek Historic Landscape District based upon over 9 acres of acquisition within the District. It has been determined that Alternatives, 6, 7, 8 and Refined Preferred Alternative 8 would have no adverse effect upon aboveground historic properties.

On October 11, 2012, FHWA signed a Finding of Effects for Section 5 of the I-69 Evansville to Indianapolis Study: Historic Properties Affected – Adverse Effect, due to the fact that the undertaking's effect on archaeological resources is not yet known. The SHPO concurred with the Adverse Effect finding on November 21, 2012. For detailed information, see the Identification of Effects Report and the 800.11(e) documentation in **Appendix N** and **Section 5.14**, *Archaeological Impacts*.

In terms of archaeological resources, a Phase Ia archaeological survey was conducted for the majority of the Section 5 preferred alternative archeological APE to identify whether NRHP-eligible archaeological resources are present and to determine what effect the proposed I-69 undertaking could have on those resources. A total of 83 sites were identified within the APE (see **Section 5.14**, *Archaeological Impacts*). Of all the surveyed sites, one site is a Contributing element to the North Clear Creek Historic Landscape District (12Mo1416), but is located outside the Refined Preferred Alternative 8 right-of-way limits. Three sites within, or in proximity to, the Refined Preferred Alternative 8 right-of-way limits are potentially eligible for listing in the NRHP (Site 12Mo1442 is located partially within the Refined Preferred Alternative 8 right-of-way; sites 12Mg456 and 12Mo1413 are located in proximity to the right-of-way). If unavoidable, the sites that are potentially eligible will be subjected to Phase II testing per a work plan submitted to the SHPO. A report of investigation will be submitted to SHPO for review and comment. Eleven sites have insufficient data for eligibility determination (12Mo1401, 12Mg467, 12Mg458, 12Mo1432, 12Mo1434, 12Mo1435, 12Mo1444, 12Mo1445, 12Mo1450, 12Mo1451, and 12Mo1452). The portions of these sites within the right-of-way limits did not contain significant archaeological deposits. Therefore, additional archaeological investigations were not recommended at these sites. The portions of sites outside the right-of-way were recommended for avoidance or additional study. There was also insufficient information regarding archaeological site 12Mg450. However, given its location, Phase Ic testing is recommended if it cannot be avoided by the project. The remaining 67 identified archaeological sites have been recommended as not eligible for listing in the NRHP. In addition, limited Phase Ic testing was recommended at 19 low-lying alluvial floodplain areas, in the vicinities of Little Indian Creek, Jordan Creek, and Buckner Branch, as well as other drainage areas in the project area (such as Beanblossom Creek and Bryant Creek).

Commitments for completion of additional archaeology investigations at these sites are included in an MOA. If the results of further testing show that additional archaeological investigations or mitigation would be warranted, that work would be completed, in consultation with the Indiana SHPO, before construction of the project could begin in those areas. The MOA also outlines procedures for completing additional Phase Ia survey work in previously unsurveyed areas of the APE. When the Refined Preferred Alternative 8 was delineated at the beginning of 2013, minor shifts in the proposed right-of-way created several small areas where the Phase Ia archaeological survey has not taken place. (See **Appendix N**, *Section 106 Documentation* for a copy of the MOA.)

The MOA further provides for the potential of a Post Review Discovery. As stipulated in the Section 106 MOA, in the event that one or more historic properties—other than Daniel Stout House, Maple Grove Road Rural Historic District, Monroe County Bridge No. 83, Stipp-Bender Farmstead, Maurice Head House, North Clear Creek Historic Landscape District, Hunter Valley Historic Landscape District, Reed Historic Landscape District, Monroe County Bridge No. 913, Morgan County Bridge No. 161, Morgan County Bridge No. 224, or the archaeological sites (12Mo1413, 12Mo1442, 12Mg450, and 12Mg456) and alluvial floodplain test areas—are discovered or that unanticipated effects on historic properties are found during the implementation of the MOA, FHWA shall follow the procedure specified in the 36 CFR Part 800 regulations in effect at that time, as well as Indiana Code §14-21-1-27 and Indiana Code §14-21-1-29, by stopping work in the immediate area and informing the Indiana SHPO and the INDOT

Cultural Resources Office of such unanticipated discoveries or effects within two (2) business days. Any necessary archaeological investigations shall be conducted according to the provisions of Indiana Code §14-21-1, 312 IAC §21, 312 IAC §22, and the most current "Guidebook for Indiana Historic Sites and Structures Inventory—Archaeological Sites."

At the conclusion of Tier 1, FHWA and INDOT entered into a Section 106 MOA. The Section 106 MOA includes the following stipulations and commitments between INDOT, FHWA, and the SHPO. The Section 106 consulting process in Section 5 during Tier 2 is in compliance with these commitments:

I. Section 106 Consultation during Tier 2 Studies

A. Tier 2 Sections. Section 5, as defined in the Tier 1 EIS, is considered a separate undertaking for purposes of Section 106 consultation.

B. Applicable Requirements. FHWA conducted Section 106 consultation for Section 5 in accordance with all applicable Federal and Indiana State laws and regulations, including Section 106 of the National Historic Preservation Act (16 U.S.C. §470f) and the Section 106 regulations (36 CFR Part 800), and also including 16 U.S.C. §470hh and 16 U.S.C. §470w-3, which require the confidentiality of archaeological site information to be maintained. Nothing in the MOA is intended to supersede or modify any requirement contained in the Section 106 statute, the Section 106 regulations, or any other applicable laws or regulations.

C. Coordination of Tier 2 Studies in Adjacent Sections. FHWA consulted with the SHPO regarding the coordination of Section 106 consultation activities in adjacent Tier 2 sections early in the development of this section.

D. Consulting Parties. During Tier 2, the same party may be designated as a consulting party for more than one section.

II. Tier 2 Section 106 Commitments and Conceptual Mitigation

As part of the Tier 1 MOA, FHWA and INDOT agreed to implement and/or fund the activities listed in this section as part of the Tier 2 environmental studies. The Tier 1 MOA also provided that additional commitments may be made, as appropriate, as an outcome of the Section 106 consultation process for each Tier 2 section. It has been determined that the Section 5 initial alternatives (4 and 5) would have an adverse effect to aboveground properties, but the Section 5 minimal impact design criteria alternatives (6,7, 8, and Refined Preferred Alternative 8) would have no adverse effects on aboveground properties. Since there are no adverse effects from the Refined Preferred Alternative 8 to aboveground historic properties in the Section 5 APE, there is no resolution of adverse effects required for aboveground resources. However, the MOA also included general mitigation stipulations as provided for in the I-69 Tier 1 MOA. These stipulations include two educational items, as provided in the Tier 1 MOA: a Multiple Property Documentation Form of the Dimension Limestone Industry, and if Monroe County chooses, an Educational Outreach Initiative, coordinated and implemented by the county with funding by FHWA.

Other stipulations in the MOA include additional coordination during design to avoid highway drainage impacts to historic landscape districts and the possible inclusion of landscaping and the use of limestone or other treatments, as coordinated between the community, FHWA, and INDOT as part of the Context-Sensitive Solutions process. The MOA was signed by SHPO on April 30, 2013, and the ACHP on May 9, 2013. See **Section 5.14**, *Archaeology Impacts*, for additional information and **Appendix N** for a copy of the MOA.

A. Avoidance and Minimization of Impacts in Section 5

1. In General. In accordance with the consultation process required under Section 106 and in accordance with other applicable laws, FHWA and INDOT sought ways to avoid, minimize, and mitigate adverse impacts to the environment, including adverse effects to historic properties.

   The following commitments should remain in place during design to ensure that Section 5 will not result in an adverse effect to aboveground properties:

   - No right-of-way will be taken from Maple Grove Road Rural Historic District or Hunter Valley Historic Landscape District.

   - Right-of-way property taken from North Clear Creek Historic Landscape District will not be more than what is currently shown for the Refined Preferred Alternative 8 (1.96 acres); minimization efforts will continue during final design.

2. Resources in Adjacent Sections. FHWA and INDOT ensured that the scope of work for Section 5 includes an analysis of resources (including aboveground and archeological resources) located just beyond the termini for that section. This analysis is intended to ensure that decisions reached in one section do not prematurely limit consideration of avoidance alternatives for resources in adjacent sections.

3. Alternatives Analysis in Tier 2 studies. Section 5 considered alternatives for completing I-69 between the beginning and end termini. The range of alternatives considered in Section 5 was confined to the corridor selected in Tier 1. However, the flexibility existed to consider alternatives outside the selected corridor.

4. Drainage Impacts to Historic Resources. In the early stages of design, FHWA and INDOT shall conduct at least one meeting with its design consultants or technical advisor and invite representatives from Monroe County, City of Bloomington, SHPO, consulting parties, and owners of property within the portions of the following historic districts within the Section 5 Project APE: Hunter Valley Historic Landscape District, Reed Historic Landscape District, and North Clear Creek Historic Landscape District. Drainage design plans will be presented and meeting participants will have an opportunity to ask questions and provide input on drainage related design aspects as they relate to the quality and quantity of water on historic

properties, especially quarries, within the quarrying landscape. FHWA and INDOT shall use Best Management Practices (BMP) on the Section 5 Project to ensure that roadway drainage from the Project does not introduce effects that adversely impact the water quality and quantity at these historic properties.

5. Context-Sensitive Solutions. FHWA and INDOT shall coordinate with the local community regarding context-sensitive solutions during the design phase of the Section 5 Project and shall incorporate aesthetic features into the design, in accordance with applicable INDOT policies. Potential aesthetic features may include landscaping, use of limestone or other treatments, as coordinated between the community, FHWA and INDOT.

6. Noise Abatement. Not required for historic properties in Section 5.

B. Preservation and Enhancement – Not required for historic properties in Section 5.

C. Education and Interpretation

1. Educational Outreach Initiative Funding. INDOT shall reimburse the Monroe County Historic Preservation Board of Review for the activities associated with the implementation of an educational outreach initiative, such as a tour, for the historic limestone quarries in Monroe County. Acceptable activities include the design and production of educational outreach materials and promotion and marketing initiatives. This reimbursement shall not exceed five thousand dollars ($5,000.00). Within one (1) calendar year of the signing of the MOA, the Monroe County Historic Preservation Board of Review, as a Certified Local Government (CLG), shall either prepare a proposal for the educational outreach initiative or the Monroe County Historic Preservation Board of Review shall review and select a proposal submitted by local individuals or groups. The proposal shall define and describe the initiative and shall include but not be limited to: a discussion of those entities that have committed to participate in developing and conducting the outreach initiative, goals, safety plan (if appropriate), project budget, milestones, and timeline for completion. Monroe County Historic Preservation Board of Review shall submit the proposal to FHWA, INDOT, and SHPO for a thirty (30) day review and comment/acceptance. If the FHWA, INDOT, or SHPO provides written comments, the Monroe County Historic Preservation Board of Review shall have sixty (60) days to make revisions to the educational outreach proposal in response to the comments. Monroe County through its representative the Monroe County Historic Preservation Board of Review shall have responsibility for the implementation of the educational outreach initiative. The reimbursement shall be implemented through an INDOT Local Public Agency (LPA) agreement with Monroe County. Monroe County, through the Monroe County Historic Preservation Board of Review, shall provide an annual progress report to FHWA, INDOT, and SHPO. The educational outreach initiative must be completed, provided to the public, and all funds expended within five (5) years of the signing of the MOA. This educational outreach initiative shall be considered to satisfy, for the Section 5

Project, the commitment in Stipulation II.C.2 of the 2003 I-69 Tier 1 MOA (i.e., "Memorandum of Agreement Between the Federal Highway Administration and the Indiana State Historic Preservation Officer Regarding the Selection of a Corridor for I-69, From Evansville to Indianapolis, Indiana"). If a proposal is not received within (1) calendar year of the signing of the MOA or the Monroe County Historic Preservation Board of Review declines to pursue the educational outreach initiative, then FHWA and INDOT obligations under this stipulation shall be concluded.

2. Multiple Property Documentation Form. FHWA and INDOT or their representatives shall fund the preparation of a Multiple Property Documentation Form nominating the Dimension Limestone Industry in Bloomington, Indiana, to the NRHP, in order to disseminate information about the history and potential property types relating to the aboveground and archaeological historic properties in the limestone industry within Section 5 of the Tier 2 Study. The Multiple Property Documentation Form shall be offered as a paper copy to selected repositories in Monroe County and in an electronic format for posting on selected websites and may include but not be limited to those of the NRHP (National Park Service), Indiana Department of Natural Resources/Division of Historic Preservation and Archaeology, and INDOT. This nomination shall be considered to satisfy, for the Section 5 Project, the commitment in Stipulation II.C.2. of the 2003 I-69 Tier 1 MOA (i.e., "Memorandum of Agreement Between the Federal Highway Administration and the Indiana State Historic Preservation Officer Regarding the Selection of a Corridor for I-69, From Evansville to Indianapolis, Indiana").

D. Technical Support for Section 106 Activities

1. GIS Capability. FHWA and INDOT will assist the SHPO to develop its GIS capability to facilitate Tier 2 consultation and to support historic preservation reviews for other transportation projects in Southwest Indiana. This has been completed.

2. Interim Reports. FHWA and INDOT will provide funding and technical assistance to support a comprehensive effort to update the Interim Reports for Monroe and Morgan counties.

3. Archaeology. FHWA and INDOT will provide financial and technical assistance to the SHPO for the further development of GIS-based tools for identifying and recording archaeological sites and development of the State Historical Architectural and Archaeological Research Database (SHAARD). This has been completed.

The IDNR-DHPA and INDOT have agreed upon a plan for support of the GIS capability and for the implementation of the Interim Reports. Together with FHWA, they have signed a Memorandum of Understanding (MOU) that allows for funding these endeavors.

7.3.6 Visual Impacts

Existing SR 37 is the primary visual feature throughout the Section 5 corridor. The view from SR 37 ranges from urban terrain in the southern portion near Bloomington to rolling agricultural terrain with areas of forest interspersed by several streams heading north to Martinsville. Development in the southern portion of the corridor around Bloomington is dense but becomes sparser as the road continues north. Between Bloomington and Martinsville, there are many rural residences, some farmsteads, and a few subdivisions. Some panoramic vistas that exist along SR 37 will remain in place, especially near the Old State Road 37 South near Martinsville. The following measures will be utilized to address impacts on visual resources:

1. **Design Elements—**Mitigation measures may include vegetative screening and roadside ditch enhancements with wetland and wildflower plantings. If feasible, existing screening will be retained along the existing highway right-of-way in the vicinity of Bloomington Auto Parts in accordance with IC 8-23-20-18.

2. **Context Sensitive Solutions—**Efforts will be made in this project to create positive impacts and reduce negative impacts without compromising traffic operations and safety. INDOT will continue to coordinate with local technical staff from the City of Bloomington, Monroe County and the Town of Ellettsville (as well as others in the community) to provide aesthetic treatments for such features as bridges, sound barriers, and medians during final design.

3. **Roadway Lighting**—Non-diffuse lighting will be considered, where appropriate. Any lights installed will be at least 40 feet above the highway in order to avoid collisions between bats and vehicles. Lighting locations will be identified during final design. The locations could include the SR 37, Fullerton Pike, Tapp Road, SR45/2nd Street, SR 48/3rd Street, and SR 39 interchanges.

7.3.7 Hazardous Material Impacts

Due to the long history of commercial, industrial, and dense population development in Bloomington area, numerous potential hazardous material sites were reported in the vicinity of the Section 5 Corridor. Of these, 15 sites (HM-1 to HM-15) were identified for additional evaluation for Section 5, including eight Underground Storage Tank (UST) and/or Leaking Underground Storage Tank (LUST) sites, one Resource and Conservation Recovery Act (RCRA) site, two Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites, and four sites through windshield surveys and interviews.

Mitigation measures for the 15 potential hazardous material sites (HM 1 to HM-15) are divided into five categories:

- **Final Design Confirmation** – While the Refined Preferred Alternative 8 right-of-way avoids residual contamination and migration routes for six HM sites, during final design it would be confirmed that this is still the case for final construction limits, right-of-way, and excavation depths. Confirmation will consist, at a minimum, of checking that the final design construction limits are either within existing SR 37 right-of-way and/or the

Refined Preferred Alternative construction limits, and that excavation depths are less than 10 feet below ground surface. In the event that avoidance of potential residual contamination or a migration route cannot be confirmed during final design, a Phase II Environmental Site Assessment (ESA) may be recommended.

- **Phase I ESA** – A Phase I ESA is recommended for two sites where a portion of an HM site is part of the Refined Preferred Alternative 8 right-of-way and additional information beyond that evaluated as part of the Section 5 FEIS is recommended. A Phase I ESA consists of an updated agency database review, IDEM VFC review, interviews of site and adjacent property owners and applicable agencies, title/property ownership research, historic aerial photographs, topographic maps, city directories, and insurance maps, and a site reconnaissance. The Phase I ESA may include a recommendation for a subsequent Phase II ESA. The Phase I ESAs will be performed prior to, or as part of, right-of-way acquisition.

- **Phase II ESA** – These will occur following a recommendation from a Phase I ESA. These also will occur for the five sites that were recognized as having potential residual contamination and/or migration routes as part of the Refined Preferred Alternative 8 FEIS evaluations. These may be planned property acquisition areas or properties adjacent to the Refined Preferred Alternative 8. A Phase II ESA consists of soil and/or groundwater sample collection for confirmation or investigation of potentially contaminated materials within the Section 5 Project from an off-site source prior to construction activities at a given location. The Phase II recommendations were based upon Section 5 FEIS agency records, interviews, and site observations for the Refined Preferred Alternative 8. While a Phase I ESA is not a requirement for conducting a Phase II ESA, a Phase I ESA may include a recommendation for a Phase II ESA. The Phase II ESAs will be performed prior to, or as part of, right-of-way acquisition.

- **Mitigation Commitment** – These have been made for two sites where hazardous materials have been previously recognized, delineated by previous Phase II ESAs, and remedial actions have been performed (Lemon Lane Landfill/ILCS recharge and Bennett's Dump Superfund sites).

- **Cautions** – These indicate locations where non-site specific potential hazardous materials could be encountered as part of the Refined Preferred Alternative 8. Examples include undocumented underground storage tanks (USTs) removals and sampling or coordination with utilities or private parties which own electrical transformers. Coordination with parties responsible for electrical transformers will occur before and during construction for removal of pole-mounted transformers.

Commitment for Final Design to Confirm No Impact

HM-3 Coca Cola, the Refined Preferred Alternative 8 does not impact/is not impacted by a former UST located at 1701 Liberty Drive, Bloomington, at a bottling facility adjacent to the northwest entrance ramp at the SR 45 /2nd Street interchange.

HM-4 Kmart, the Refined Preferred Alternative 8 does not impact/is not impacted by a former UST located at 3175 W. 3rd St., Bloomington, in the Kmart parking lot, which is adjacent to the Refined Preferred Alternative 8 southwest exit ramp at the SR 48 / 3rd Street interchange.

HM-5 Former Amoco Unit 10116, the Refined Preferred Alternative 8 does not impact/is not impacted by a former gas station with five USTs, located at 3100 West 3rd Street, Bloomington, which has been closed with a No Further Action. Residual groundwater contamination may be located in the northwest quadrant of the SR 37 and 48/3rd Street interchange.

HM-6 Former Marathon, the Refined Preferred Alternative 8 does not impact/is not impacted by a former USTs located at 2830 W. 3rd St., Bloomington, at a former gas station, which is adjacent to improvements along 3rd Street just east of the interchange.

HM-8 Hanna Trucking, the Refined Preferred Alternative 8 does not impact/is not impacted by former at a former trucking/current contractor facility that had USTs located at 2520 Industrial Drive, 2830 W. 3rd St., Bloomington, to the southwest of the SR 37 and Vernal Pike intersection.

HM-12 INDOT Subdistrict the Refined Preferred Alternative 8 does not impact/is not impacted by an existing Aboveground Storage Tank (AST) and drums at 2965 N. Prow Road, Bloomington, at a roadway maintenance facility, adjacent to the Refined Preferred Alternative 8 mainline improvements.

Commitment for Phase I Site ESAs prior to property acquisition:

HM-1 C&H Stone, pre-regulatory operations, historic ASTs, and existing drums located at 4000 Rockport Road, Bloomington, at an active limestone mill and former quarry facility, which would be impacted by Refined Preferred Alternative 8 as a result of the improvements along Fullerton Pike. The Phase I ESA may include a recommendation for a Phase II ESA.

HM-10 Dotlich Crane Service, AST and historic operations at the northwest intersection of Crescent Road and West 17th Street, Bloomington, at a crane and heavy equipment facility, which would be impacted by Refined Preferred Alternative 8 as a result of the improvements in the eastern portion of the Vernal Pike/17th Street overpass. The Phase I ESA may include a recommendation for a Phase II ESA.

Commitment for Phase II Site ESAs

HM-2 Sam's Club #6437, the Refined Preferred Alternative 8 right-of-way will acquire property from a a current gas station with USTs located at 3205 W. State Highway 45, Bloomington which would be impacted by the Refined

Preferred Alternative 8 as a result of the improvements at the SR 45/2nd Street interchange. The Phase II ESA will be limited to proposed property acquisition area along the UST locations.

HM-9 Sturgis Auto Salvage, the Refined Preferred Alternative 8 right-of-way will acquire property from a towing and salvage operations located at 2810 West Hensonburg Road, Bloomington for the entire property as a result of the relocation of Industrial Park Drive in the southwest quadrant of the Vernal Pike/17th Street overpass.

HM-13 Hoosier Energy, the Refined Preferred Alternative 8 right-of-way will acquire property from a utility headquarters that contains transformer service and maintenance facility located at 7398 North SR 37, Bloomington. The Phase II ESA will be limited to excavation areas for proposed retaining wall and if existing SR 37 drainage is replaced along the western edge of the property.

HM-14 Johnson Oil Bigfoot (aka Circle K/BP), the Refined Preferred Alternative 8 right-of-way will acquire property from a fuel station located at 7340 North Wayport Road, Bloomington. The Phase II ESA will be limited to the proposed property acquisition area along the UST locations along the western edge of the property and downgradient of the site to the south.

HM-15 Bloomington Auto Parts, historic and ongoing salvage operations and 55-gallon drums located at 7650 North SR 37, Bloomington, at an automotive parts and salvage facility, which could impact construction activities for Refined Preferred Alternative 8. The Phase II ESA will be limited to existing SR 37 right-of-way.

Sites for Specific Measures

HM-7 Lemon Lane Landfill (Superfund Site), located southeast of the intersection of SR 37 and Vernal Pike, Bloomington, will not be directly impacted by Refined Preferred Alternative 8 mainline improvements. INDOT has made a mitigation commitment to prevent I-69 drainage from increasing above the existing SR 37 levels extending along the eastern side of SR 37 that is within the Lemon Lane Landfill/ILCS recharge area to address USEPA and IDEM concerns regarding indirect impacts from changes in existing groundwater flow. Blasting is not anticipated and will not be allowed adjacent to the site to prevent damage to the monitoring system.

HM-11 Bennett Stone Quarry (Superfund Site), located south of Hunter Lane, Bloomington, will not be directly impacted, by additional lane construction and earthwork under the Arlington Road bridge as part of the re-use of existing SR 46 interchange and Arlington Road bridge. INDOT has made a mitigation commitment to prevent I-69 drainage from increasing above the existing SR 37 levels extending along the northwest quadrant of the SR 37/SR 46 interchange

area to address USEPA and IDEM concerns regarding indirect impacts form changes in existing drainage at Site HM-11 - Bennett's Dump area. Blasting is not anticipated and will not be allowed adjacent to the site to prevent damage to the monitoring system.

Coordination with IDEM and USEPA has occurred throughout the Section 5 study and will continue through the final design phase for the hazardous waste and Superfund sites. Design plans will be provided to USEPA and IDEM for review in these areas with a two-week turnaround time for comment.

Cautions

Rural residences and farms were identified within the Section 5 corridor with the potential for ASTs and USTs to be present. These tanks are typically used for the on-site storage of chemicals associated with pesticides and herbicides and fuel for equipment. No specific sites were identified. If any of these ASTs and/or USTs are encountered within Refined Preferred Alternative 8, then they will be removed in accordance with applicable state and federal laws and regulations. As part of the removal of the USTs, an impact assessment consisting of soil and/or groundwater testing will be performed.

During the field inspection, utility owned, pole-mounted electrical transformers located along public rights-of-way were observed. No visible indicators of oil leakage were observed. Coordination will occur with the owners of electrical transformers before and during construction for proper handling and removal of any transformers or pipes affected by the Refined Preferred Alternative 8.

In addition, the following mitigation measures shall be implemented as required:

1. **Hazardous Material Cleanup**—Appropriate cleanup of hazardous materials and/or removal of USTs and ASTs may be required if a contaminated site is purchased. INDOT will coordinate with the appropriate agencies and property owners to see that proper cleanup of any contaminated sites are completed. To fulfill Rule 5 (327 IAC 15-5) requirements, contractors will need to provide an acceptable spill response plan, as part of the overall construction plan required by 327 IAC 15-5. This response plan will include telephone numbers for emergency response personnel and copies of agreements with any agencies which are part of the spill-response effort. An emergency contact telephone number also is required.

2. **Relocating Pipelines Transporting Hazardous Material**—Where construction would require the removal/relocation of buried fuel (oil, natural gas, and diesel) pipelines, coordination will occur with pipeline owners, per INDOT's *Standard Specifications*. Also, stipulations in the *Standard Specifications* will be followed to ensure safe removal/relocation of the pipelines and associated appurtenances, and appropriate remediation of soils and groundwater impacts, should such be necessary. In addition, the procedure will include advance notification of IDEM regarding the potential for contamination of groundwater and need for remediation.

3. **Discovery of Improperly Abandoned Wells**—INDOT will be responsible for proper closing of any improperly abandoned well discovered during construction within the project right-of-way, according to INDOT Standard Operating Procedures for closing wells that are to be abandoned. In addition, the procedure will include advance notification of IDEM regarding the potential for contamination of groundwater and need for remediation.

4. **Erosion Control -** As part of the construction plan required under 327 IAC 15-5, an erosion control plan and SWPPP will be developed and approved by INDOT and IDEM prior to construction. BMPs and erosion and sediment control measures will be implemented, as discussed previously in **Section 7.3.4**, *Construction Impacts*.

7.3.8 Floodplain Impacts

Major streams and FEMA mapped 100-year floodplains crossed in Section 5 are at Beanblossom Creek, Griffy Creek, Bryant Creek, Little Indian Creek, Jordan Creek, Buckner Branch of Little Indian Creek, and Indian Creek. A final hydraulic design study that addresses various structure size and types will be completed during the final design phase, and a summary of this will be included with the Field Check Plans and Design Summary. The following measures will be utilized to address impacts on floodplains:

1. **Encroachments**—Longitudinal and transverse floodplain encroachments will be minimized, where reasonable, through re-use of existing bridges, and design practices such as longer bridges and perpendicular stream crossings where new bridges are warranted. The crossings at Bryant Creek, Jordan Creek, and the Buckner Branch of Little Indian Creek are transverse crossings. A hydraulic study during final design will determine the length of the span. Refined Preferred Alternative 8 would encroach longitudinally upon the Little Indian Creek floodplain. The Beanblossom Creek and Griffy Creek floodplains are so broad that Refined Preferred Alternative 8's crossings could be classified as either longitudinal or transverse. The Indian Creek floodplain is only slightly encroached by the northern termini of each of the alternatives. There are no proposed improvements to the existing bridge over Indian Creek and thus, impacts to this resource shall be considered minor. Flood easements may be acquired at these or other locations if determined appropriate.

2. **Construction in a Floodway Permit**—INDOT will seek and secure a formal permit application to the IDNR, Division or Water, during the final design phase of the project for all areas that require a "Construction in a Floodway" permit.

7.3.9 Wetland Impacts

There are approximately 53.5 acres of wetlands (37.52 acres of forested wetlands, 3.41 acres of scrub/shrub wetlands, 2.23 acres of aquatic bed and 10.34 acres of emergent wetlands) and 29.68 acres of ponds within the Section 5 corridor. Within the Section 5 corridor there are 21 forested wetlands, 36 emergent wetlands, 7 scrub/shrub wetlands, 2 aquatic bed wetlands, and 43 open water ponds. Of these 109 wetlands in the Section 5 corridor, 33 wetland complexes are impacted by one or more alternatives (see **Section 5.19.2**, *Surface Waters*). For the purposes of

the Section 5 Indiana Wetland Rapid Assessment Protocol (INWRAP) analysis, some of these wetlands were combined into complexes.

The *Final Wetland Technical Report* (see **Appendix F**) identified 20 (excluding open water/PUB) of the wetlands that will be impacted by Refined Preferred Alternative 8 as "waters of the U.S.," and therefore under the jurisdiction of USACE and IDEM, and one as a "waters of the state" (isolated) and would be regulated solely by IDEM.[11] For the most part, the wetlands are poor to fair and not of high quality. The following measures will be utilized to address impacts on wetlands.

1. **Additional Avoidance and Minimization**—Wetlands and wetland complexes will continue to be avoided as much as possible. If unable to be avoided completely, wetland impacts will be minimized by shifts in the alignment. INDOT and FHWA are committed to mitigating for unavoidable wetland losses. Wetlands outside the actual footprint of the project will be protected from secondary construction impacts with methods such as erosion and sediment control measures, signage, and borrow/waste site control and location efforts. A firm commitment has been made that wetlands and other water resources will be actively avoided throughout the final design of the Section 5 roadway. All avoided water resource areas within the right-of-way will be identified on the design plans and these areas will have erosion control measures as approved by IDEM as part of the overall erosion control plan for the roadway project to prevent any filling or contamination of these areas during construction of the Section 5 project.

2. **Wetlands MOU**—Wetlands determined to be "waters of the U.S." will be replaced in accordance with the MOU between INDOT, USFWS, and IDNR as dated January 28, 1991, or any successor agreement entered into by these agencies. While not signatory to the agreement, USACE typically follows the mitigation ratios within the MOU. Under the 1991 MOU, wetlands would be mitigated as follows:

   - Farmed 1 to 1.
   - Scrub/shrub and palustrine/lacustrine emergent 2 – 3 to 1 depending upon quality.
   - Bottomland hardwood forest 3 – 4 to 1 depending upon quality.
   - Exceptional, unique, critical (i.e. cypress swamps) 4 and above to 1 depending upon quality.

   The identification of wetlands as "waters of the U.S." was based on definitions and guidance found in 33 CFR §328.3, *Corps Regulatory Guidance Letters, the Regional Supplement of the Corps of Engineers Wetland Delineation Manual: Midwest Region*, and field observations performed as part of the INWRAP evaluation. USACE and IDEM will make the

[11] USACE will make a jurisdictional determination that will take into account all aquatic resources, including wetlands, subject to Section 404 Permit jurisdiction. A wetland delineation report will be submitted to USACE prior to the submittal of the permit applications.

final determinations regarding the jurisdictional status of wetlands. See **Section 7.4**, *Environmental Mitigation Costs*, for estimated wetland mitigation quantities.

3. **Revised Tier 1 Conceptual Forest and Wetland Forest Mitigation Plan**—The *Revised Tier 1 Conceptual Forest and Wetlands Mitigation and Enhancement Plan* (see **Appendix S**) included a commitment to replace wetlands at a ratio of 3 to 1 for forested and scrub/shrub wetlands, and a ratio of 2 to 1 for emergent wetlands. The wetland mitigation sites will include an approximate 25% buffer area around them in appropriate areas. *The Revised Tier 1 Conceptual Forest and Wetlands Mitigation Plan* identifies the general location of 13 potential mitigation sites for the design and construction of wetlands and upland forest. For Section 5, the sites are West Fork White River (Bryant Creek) and Beanblossom Bottoms areas. The Morgan-Monroe State Forest area was identified as a secondary site. See **Section 7.2,** *Wetland Mitigation* and *Forest Mitigation*, for a description of these sites. The Section 5 Tier 2 BA identifies a total of 20 properties for mitigation. Seven (7) focus areas were targeted for Section 5 mitigation: West Fork (Bryant Creek) Maternity Colony, Lambs Creek Maternity Colony, Beanblossom Bottoms Nature Preserve Maternity Colony, Crooked Creek Maternity Colony (Section 6), Morgan-Monroe State Forest, Beanblossom Creek, and Maple Grove Road Rural Historic District. The 20 sites include properties to be acquired for preservation and those to be acquired for future restoration and replanting activities. These 20 sites are expected to provide a total of more than 1,500 acres of mitigation lands. Additional detail on these sites is presented in the Section 5 Tier 2 BA in **Appendix LL1**. Coordination with regulatory agencies has been initiated and will continue throughout the development of the proposed mitigation sites that will be offered for compensatory mitigation in Section 5. **Figure 7-3** through **Figure 7-5** (located at the end of the chapter) show examples of wetland mitigation.

4. **Wetland Pooling/Banking**—If appropriate, wetland mitigation may include wetland pooling or banking. Wetland pooling or banking is an effort to build one large wetland mitigation site to mitigate for a number of smaller impacts from potentially a number of projects typically in the same watershed. This typically results in a much more functional and valuable replacement wetland.

5. **Wetland Mitigation and Monitoring Plans**—As determined during Section 404 and Section 401 permitting and/or Flood Control Act administered by IDNR, detailed Wetland Mitigation and Monitoring Plans will be prepared. Additional measures to minimize impacts to specific wetland sites will be considered, including narrowing the right-of-way; installing drainage features such as swales to ensure that roadway runoff does not enter wetland areas; and, designing culverts to maintain the flow of water to a wetland area otherwise cut off from its existing water source.

6. **Spraying of Herbicides**—To prevent herbicides from entering wetland areas, “Do Not Spray” signs will be posted as appropriate in the right-of-way.

7.3.10 Farmland Impacts

Currently, agricultural lands comprise about 22.5% of the total corridor. The following measures will be used to address impacts to farmland:

1. **Existing Property Lines**—Where reasonable, alternatives will follow existing property lines and minimize dividing or splitting of large tracts of farmland to reduce the creation of point rows and uneconomic remnants.

2. **Farmland Access**—Many farm parcels that would otherwise lose access as a result of the project will be provided access via new roads as features of the project. Where providing access is not deemed reasonable from an economic standpoint (i.e., it would cost more to provide new access than to acquire the property), potential acquisition and disposition of landlocked parcels and uneconomic remnants will be addressed during final design. In several locations, overpasses will be provided to maintain the connectivity of local roads. The overpasses would facilitate access to farm operations divided by I-69.

3. **Farmland Protection**—The NRCS has been contacted, and appropriate analysis conducted in accordance with the Farmland Protection Policy Act for Section 5. Section 5 accrued a total point value of less than 160 points and is therefore within the "no significant impact to farmland" range; therefore, there will be no further consideration for farmland protection.

7.3.11 Forest Impacts

The following measures will be utilized to address impacts on forests:

1. **Forest Mitigation Ratio**—Upland forest impacts will be mitigated at a ratio of 3 to 1 for the I-69 Evansville to Indianapolis project as a whole, through the preservation and/or replacement of forested lands within Southwest Indiana. Mitigation goals are to replace direct forest impacts at a 1 to 1 ratio and provide an additional 2 to 1 ratio of forest preservation. All forest mitigation lands will be protected in perpetuity by conservation easements or other preservation mechanism. It is anticipated that most of the mitigation for forest impacts for this project will be located within the Section 5 Study Area (see item #2, below). However, forest mitigation is being developed on a project-wide basis, and may include large tracts that serve as mitigation for multiple Tier 2 sections. The 3 to 1 mitigation ratio may not necessarily be provided within each Tier 2 section; however, the total mitigation for all forest impacts will be 3 to 1. For purposes of discussing the potential mitigation requirements for forest impacts in Section 5 in this DEIS, the 3 to 1 ratio has been used. See **Section 7.4**, *Environmental Mitigation Costs*, for estimated forest mitigation quantities.

2. **Forest Mitigation**—INDOT has consulted with appropriate resource agencies regarding forest mitigation measures. Potential forest mitigation sites are identified in the *Revised Tier 1 Conceptual Forest and Wetlands Mitigation and Enhancement Plan & Comparison of Tier 1 Plans* (see **Appendix S**). The plan provides a list of possible replacement sites. For Section 5, the sites are the West Fork White River (Bryant Creek), Beanblossom Bottoms,

and Morgan-Monroe State Forest (Morgan County) areas (see **Section 7.2**, *Wetland Mitigation* and *Forest Mitigation*, for a description of these sites). The Section 5 Tier 2 BA identifies a total of 20 properties for mitigation. Seven (7) focus areas were targeted for Section 5 mitigation: West Fork (Bryant Creek) Maternity Colony, Lambs Creek Maternity Colony, Beanblossom Bottoms Nature Preserve Maternity Colony, Crooked Creek Maternity Colony (Section 6), Morgan-Monroe State Forest, Beanblossom Creek, and Maple Grove Road Rural Historic District. The 20 sites include properties to be acquired for preservation and those to be acquired for future restoration and replanting activities. These 20 sites are expected to provide a total of more than 1,500 acres of mitigation lands. Additional detail on these sites is presented in the Section 5 Tier 2 BA in **Appendix LL1**.

3. **Riparian Forest Mitigation**—Riparian impacts were calculated by identifying plant communities within 100 feet of a stream. If these riparian forests are identified as wetland forests, the impacts will be mitigated according to the Wetlands MOU. If the riparian forests are identified as non-wetland forests in a floodway, impacts will be mitigated according to IDNR ratios: 2 to 1 replanting, or 10 to 1 preservation. Impacts to non-wetland riparian areas that are not in a floodway will be mitigated in consultation with IDEM and USACE. All non-wetland riparian forest replacement will be included as part of the 3 to 1 upland forest mitigation. Refined Preferred Alternative 8 would impact 9.38 acres of non-wetland riparian habitat not already accounted for as part of forest mitigation. The total length of natural stream impacts for Refined Preferred Alternative 8 is estimated to be approximately 26,389 linear feet.

7.3.12 Stream and Water Body Modification Impacts

The following measures will be utilized to address impacts to streams and water bodies:

1. **Signage**—Water bodies, wetlands, and other natural areas outside the construction limits but within the right-of-way will be delineated and posted with “Do Not Disturb” signs.

2. **Tree Clearing**—Tree clearing and snag removal will be kept to a minimum and limited to within the construction limits and calendar requirements. In the median, tree clearing will be kept to a minimum with woods kept in as much a natural state as reasonable if it is sufficiently outside any clear zone requirements.

3. **Stream Relocations**—The realignment of surface streams or impacts to riffle-pool complexes and natural stream geomorphology will be avoided where reasonable. In instances where this is not possible, stream impacts will be minimized and mitigated. Stream relocations within Indiana bat maternity colony areas will be completed using the natural channel design features that are identified through coordination with the resource agencies. Stream mitigation will be completed to adequately mitigate for linear feet of stream impacts in coordination with regulatory agencies during the permitting process of the Section 5 project. Wherever possible, both banks of stream mitigation areas will be protected. If both banks cannot be protected, coordination with the regulatory agencies will be completed to identify the amount of mitigation credits that INDOT may receive based on the proposed mitigation site.

Coordination with regulatory agencies has been initiated and will continue throughout the development of the proposed mitigation sites that will be offered for compensatory mitigation in Section 5. Natural channel stream designs for perennial and larger intermittent stream relocation located within the Indiana bat maternity colony areas and the WAA may include but will not be limited to stream designs that incorporate riffle/run/pool/glide or step/pool sequences and sinuosity to replicate natural channel geomorphology, in stream natural structures (log and rock vanes) to help prevent streambank erosion, and riparian buffer plantings outside the clear zone of the roadway. Off-site channel restoration for compensatory mitigation will also be completed including the same natural channel design features.

Consideration will be given in the design phase to planting trees and shrubs along relocated streams and outside the right-of-way edge.

Continued efforts will be made during final design to identify design features that would minimize impacts at stream crossings, including measures to keep channel and bank modifications to a minimum and, where feasible, avoid channel alterations below the ordinary high water mark elevation. Mitigation of stream impacts could include installing three-sided culverts or oversized box culverts sunk into the streambed that would retain the natural channel bottom, thereby facilitating the migration of stream fauna through the culverts, and reducing impacts to the flow rate. The culverts should be of sufficient size to prevent upstream bed instability and erosion of downstream banks.

During the design phase, consideration will be given to using alternative armoring materials and include portions of dry land under the bridge opening that is not armored with riprap. The use of bio-engineering techniques to provide natural armoring of stream banks will be considered and implemented where practicable. Installation of riprap will be limited to areas necessary to protect the integrity of structures being installed. If riprap is required, it will be installed outside the thalweg and between the toe of slope and the ordinary high water mark (OHWM) where possible. In some instances, such as culvert inlets and outlets, riprap may need to be placed within the thalweg to prevent scour. Riprap will be installed at the same elevation as the thalweg to avoid fish passage issues. Riprap may also be needed above the OHWM to protect bridge piers and abutments from scour where bio-engineering will not suffice.

Other details of mitigation will be coordinated with the regulatory agencies with jurisdiction during the permitting process. In addition, INDOT will coordinate with IDEM, IDNR, and USACE to take into account any recent stream stabilization projects. In addition, any stream relocations required within an Indiana bat maternity colony area in Section 5 will be completed with a natural stream design. USFWS will be included in the coordination regarding the relocation during the permitting process to assure that any concerns relative to the Indiana bat are addressed as part of the stream relocation.

4. **Below-water Work**—Where reasonable, below-water work will be restricted to placement of piers, pilings and/or footings, shaping of spill slopes around the bridge abutments, and

placement of riprap. Any in-stream construction timing restrictions will be addressed during permitting.

5. **Channel Work**—Where appropriate, channel work and vegetation clearing shall be restricted to within the width of the normal approach road right-of-way (construction limits).

6. **Artificial Bank Stabilization**—The extent of artificial bank stabilization will be minimized. Soil bio-engineering techniques for bank stabilization will be considered where situations allow.

7. **Riprap**—If riprap is utilized for bank stabilization, it shall be of appropriate size and extend below the low-water elevation to provide for aquatic habitat.

8. **Culverts**—Culverts and other devices will be placed so that they do not preclude the movement of fish and other aquatic organisms. Culverts and other devices will be used to preserve existing drainage patterns. Consideration will be given to oversized culverts to allow for the passage of small fauna at locations where it is determined to be appropriate and reasonable. Current preliminary designs will maintain at least six bridges with Refined Preferred Alternative 8 that provide openings that are sufficiently large to allow deer and other wildlife to use them to cross under the new highway.

9. **Erosion Control**—As part of the construction plan required under 327 IAC 15-5, an erosion control plan and storm water pollution prevention plan (SWPPP) will be developed and approved by INDOT and IDEM prior to construction. As part of the erosion control plan and SWPPP, BMPs and erosion and sediment control measures will be in place in accordance with Chapter 205 of the INDOT Design Manual and/or the IDEM Storm Water Quality Manual, whichever is more stringent for each situation. BMPs can include non-structural control measures such as prohibitions of certain practices or operation and maintenance procedures that would minimize erosion and sediment runoff into waters. Erosion and sediment control devices, such as burlap, jute matting, grading, seeding, and sodding, will be used to minimize sediment and debris from leaving the project site in stormwater runoff and minimize sediment and debris in tributaries crossed by the project. Timely revegetation after soil disturbance will be implemented and monitored for coverage and viability. When revegetating sites, the contractor will take into consideration the site's specific needs for water quality and karst protection. Erosion control measures will be put in place as a first step in construction and maintained throughout construction. Any riprap used below the high water mark will be of a large diameter in order to allow space for habitat for aquatic species after placement. Slopes will be designed that resist erosion. If slopes exceed 2 to 1, they will include stabilization techniques. Soil bioengineering techniques for bank stabilization will be considered where situations allow.

   INDOT will complete contractor compliance inspections on a regular basis to help control erosion and sediment on the project.

7.3.13 Ecosystems Impacts

The southern one-third of Section 5 is urban while the northern two-thirds are a mix of agriculture and forest. Several wildlife habitat areas were identified within the Section 5 corridor (such as the Morgan-Monroe State Forest). Alternative alignments have been located to minimize impacts to wildlife habitats where possible. The following measures will be utilized to address impacts on ecosystems:

1. **Do Not Spray Or Mow**—Where karst features, woody vegetation, wetlands, wildflowers or environmentally-sensitive locations occur, "Do Not Spray or Mow" signs will be posted.

2. **Invasive Plant Species**—INDOT is a member of the Invasive Plant Species Assessment Group (IPSAWG), and as a member, develops recommendations for selling and planting plant species in the State. In mitigation sites and within the proposed right-of-way for I-69, INDOT will use appropriate herbicides and/or physical mechanisms to control invasive plants, such as purple loosestrife, canary reed grass, kudzu, Japanese knotweed, and others.

3. **Migratory Bird Treaty Act**—Coordination with the USFWS will continue pursuant to the Migratory Bird Treaty Act of 1918.

4. **Conservation Measures for Wildlife**—Transportation designers will work with appropriate agencies to determine the most feasible and practical conservation measures for the maintenance of wildlife movements and landscape connectivity.

5. **Mitigation Measures for Wildlife**—Wildlife crossings are proposed at the Section 5 locations discussed below to allow deer and other wildlife to use them to cross under the new highway. Based on field reconnaissance, habitat and landscape connectivity, and sizes of existing bridges (as many bridges are anticipated to be rehabilitated in place), Section 5 includes six wildlife crossings which are listed below. See **Appendix II**, *Wildlife Corridors Information*, for maps, photographs, and additional information on these crossings.

    a. Griffy Creek – The existing northbound bridge is 224.4 feet long and 23 feet high. The existing southbound bridge is 280 feet long and 23 feet high. For the Refined Preferred Alternative 8, the bridges would be rehabilitated and a new fifth span added to the northbound structure that would match the length of the southbound structure, providing the same size crossing as the existing structure.

    b. Beanblossom Creek (southern crossing) – Both the existing northbound and southbound bridges are 292.5 feet long and 23 feet high. For the Refined Preferred Alternative 8, both bridges are proposed to be rehabilitated in place.

    c. Beanblossom Creek Overflow (northern crossing) – Both existing northbound and southbound bridges are 153 feet long and 15.5 feet high. Wildlife that currently crosses SR 37 will continue to use these existing structures to cross under I-69. With the Refined Preferred Alternative 8, both bridges are proposed to be rehabilitated in place.

d. Bryant Creek – The existing northbound bridge is 142.4 feet long and 13.5 feet high. The existing southbound bridge is 142.5 feet long and 13.5 feet high. Wildlife that currently crosses SR 37 will continue to use these existing structures to cross under I-69. With the Refined Preferred Alternative 8, both bridges are proposed to be rehabilitated in place.

e. Little Indian Creek – Both the existing northbound and southbound bridges are 75 feet long and 20 feet high. The Liberty Church interchange was shifted to the north to reduce floodplain and stream impacts to Little Indian Creek. Refined Preferred Alternative 8 proposes rehabilitation of the existing structures. The proposed west local access road bridge is directly adjacent to the rehabilitated structures and will convey the same opening as exists for the I-69 southbound bridge (a 6-foot by 6-foot allowance on both ends of the structure). There is little surrounding habitat at this location, but a narrow riparian corridor is present. Wildlife that currently crosses under SR 37 will continue to use these existing passages to cross under I-69. Refined Preferred Alternative 8 proposes rehabilitation of the existing structures.

f. Jordan Creek – Both the existing northbound and southbound bridges are 40 feet long and 11.25 feet high. The bridges are proposed for replacement at their current location in all alternatives. The proposed ramp and access road bridges over Jordan Creek will at a minimum provide the same bridge opening as the proposed mainline I-69 structures. There is little surrounding habitat at this location; however, wildlife that currently crosses under SR 37 will continue to use these existing passages to cross under I-69. The proposed dimensions for the Refined Preferred Alternative 8 bridges are 58 feet long by approximately 9.5 feet high.

The south side of Griffy Creek, as currently proposed in all alternatives, will provide a wildlife crossing in excess of the minimum dimensions required to allow larger mammals (i.e. male deer with antlers) to pass (at least 8 feet high by 24 feet) beneath the highway. The other five structures are currently sized to provide ambient light and also provide wildlife crossing opportunities for all but the largest mammals. The remainder of the Section 5 crossings will also provide additional crossing opportunities for smaller wildlife including small mammals, amphibians, and reptiles using smaller culverts and pipes.

During the final design phase, consideration may be given to incorporating vegetation plantings that will provide adequate cover for wildlife to access these crossings from adjacent areas of cover. Fencing to funnel wildlife toward these crossings will also be evaluated during design. Vegetation plantings and fencing will be assessed in regards to the habitat remaining after final design, the final size of structures, topography, fill material used in the roadway, and cost. Natural bottoms for the box culverts will be used for these crossings where feasible to further promote maintenance of aquatic communities and wildlife movement.

7.3.14 Water Quality Impacts

As the Qualitative Habitat Evaluation Index/Headwater Habitat Evaluation Index (QHEI/HHEI) scores indicate, the majority of streams crossed by the alternatives have low to moderate water quality. Only one of the 30 scores using QHEI analysis fell into the highest quality category.

About 6% of the HHEI scores fell into the highest quality categories. The Upper White River, Lower White River Watershed, and Lower East Fork White River Watershed are the three major watersheds traversed by the project corridor. These watersheds are briefly described in **Section 4.3.2**, *Water Resources*. The following measures will be utilized to address impacts on water quality:

1. **Stream Crossings**—Where reasonable, Refined Preferred Alternative 8 will cross streams at their narrowest floodway width and utilize existing stream crossings where appropriate.

2. **Stream Mitigation Plans**—Develop stream mitigation plans where necessary.

3. **Disturbed In-Stream Habitats**—Return disturbed in-stream habitats to their original condition, when possible, upon completion of construction in the area.

4. **Tree Clearing**—Minimize tree clearing and snag removal near streams and rivers. Note that providing approximately 20 feet of cleared space around a bridge would be permitted to allow sufficient room for bridge maintenance and inspection.

5. **Wetlands**—Avoid wetlands as much as possible and follow the Wetlands MOU dated January 28, 1991, between INDOT, IDNR, and USFWS. Replace all wetlands at the appropriate mitigation ratio as identified in the Wetlands MOU.

6. **Erosion Control**—Follow BMPs for erosion control in the project.

7. **Roadside Drainage**—Where appropriate, construct roadside ditches that are grass-lined and connected to filter strips and containment basins.

8. **Spill Prevention/Containment**—Include in roadway design appropriate measures for spill prevention/containment. Contractors will be required to provide an acceptable spill response plan. This response plan will include telephone numbers for emergency response personnel and copies of agreements with any agencies which are part of the spill-response effort. An emergency contact telephone number also is required. To fulfill Rule 5 (327 IAC 15-5) requirements, contractors will need to provide an acceptable spill response plan, as part of the overall construction plan required by 327 IAC 15-5. This response plan will include telephone numbers for emergency response personnel and copies of agreements with any agencies which are part of the spill-response effort. An emergency contact telephone number also is required. Special measures including diversions of highway runoff from direct discharge off of bridge decks into streams, and containment basins to detain accidental spills, will be incorporated into final design plans for perennial streams within any of the Indiana bat maternity colony areas.

9. **Road Salt Spray and Salt Runoff**—Make every effort to minimize the amount of salt used on the bridges and roads. Use of alternative substances or low salt (e.g., sand) as much as possible. INDOT's Standard Operating Procedures for applying deicing chemicals to roadways and bridges is included in this DEIS as **Appendix Q**, *INDOT SOP's – Wells, Asbestos, Snow & Ice Control*.

7.3.15 Managed Lands

For the purposes of this study, managed lands include all of the following: all outdoor recreational facilities, all publicly managed lands, and all private properties whose owners participate in federal, state, and local wetland, habitat, or other conservation and management programs. There are federal and state interests in many of the privately-owned managed lands in the form of cost-sharing agreements, purchased easements, or property tax reductions. Federal and state funds have been or are being expended on many of these properties. There are 15 privately-owned managed land properties and five publicly-owned or managed properties located throughout the Section 5 corridor. Nine of the privately-owned managed land properties participate in the IDNR Classified Forest and Wildlands Program (CFWP). Six are enrolled in the USDA-NRCS Conservation Reserve Program (CRP). Four managed land properties were avoided by all Section 5 alternatives. All six alternatives would require right-of-way acquisition from the remaining 16 managed land properties. Refined Preferred Alternative 8 would impact 8.29 acres of managed lands.

The CFWP and CRP programs do not involve relinquishment of ownership of the property through dedication of a permanent conservation easement or other method of terminating property rights. The properties are privately owned and are not officially designated as a park, recreational area, or wildlife or waterfowl refuge; therefore they do not qualify for protection under Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. §303(c) (see **Chapter 8**, *Section 4(f)*). With the exception of any wetland and forest areas within the managed properties, mitigation for impacts to the managed land areas could be accomplished through repayment to the resource agencies of an amount associated with each cost-sharing agreement and abiding by other agreement stipulations. These mitigation measures would apply only if the agreements are still in force (i.e., the time stipulated periods have not expired).

Wapehani Mountain Bike Park is a publicly-owned park that qualifies for protection under Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. §303(c). Refined Preferred Alternative 8 would acquire 1.73 acres of the park**.** FHWA, INDOT, and the City of Bloomington have agreed that mitigation for this Section 4(f) resource will be implemented in accordance with the Wapehani MOA (**Appendix QQ**). The land required for right-of-way will be purchased in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646), as amended in 1987 (Uniform Act). In addition, the City will be compensated to reconnect the portion of the trail impacted by the project in a manner that provides a similar challenge for the user and provides other aesthetic improvements identified by the City on property owned by the City within the Wapehani Mountain Bike Park. Coordination with the City will continue during final design.

Section 4(f) does not apply to the portion of the Morgan-Monroe State Forest within the Section 5 corridor, the Mill Creek Conservation Easement, and Brown's Woods (see 23 CFR § 774.11(d)). I-69 provides visitor access to the Morgan-Monroe State Forest; therefore, the following design features are committed to as part of the Refined Preferred Alternative:

- A local access road that connects the Sample Road Interchange with Chambers Pike will provide visitor access from the south.

- The overpass at Chambers Pike will provide access to forest property on the west side of SR 37/I-69.
- A local access road that connects Liberty Church Interchange with Old 37 will provide visitor access from the north.
- Directional signage will be provided from the Liberty Church and Sample Road interchanges to direct visitors to the State Forest.
- A local access road will be provided between Burma Road and Chambers Pike to maintain access to forest property on both sides of SR 37/I-69.

7.3.16 Threatened and Endangered Species

In addition to the Tier 1 Reasonable and Prudent Measures (RPMs) contained within the 24 August 2006 Incidental Take Statement for Tier 1 of the I-69 Evansville to Indianapolis project (and subsequently updated in the May 25, 2011 and July 24, 2013 amendments) the Service believes the following Tier 2 RPMs are necessary, appropriate, and reasonable for further minimizing incidental take of Indiana bats in Section 5 of I-69:

1. In the Section 5 Tier 2 BA (page 114), the FHWA proposed to implement numerous conservation measures and mitigation efforts as part of their proposed action and these measures are hereby incorporated by reference (including the recently added measure to work with private landowners to avoid tree clearing during the time period Indiana bats are present). These measures will benefit a variety of wildlife species, including Indiana bats. FHWA should take necessary steps to ensure that successful implementation of all conservation measures is achieved to the fullest extent practicable in a timely manner.

2. The implementation status of all the proposed conservation measures, mitigation efforts, and research and any related problems need to be monitored and clearly communicated to the Service on an annual basis.

The following terms and conditions were included in the Section 5 Tier 2 BO and will be completed as part of this project.

1. The FHWA, in consultation with the Service, must develop detailed, site-specific final mitigation plans for each secured mitigation site within six (6) months of securing the site or within six (6) months of the issuance of this BO, whichever is later. All mitigation sites must be identified and secured within 3 years of the issuance of this biological opinion, including the development of final mitigation plans. The mitigation plans will not be conceptual, but rather will contain detailed descriptions for each phase of mitigation including 1) initial construction and establishment, 2) 5-year, post construction monitoring phase, and 3) long-term management. The Section 5 final mitigation plans will address and/or establish the following: quantifiable criteria and methods for assessing success of all mitigation plantings and functionality of constructed wetlands and streams, approved lists of

tree/plant species to be planted (and their relative abundance/%), approved lists of herbicides for weed control, proposed construction schedules, annual post-construction monitoring schedules, and a long-term, ongoing management/ stewardship strategy.

To ensure timeliness, the FHWA must begin construction and/or reforestation within the Section 5 Mitigation Areas either before (the most preferable option) or during the first summer reproductive season (1 April – 30 September) immediately after any I-69 related tree clearing or construction begins in Section 5 anywhere within each 2.5-mile radius maternity area (see Figure 7 [of the Section 5 Tier 2 BO]). Once initiated, all Service-approved construction and tree plantings within the Section 5 Mitigation Areas must be completed within 3 calendar years.

2. FHWA will provide the Service with a written annual report that summarizes the previous year's monitoring, conservation and mitigation accomplishments, remaining efforts, and any problems encountered within Section 5. This annual report will be completed throughout the 5-year post-construction monitoring period. The annual report for Section 5 may be a stand-alone document or included as part of the annual report required under the Tier 1 Term and Condition Number 2 (amended May 25, 2011 and July 24, 2013).

The revised Tier 1 BO issued by USFWS listed conservation measures to minimize impacts and ensure that the construction of I-69 is not likely to jeopardize the continued existence of any federally-listed, threatened, or endangered species, or result in the destruction or adverse modification of their Critical Habitat. The following conservation measures were jointly developed by the FHWA, INDOT, and the USFWS during informal consultation and were subsequently incorporated into the Tier 1 BA and the Tier 1 BA Addendum as part of the official Proposed Action for the I-69 project. Since conservation measures are part of the Proposed Action, their implementation is required under the terms of the consultation. These measures were specifically designed to avoid and minimize impacts of the proposed action on Indiana bats and bald eagles and to further their recovery. It should be noted that only those portions of the text having some applicability to Section 5 are cited below. Where text included in the Section 5 Tier 2 EIS has received a status update or has otherwise changed due to planning or design modifications, it is noted as *Update* following the applicable text. In the event of any differences of wording between the conservation measures listed below and the revised Tier 1 BO or amendments, the latter takes precedence.

INDIANA BAT (*Myotis sodalis*)

A. CONTEXT SENSITIVE SOLUTIONS

WINTER HABITAT

1. **Alignment Planning—**Efforts will be made to locate Interstate alignments beyond 0.5 miles from known Indiana bat hibernacula.

Status – All six alternatives have been located greater than 0.5 miles from all of the 15 known Indiana bat hibernacula.

2. **Blasting** – Blasting will be avoided between September 15 and April 15 in areas within 0.5 miles of known Indiana bat hibernacula. All blasting in the WAA will follow the specifications developed in consultation with the USFWS and will be conducted in a manner that will not compromise the structural integrity or alter the karst hydrology of nearby caves serving as Indiana bat hibernacula.

   Status – To be completed.

3. **Hibernacula Surveys** – A plan for hibernacula surveys will be developed and conducted in consultation with and approved by USFWS during Tier 2 studies.

   Status – The survey plan was developed in consultation with USFWS, and fieldwork has been completed. To date, 373 cave records were evaluated, and 250 caves were visited in the field. Of these, 61 caves were surveyed for Indiana bats in 2004-2005, and 16 caves had fall harp trapping in 2005. The 16 caves that were harp trapped in the fall of 2005 also had internal cave surveys completed in December 2005. Three new Indiana bat hibernacula were identified as a result of these surveys.

4. **Karst Hydrology –** To avoid and minimize the potential for flooding, dewatering, and/or microclimate (i.e., temperature and humidity) changes within hibernacula, site-specific efforts will be made to minimize changes in the amount, frequency, and rate of flow of roadway drainage that enters karst systems that are determined to be hydrologically connected to Indiana bat hibernacula.

   Update – No additional roadway runoff from I-69 Section 5 above the existing SR 37 levels will be directed to karst features with hydrological connectivity to Indiana bat hibernacula.

AUTUMN/SPRING HABITAT

5. **Tree Removal** - To minimize adverse effects on bat habitat, tree (three or more inches in diameter) cutting will be avoided within five miles of a known hibernaculum. If unavoidable, cutting will only occur between November 15 and March 31.

   Update – USFWS has clarified that cutting can only occur within the WAA between November 16 and March 31. No tree cutting (trees with a diameter of three inches or more) within the WAA will occur between April 1 and November 15.

SUMMER HABITAT

6. **Alignment Planning—**Efforts will be made to locate interstate alignments so they avoid transecting forested areas and fragmenting core forest where reasonable.

   Status – Efforts have been made to avoid and minimize fragmenting forests.

7. **Tree Removal—**Tree and snag removal will be avoided or minimized as follows:

   Tree Cutting—To avoid any direct take of Indiana bats, no trees with a diameter of 3 or more inches will be removed between April 1 and September 30. Tree clearing and snag removal will be kept to a minimum and limited to within the construction limits. In the median, outside the clear zone, tree clearing will be kept to a minimum with woods kept in as much a natural state as reasonable. Forested medians will be managed following the IDNR State Forest timber management plan.

   Update – The Revised Tier 1 BO and the Section 1 Tier 2 BO include the dates of April 15 to September 15. However, after that BO was issued, USFWS provided (on February 14, 2008) revised tree clearing restriction dates of April 1 to September 30 for areas not within the Indiana bat WAA. Within the WAA, tree cutting can only occur between November 16 and March 31. No tree cutting (trees with a diameter of three inches or more) within the WAA will occur between April 1 and November 15. Although the I-69 project is governed by the conditions of the BO, INDOT and FHWA have adopted the updated tree clearing restriction dates for the project.

   In addition, should USFWS so desire, INDOT and FHWA will assist USFWS in distributing letters to the property owners in the Section 5 corridor designed to increase awareness of the impact of tree harvesting on Indiana bats. INDOT will also send a letter to each property owner in the right-of-way, stating that INDOT is not working with any logging companies in the development of I-69. This information should prevent any confusion on the part of the landowners that INDOT advocates, condones or permits logging on the property prior to the time when INDOT purchases the property for the Project. INDOT and FHWA will also work with USFWS to identify logging activities within the project area, and INDOT will notify USFWS of any logging activity discovered. This notice will allow USFWS to take appropriate action under the ESA as warranted.

8. **Mist Netting—**In areas with suitable summer habitat for the Indiana bat, mist net surveys will be conducted between May 15 and August 15 at locations determined in consultation with USFWS as part of Tier 2 studies. If Indiana bats are captured, some will be fitted with radio transmitters and tracked to their diurnal roosts for at least five days unless otherwise determined by USFWS.

   Status – Completed. For the entire I-69 project, a total of 148 mist net sites were surveyed (24 located in Section 5) in 2004, and 49 sites (three located in Section 5) were surveyed or resurveyed in the summer of 2005. Captures in Section 5 included four adult male Indiana bats and one lactating female Indiana bat from five sites. Two of these captures occurred approximately within 1,000 feet of the proposed I-69 centerline. Two roosts were found in Section 5 from radio tagging of the bats. These roost locations were not within the Section 5 corridor and were not identified as maternity roost colonies. Additional mist netting surveys were completed during the summer of 2005. The 2005 surveys focused around the location of Indiana bat captures where no primary roost trees were identified in 2004. Three mist net sites were surveyed for a total of 12 net nights. One lactating female Indiana bat was captured. The lactating female was radio-tagged

and successfully tracked to four new roost trees. None of these roosts were located within the project corridor.

Additional mist netting surveys were completed during the summer of 2012. A total of 12 Indiana bats were captured. Transmitters were attached to five Indiana bats, and all were tracked to at least one specific roost. Two adult males were captured and tracked to a total of three roost trees. A third adult male was captured and tracked to a batbox near a residence. Two pregnant females were captured and successfully tracked to a total of three roosts. None of these roosts were located within the project corridor.

9. **Bridges—**Bridges will include the following design features:

   a. **Surveys—**The undersides of existing bridges that must be removed for construction of I-69 will be visually surveyed and/or netted to determine their use as night roosts by Indiana bats during the summer.

      Status – Completed. A total of 259 bridges and culverts were inspected for Indiana bats. Of the bridges surveyed, Indiana bats were found under one bridge in the Section 3 study corridor. (Note: Thirteen bridges and culverts were surveyed in Section 5; however, no Indiana bats were found roosting under the bridges and culverts associated with the Section 5 corridor.) At a bridge associated with the Section 3 corridor, five of the 13 Indiana bats captured in the 2004 Indiana bat study area were found. In 2005, an assessment at the same location found nine Indiana bats during the day and six at night. INDOT and FHWA have worked with USFWS to provide fencing below this bridge at both ends to prevent human disturbance.

   b. **Bat-friendly Bridges—**Where feasible and appropriate, interstate and frontage road bridges will be designed to provide suitable night roosts for Indiana bats and other bat species in consultation with USFWS.

      Update – Due to concerns relative to attracting bats to the high-speed interstate facility, it is currently proposed to not include any bat friendly bridges on I-69.

   c. **Floodplains—**Where reasonable and appropriate, floodplains and oxbows will be bridged to protect environmentally sensitive areas.

      Update – To be completed. Although it is not anticipated that any floodplains in Section 5 will be bridged in their entirety, floodplain encroachments will be minimized, where reasonable, by utilizing existing bridge crossings and through design practices such as longer bridges and perpendicular stream crossings where new crossings are warranted. The Section 5 study corridor contains several 100-year floodplains. These mapped floodplains include: Indian Creek and the eastern edge of the White River floodplain; the confluence of Little Indian Creek, Jordan Creek, and Buckner Branch of Little Indian Creek; Bryant Creek; the confluence of Beanblossom Creek and Griffy Creek; and, Stout Creek. With the exception of Little Indian Creek (transverse crossing), and Bryant Creek (longitudinal crossing), it is difficult to precisely determine if crossings shall be considered longitudinal or transverse because

the floodplain is so broad in those areas. A final hydraulic design study will be completed during the design phase to determine the length of the spans, and a summary of this will be included with the Field Check Plans and Design Summary.

10. **Stream Relocations**—Site-specific plans for stream relocations will be developed in design considering the needs of sensitive species and environmental concerns. Plans will include the planting of woody and herbaceous vegetation to stabilize the banks. Such plantings will provide foraging cover for many species. Stream Mitigation and Monitoring plans will be developed for stream relocations, as appropriate.

    Status – To be completed.

ALL HABITATS

11. **Medians and Alignments**—Variable-width medians will be used where appropriate to minimize impacts to sensitive and/or significant habitats. Context Sensitive Solutions will be used, where possible. This may involve vertical and horizontal shifts in the interstate.

    Status – A typical median width of 60 feet is proposed for Section 5. No trees will be left in the median for the majority of the Section 5 corridor with the exception of a small stretch (approximately 1.4 miles) of split roadway north of Burma Road and Bryant's Creek Road in the area of the Morgan-Monroe State Forest. This split minimizes impacts to forest habitat, the State Forest, and streams.

12. **Minimize Interchanges**—Efforts have been made to limit interchanges in karst areas, thereby limiting access and discouraging secondary growth and impacts. In Tier 2, further consideration will be given to limiting the location and number of interchanges in karst areas.

    Status – Interchanges were designed to minimize impacts in karst areas. Specific design elements used included folded ramps, the use of smaller urban style interchanges in rural areas, using existing interchange locations when possible, using existing overpasses when possible, and using existing pavement layouts when possible.

13. **Memoranda of Understandings (MOUs)**—Construction will adhere to the Wetlands MOU (dated January 28, 1991), and the Karst MOU (dated October 13, 1993). The Wetlands MOU minimizes impacts to the Indiana bat by mitigating for wetland loss; and creating bat foraging areas at greater ratios than that lost to the project. The Karst MOU avoids and minimizes impacts to the Indiana bat by numerous measures which protect sensitive karst features including hibernacula.

    Status – Wetland impacts associated with Section 5 will be mitigated in accordance with the Wetlands MOU. Procedural steps 1 through 4 of the 17 procedural steps outlined in the Karst MOU are being addressed in Tier 2. Additional procedural steps will be addressed during design.

14. **Water Quality**—Water contamination will be avoided/minimized by the following:

a. **Equipment Service**—Equipment servicing and maintenance areas will be designated to areas away from streambeds, sinkholes, or areas draining into sinkholes.

   Status – Procedural steps 1 through 4 of the Karst MOU are being addressed in Tier 2. Additional procedural steps will be addressed during design.

b. **Roadside Drainage**—Where appropriate, roadside ditches will be constructed that are grass-lined and connected to filter strips and containment basins.

   Update – Specific impacts to karst features and treatment of drainage have not been determined at this time. Impacts to specific karst features will be addressed via consideration of alternative drainage and other appropriate mitigation features during final design. Such treatment measures include peat and sand filters, gravel filters, vegetated buffers, and lined spill or run-off containment structures.

c. **Equipment Maintenance**—Construction equipment will be maintained in proper mechanical condition.

   Status – To be completed.

d. **Spill Prevention/Containment**—The design for the roadway will include appropriate measures for spill prevention/containment.

   Status – Special measures including diversions of highway runoff from direct discharge off of bridge decks into streams, and containment basins to detain accidental spills, will be incorporated into final design plans for perennial streams within the Indiana bat maternity colony areas to address water quality concerns associated with Indiana bats. Measures for spill prevention/containment will be included in the roadway design. To fulfill Rule 5 (327 IAC 15-5) requirements, contractors will need to provide an acceptable spill response plan, as part of the overall construction plan required by 327 IAC 15-5. This response plan will include telephone numbers for emergency response personnel and copies of agreements with any agencies which are part of the spill-response effort. An emergency contact telephone number also is required.

e. **Herbicide Use Plan**—The use of herbicides will be minimized in environmentally sensitive areas, such as karst areas that are protective of Indiana bats and their prey. Environmentally sensitive areas will be determined in coordination with INDOT as appropriate. Appropriate signage will be posted along the interstate to alert maintenance staff.

   Status – The use of herbicides will be minimized within the environmentally sensitive habitats. Environmentally sensitive habitats within Section 5 include Cave A and Cave B recharge area. The limits for the low salt/no spray zone would be along I-69 continuing from Section 4 to 200 feet north of the existing Chambers Pike intersection along SR 37. Once I-69 is constructed there will be an overpass at Chambers Pike.

f. **Revegetation**—Revegetation of disturbed areas will occur in accordance with INDOT standard specifications. Woody vegetation will only be utilized beyond the clear zone. Revegetation of disturbed soils in the right-of-way and medians will utilize native grasses and wildflowers, as appropriate, similar to the native seed mixes of Indiana and other nearby states.

   Status – Revegetation of disturbed areas will occur in accordance with INDOT standard specifications. Woody vegetation will only be used a reasonable distance beyond the clear zone to ensure a safe facility. Revegetation of disturbed soils in the right-of-way and medians will utilize native grasses and wildflowers as appropriate, such as those cultivated through INDOT's Roadside Heritage program. Locations that may be considered, but are not limited to, include stream crossings and the interchange locations.

g. **Low Salt Zones**—A low salt and no spray strategy will be developed for this project. A signing strategy for these items will also be developed. The low-salt zones will be determined in coordination with INDOT. The low salt zones will be delineated in the section-specific Tier 2 BAs.

   Update – In Section 5, Bloomington Karst extends from approximately Clear Creek along SR 37, south of the Section 5 corridor, northward along SR 37 to approximately Arlington Road. Bloomington North Karst extends from the vicinity of Arlington Road north to the southern slope of the Beanblossom Valley. Simpson Chapel Karst extends from the northern slope of the Beanblossom Valley and continues north to just south of Chambers Pike. The limits for the low salt/no spray zone would be along I-69 continuing from Section 4 to 200 feet north of the existing Chambers Pike intersection along SR 37. Once I-69 is constructed there will be an overpass at Chambers Pike.

h. **Bridge Design**—Where feasible and appropriate, bridges will be designed with no or a minimum number of in-span drains. To the extent possible, the water flow will be directed towards the ends of the bridge and to the riprap drainage turnouts.

   Status – To be completed.

15. **Erosion Control**—Temporary erosion control devices will be used to minimize sediment and debris. Timely revegetation after soil disturbance will be implemented and monitored. Revegetation will consider site specific needs for water and karst. Erosion control measures will be put in place as a first step in construction and maintained throughout construction.

    Update – BMPs will be used in the construction of this project to minimize impacts of erosion. Erosion control measures will be put in place as a first step in construction and maintained throughout construction. Temporary erosion control devices, such as silt fencing, check dams, sediment basins, inlet protection, sodding, and other appropriate BMPs will be used to minimize sediment and debris in tributaries and karst features within the project area. Timely revegetation will be implemented after soil disturbance

and monitored for coverage and viability. Any riprap used will be of a large diameter in order to allow space for habitat for aquatic species after placement. Slopes will be designed that resist erosion. If slopes exceed 2 to 1, they will include stabilization techniques. Soil bioengineering techniques for bank stabilization will be considered where situations allow. INDOT will complete contractor compliance inspections on a regular basis to monitor control erosion and sediment on the project.

16. **Parking and Turning Areas**—Parking and turning areas for heavy equipment will be confined to sites that will minimize soil erosion and tree clearing, and will avoid environmentally sensitive areas, such as karst.

    Status – To be completed.

B. RESTORATION / REPLACEMENT

SUMMER HABITAT

1. **Summer Habitat Creation / Enhancement**—Indiana bat summer habitat will be created and enhanced in the Action Area through wetland and forest mitigation focused on riparian corridors and existing forest blocks to provide habitat connectivity. The following areas and possibly others will be investigated for wetland and forest mitigation to create and enhance summer habitat for the Indiana bat: Pigeon Creek, Patoka River bottoms, East Fork of the White River, Thousand Acre Woods, White River (Elnora), First Creek, American Bottoms, Ray's Cave, Sexton Springs Cave, Garrison Chapel Valley, Beanblossom Bottoms, White River (Gosport), White River (Blue Bluff), and Bradford Woods.

   In selecting sites for summer habitat creation and enhancement, priority will be given to sites located within a 2.5 mile radius from a recorded capture site or roost tree. If willing sellers cannot be found within these areas, other areas may be used as second choice areas as long as they are within the Action Area and close enough to benefit these maternity colonies, or are outside the Action Area but still deemed acceptable to the USFWS.

   Where appropriate, mitigation sites will be planted with a mixture of native trees that are largely comprised of species that have been identified as having relatively high value as potential Indiana bat roost trees. Tree plantings will be monitored for five years after planting to ensure establishment and protected in perpetuity via conservation easements.

   Status - The Section 5 Tier 2 BA identifies a total of 20 properties for mitigation. Seven (7) focus areas were targeted for Section 5 mitigation: West Fork (Bryant Creek) Maternity Colony, Lambs Creek Maternity Colony, Beanblossom Bottoms Nature Preserve Maternity Colony, Crooked Creek Maternity Colony (Section 6), Morgan-Monroe State Forest, Beanblossom Creek, and Maple Grove Road Rural Historic District. The 20 sites include properties to be acquired for preservation and those to be acquired for future restoration and replanting activities. These 20 sites are

expected to provide a total of more than 1,500 acres of mitigation lands. Additional detail on these sites is presented in the Section 5 Tier 2 BA in **Appendix LL1**.

2. **Wetlands MOU**—Wetlands will be mitigated at ratios agreed on in the Wetlands MOU (dated January 28, 1991). Wetland replacement ratios are as follows:

   a. Farmed wetlands 1 to 1.

   b. Scrub/shrub and palustrine/lacustrine emergent wetlands 2 - 3 to 1 depending upon quality.

   c. Bottomland hardwood forest wetlands 3 - 4 to 1 depending upon quality.

   d. Exceptional, unique, critical (i.e. cypress swamps) 4 and above to 1 depending upon quality.

   Update – To be completed. The MOU was developed to ensure that wetland impacts are avoided, minimized, and mitigated to compensate for the loss of wetland functions and values. The Refined Preferred Alternative 8 impacts approximately 1.78 acres of emergent wetlands, 1.04 acres of scrub/shrub wetlands, 7.27 acres of palustrine unconsolidated bottom wetlands (ponds), 0.02-acre of aquatic bed wetlands, and 0.59-acre of forested wetlands. Based on the range of mitigation ratios described in **Section 7.3.9**, *Wetland Impacts*, the total area needed for mitigation of impacts to wetlands for Refined Preferred Alternative 8 is 10.61 acres (including 25% buffer).

3. **Forest Mitigation**—The *Tier 1 Forest and Wetlands Mitigation and Enhancement Plan* (included in **Appendix S**) identifies the general location of potential mitigation sites for upland and bottomland forests. Preference will be given to areas contiguous to large forested tracts that have recorded federal- and state-listed species. The actual mitigation sites implemented will be determined in or following Tier 2 in consultation with the USFWS and other environmental review agencies. Coordination with the environmental review agencies will assure that these forest mitigation sites are strategically situated in biologically attractive ecosystems. Forest impacts will be mitigated at a ratio of 3 to 1. All forest mitigation lands will be protected in perpetuity via conservation easements. The 3 to 1 forest mitigation may not be located entirely within the SAA. Forest impacts occurring within each of the thirteen[12] 2.5-mile radius maternity colony areas would be mitigated by replacement (i.e. planting of new forest and purchase of existing) at approximately 3 to 1, preferably in the vicinity of the known roosting habitat.

   Update – To be completed. For the I-69 Evansville to Indianapolis project as a whole, FHWA and INDOT committed to mitigate impacts to upland forests at a 3 to 1 ratio. Mitigation goals are to replace direct forest impacts at a minimum 1 to 1 ratio and

[12] Thirteen (13) Indiana bat maternity colonies were originally identified in Tier 1. Pre-construction mist netting in 2010 for a portion of Section 4 identified an additional maternity colony, and two additional colonies were identified in 2012 in Section 5. This brings the project-wide total to 16 maternity colonies.

provide up to a 2 to 1 ratio of forest preservation. The 3 to 1 ratio will be achieved for the overall I-69 Evansville to Indianapolis project; the ratio for an individual Tier 2 section could be higher or lower than 3 to 1. The potential impacts to upland forests due to I-69 Section 5 alternatives vary from approximately 227.66 acres (Refined Preferred Alternative 8) to 433.16 acres (Alternative 4). The total area needed for mitigation based on the 3 to 1 ratio would range from approximately 682.98 to 1,299.48 acres of mitigation. Of this total, 227.66 to 433.16 acres would be reforestation of agricultural land, and the remainder preservation of existing forest. All forest mitigation lands will be protected in perpetuity via direct purchase or conservation easements. **Figure 7-6** (located at the end of the chapter) shows an example of reforestation. Other areas may also be identified.

In Section 5, the proposed conceptual forest mitigation sites are described above. This mitigation will be accomplished either by purchasing and protecting existing tracts of forests or by planting trees. Preference will be given to areas contiguous to large forested tracts that have recorded federal- and state-listed threatened and endangered species. Coordination with resource agencies will assure that these forest mitigation sites are strategically situated in biologically attractive ecosystems. All forest mitigation lands will be protected in perpetuity via conservation easements or other appropriate measures. The species to be planted and the long-term management of these mitigation sites will be coordinated with the agencies relative to the conditions of the necessary permits and authorizations.

C. CONSERVATION / PRESERVATION

WINTER HABITAT

1. **Hibernacula Purchase**—Opportunities will be investigated to purchase at fair market value from "willing sellers," one or more Indiana bat hibernaculum(a) including associated autumn swarming/spring staging habitat. After purchase and implementation of all management efforts, the hibernaculum(a) and all buffered areas will be turned over to an appropriate government conservation and management agency for protection in perpetuity via conservation easements.

   Update – Three Indiana bat hibernacula within the WAA (including two Priority 1A caves) and one hibernaculum outside of the WAA have been purchased by INDOT.

2. **Hibernacula Protection**—With landowner permission, investigations will be coordinated with the USFWS on acquiring easements to erect bat-friendly angle-iron gates at cave entrances. These gates prevent unauthorized human access and disturbance of hibernacula, while maintaining free airflow within the hibernacula within the Action Area. Gates will be constructed according to designs from the American Cave Conservation Association. Effects of gates on water flow and flash flooding debris will be carefully evaluated before and after gates are installed. Other structures (e.g., perimeter fencing) or techniques (e.g., alarm systems and signs) may also be used.

Status – To be completed.

AUTUMN/SPRING HABITAT

3. **Autumn/Spring Habitat Purchase**—Any hibernaculum(a) purchased as part of conservation for Indiana bat winter habitat will include associated autumn swarming/spring staging habitat to the maximum extent practicable. Any purchase will be from a willing seller at fair market value. In addition, some parcels containing important autumn swarming/spring staging habitat may be acquired near key hibernacula regardless of whether the hibernacula are acquired themselves. Any acquired autumn swarming/spring staging habitat would be turned over to an appropriate government conservation and management agency for protection in perpetuity via conservation easements. The purchase of forest would be included as part of the 3 to 1 forest mitigation.

   Status – Three Indiana bat hibernacula within the WAA (including two Priority 1A caves) and one hibernaculum outside of the WAA have been purchased by INDOT. These purchases also include autumn/spring habitat.

SUMMER HABITAT

4. **Summer Habitat**—Investigations will be coordinated with the USFWS on purchasing lands at fair market value in the Action Area from "willing sellers" to preserve summer habitat. Any acquired summer habitat area would be turned over to an appropriate government conservation and management agency for protection in perpetuity via conservation easements.

   Status – To be completed.

D. EDUCATION / RESEARCH / MONITORING

WINTER HABITAT

1. **Monitor Gated Caves**—All caves that have gates erected as mitigation for this project will have their temperature, humidity, bat activity and populations monitored before and for three years after gate installation. Infra-red video monitoring or other techniques deemed acceptable by USFWS will be conducted for a minimum of two nights in the appropriate season at each newly installed cave gate to ensure the bats are able to freely ingress and egress. Data acquisition will use a number of data loggers minimizing the need for entry into these caves. All precautionary measures will be taken to minimize potential impacts to hibernating Indiana bats.

   Status – To be completed.

2. **Cave Warning Signs**—Where deemed appropriate by USFWS, the following may be done: signs will be posted that warn the public and discourage cave entry at hibernacula within/near the Action Area. Signs should be placed so that they do not block air flow into the cave and do not draw attention to the entrance and attract

violators (USFWS 1999). Also, light-sensitive data loggers may be placed within the caves to assess the effectiveness of the warning signs at deterring unauthorized entries. Permission from the landowners must be obtained before erecting such signs and installing data loggers.

Status – Cave warning signs will be placed near the entrances of caves as appropriate.

3. **Biennial Census**—Total funding of $50,000 will be provided to supplement the biennial winter census of hibernacula within/near the proposed Action Areas. Funding will be made available in consultation with the USFWS.

   Status – To be completed.

AUTUMN/SPRING HABITAT

4. **Autumn/Spring Habitat Research** Total funding of $125,000 will be provided for research on the relationship between quality autumn/spring habitat near hibernacula and hibernacula use within/near the Action Area. This research should include methods attempting to track bats at longer distances such as aerial telemetry or a sufficient ground workforce. A research work plan will be developed in consultation with the USFWS. Funding will be made available as soon as practical after Notice to Proceed is given to the construction contractor for the applicable Tier 2 Section (or earlier).

   Status – To be completed.

SUMMER HABITAT

5. **Mist Netting**—A work plan for surveying, monitoring, and reporting will be developed and conducted in consultation with and approved by USFWS. This mist netting effort will be beyond the Tier 2 sampling requirements. Fifty mist netting sampling sites are anticipated. Monitoring surveys focused at each of the 13[13] known maternity colonies will be completed the summer before construction begins in a given section and will continue each subsequent summer during the construction phase and for at least five summers after construction has been completed. If Indiana bats are captured, radio transmitters will be used in an attempt to locate roost trees, and multiple emergence counts will be made at each located roost tree. These monitoring efforts will be documented and summarized within an annual report prepared for USFWS.

   Update – Additional mist netting surveys were completed during the summer of 2012. A total of 12 Indiana bats were captured. Transmitters were attached to five Indiana bats, and all were tracked to at least one specific roost. Two adult males were

[13] Thirteen (13) Indiana bat maternity colonies were originally identified in Tier 1. Pre-construction mist netting in 2010 for a portion of Section 4 identified an additional maternity colony, and two additional colonies were identified in 2012 in Section 5. This brings the project-wide total to 16 maternity colonies.

captured and tracked to a total of three roost trees. A third adult male was captured and tracked to a batbox near a residence. Two pregnant females were captured and successfully tracked to a total of three roosts. None of these roosts were located within the Section 5 project corridor. Depending upon when construction begins for Section 5, the 2012 surveys may serve as the pre-construction surveys.

GENERAL

6. **Educational Poster**—Total funding of $25,000 will be provided for the creation of an educational poster or exhibit and/or other educational outreach media to inform the public about the presence and protection of bats, particularly the Indiana bat. Funding would be provided after a Notice to Proceed is issued for construction of the first section of the project.

   Status – To be completed.

7. **GIS Information**—GIS maps and databases developed and compiled for use in proposed I-69 planning will be made available to the public. These data provide information that can be used to determine suitable habitats, as well as highlight other environmental concerns in local, county, and regional planning. Digital data and on-line maps are being made available from a server accessed on the IGS Website at Indiana University (IU): http://igs.indiana.edu/arcims/statewide/index.html. In addition, detailed GIS forest data (five-meter resolution) has been developed for the 13 maternity colony foraging areas (circles with 2.5-mile radius) and WAA. This data was developed in order to better determine habitat impacts to the Indiana bat. This is the most accurate and detailed forest data known to exist for those areas. This data could potentially be used by USFWS, other government agencies, or students to examine effects on the Indiana bat, other species, or ecosystems over time.

   Status – Completed.

Additional Conservation Measure Resulting from Tier 1 Reinitiation

The following conservation measure was developed by INDOT and FWHA in consultation with USFWS during the third Tier 1 reinitiation. It is included in Amendment 2 to the revised Tier 1 BO, as well as the Section 5 Tier 2 BO.

1. **Avoid and minimize impacts from private landowner harvests within the right of way -** The goal of the measure is to avoid and minimize impacts from private landowner harvests by working with property owners within the right of way who plan to harvest their property. FHWA and INDOT propose to develop an voluntary agreement with the interested landowners, such as a “right of entry” agreement or other type of covenant, to pay the landowner to limit the time of year in which they harvest their property; this time period would be limited to the late fall and winter when Indiana bats are not present in the forested areas.

In addition to the conservation measures listed above, the following conservation recommendations for the Indiana bat were included in Amendment 2 to the revised Tier 1 BO. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action/program on listed species or critical habitat, to help implement recovery plans, or to develop information. Conservation recommendations generally do not focus on a specific project, but rather on an agency's overall program.

1. Working with the Service, develop national guidelines or best management practices for addressing Indiana bat issues associated with FHWA projects within the range of the Indiana bat, including measures to ensure private landowners are not economically motivated to harvest or clear-cut their properties prior to state and/or federal acquisition.

2. Provide funding to expand on scientific research and educational outreach efforts on Indiana bats in coordination with the Service's BFO.

3. In coordination with the BFO, purchase or otherwise protect additional Indiana bat hibernacula and forested swarming habitat in Indiana.

4. Provide funding to staff a full-time Indiana bat Conservation Coordinator position within the BFO, which has the Service's national lead for this wide-ranging species.

5. Provide funding for research to address WNS in bats.

FHWA and INDOT have no current plan to commit additional funding to implement these conservation recommendations. However, both INDOT and FHWA continue to work with the USFWS to provide information and develop BMPs associated with highway development, management, and maintenance to assist in the conservation of the Indiana bat.

BALD EAGLE (*Haliaeetus leucocephalus*)

On July 9, 2007, the USFWS removed the bald eagle from the list of endangered and threatened species under the Endangered Species Act. However, the bald eagle continues to have protection under the Bald and Golden Eagle Protection Act, 16 U.S.C. §§ 668-668d. On May 20, 2008, the USFWS issued regulations governing permits under the Bald and Golden Eagle Protection Act for the projects that obtained an incidental take permit under the ESA (refer to 50 CFR Part 22). FHWA and INDOT intend to comply, as appropriate, with the Bald and Golden Eagle Protection Act permit requirements established by USFWS prior to construction.

Most conservation measures for the bald eagle are also measures for the Indiana bat, and have been updated in the Indiana bat *Conservation Measures* section, described above. The conservation measures for the bald eagle are described in the revised Tier 1 BO, (**Appendix BB**, *Revised Tier 1 Biological Opinion and Amendments*) and will be fully complied with as a part of the overall I-69 mitigation.

A Bald and Golden Eagle Protection Act permit from the USFWS was acquired for this project for the bald eagle on June 25, 2009 (**Appendix BB**, *Revised Tier 1 Biological Opinion and*

Amendments). This permit includes all six Sections of I-69. FHWA and INDOT intend to comply fully with the terms and conditions imposed by the incidental take statement that is included in the August 24, 2006, revised Tier 1 BO, as it proceeds with this project. Conservation measures developed for the bald eagle as part of the Tier 1 BA and Tier 1 BA Addendum will be completed as a condition of the permit, despite the species delisting. A bald eagle nest has been identified near the Section 5 corridor, located approximately 0.5-mile from existing SR 37, and approximately 0.4-mile from an existing interchange. This is outside of the recommended 660-foot radius for activities as described in the USFWS National Bald Eagle Management Guidelines. INDOT is attempting to purchase the parcel containing the bald eagle nest for purposes of mitigation.

7.3.17 Karst

In the Tier 1 ROD, it was recognized that avoidance of impacts to karst terrain would not be possible, because all alternatives within Section 5 would be located within karst terrain. The Section 5 alternatives will impact between 109 and 144 karst features consisting of 338.5 and 439.7 acres. However, within the Refined Preferred Alternative 8, the existing SR 37 right-of-way accounts for 70% of the number of karst features impacted, 75% of the acres within those karst features, and 74% relevant karst acres impacted. The Section 5 project is being developed in a manner consistent with the 17 procedural steps outlined in the Karst MOU (included in **Appendix Y,** *Final Karst Report [Redacted]*) as it relates to modification of the existing four-lane SR 37 highway. Steps 1 through 4 have been completed to date. Steps 5 through 17 require more detailed design, or occur during and after construction. These will be completed as the project design advances, as well as during and after construction. Refined Preferred Alternative 8 would impact approximately 110 karst features consisting of 347.3 acres, and 713.7 acres of relevant karst (includes areas that did not have identified surface expression as well as those areas where discrete karst features were identified).

A primary objective of the Karst MOU is to minimize the effects of highway construction and operation on karst resources. The four strategies outlined in the Karst MOU to achieve this objective, in order of priority and/or effectiveness, are avoidance, alternative drainage, mitigation/treatment, and operation and maintenance.

Karst biological communities are known to be susceptible to changes in temperature and humidity within their ecosystem. In accordance with the Karst MOU, a monitoring and maintenance plan will be developed for affected karst features. This monitoring and maintenance plan may address karst impacts and treatment measures during and post construction. Also in accordance with the Karst MOU, if during construction additional karst features are discovered and it is found that the mitigation agreement must be altered, all of the agencies will be contacted and agreement reached prior to work continuing in that specific area of the project. It is also recommended that temporary caps be placed over any exposed karst feature discovered during construction to limit changes to temperature and humidity within the karst ecosystem.

Per USEPA written comments on the Section 4 DEIS, a firm commitment has been added for Section 5 that if active groundwater flow paths are discovered, measures will be taken to perpetuate the flow and protect water quality.

While avoidance is the preferred strategy for minimizing karst resource impacts associated with highway construction and operation, I-69 Section 5 would be constructed primarily on developed land along as part of existing SR 37 right-of-way. Therefore, opportunities for avoidance are limited. According to Step 14 of the Karst MOU, if during construction previously unknown karst features are identified and it is found that the mitigation agreement must be altered, all of the signatory agencies will be contacted and agreement reached prior to work continuing in that specific area of the project. Mitigation for impacts to unidentified karst features will be managed in the same manner as mitigation for impacts to identified features.

Unavoidable impacts are addressed via consideration of alternative drainage and other appropriate mitigation/treatment measures. Collection and management of highway runoff is an important consideration during the development of the roadway design as well as the development of karst impact mitigation measures. The term "alternative drainage" involves directing highway runoff to surface drainage and away from recharge features such as sinkholes, swallets, and sinking streams. Alternative drainage also includes avoiding severing karst conduits between recharge features and discharge features so as to avoid/minimize potential downstream effects upon troglobitic species that cannot be directly observed due to lack of adequate access to caves which serve as their habitat.

It should be noted that utilizing alternative drainage will not always be a viable option within the Section 5 corridor. In some areas, karst features extend across the entire corridor, which could preclude diverting runoff from the highway away from all karst features. This is especially true in Monroe County.

When alternative drainage is not an option, potential highway construction, operation and maintenance measures used to perpetuate and/or treat highway drainage include, but are not limited to, the following:

- INDOT has made a mitigation commitment for a low salt/no spray zone for Section 5 that will extend from the Section 4 interchange to approximately 200 feet north of Chambers Pike (this includes all karst areas within Section 5). Further coordination with the Karst MOU agencies will occur during the design phase of the project regarding low-salt zones.

- Implementation of hazardous waste traps will be conducted by INDOT (or their designated contractors) to protect karst features against hazardous materials spills per Step 7 of the Karst MOU.

- As stated in Step 8 of the Karst MOU, additional information on runoff treatment and protocol for long term monitoring will be developed in the design phase of the project and provided to the IDNR, IDEM and USFWS for review. As stated in Step 10 of the Karst MOU, an agreement between INDOT, IDNR, IDEM, and USFWS that will specify the appropriate and practicable measures to offset unavoidable impacts to karst features will be signed prior to acceptance of final design plans.

- Installation of concrete caps, specially designed drainage structures, detention basins or swales, peat filters, and spring boxes.

- Natural vegetative treatment for road runoff.

- Examination of the areas that receive runoff from the highway to detect soil piping (conduits in the soil – not bedrock) or opening of buried karst features. Soil piping will be addressed by the contractor during the weekly erosion control inspections (or after a rainfall of a ½ inch or more) required as part of the Rule 5 permit during construction. Inspections following construction will be determined during the final design phase as part of the monitoring and maintenance plan under Step 11 of the Karst MOU. It will be INDOT's responsibility or their designated agent's responsibility to perform these inspections, depending on the structure of the contract. Quarterly inspections and inspections after all heavy rains are recommended for the first year. Annual or bi-annual inspections are recommended after the first year.

- Strict runoff/erosion control measures will be implemented in accordance with Chapter 37 of the INDOT Design Manual and/or the IDEM Storm Water Quality Manua,l whichever is more stringent for each situation.

- INDOT will conduct routine maintenance and inspection of treatment/containment structures. INDOT will complete contractor compliance inspections on a regular basis to help control erosion and sediment on the project.

- The Contractor will be required to develop a SWPPP for each individual project, as part of the construction plan required in 327 IAC 15-5 (Rule 5), which must be reviewed by INDOT Environmental Services and IDEM Wetlands and Storm Water Section for comments.

- It is anticipated that the Blasting Operations Specifications utilized during the Section 4 construction in karst areas will be utilized for the Section 5 activities. The specification was developed to protect karst and limestone resources.

- Karst training will be developed for implementation during construction and is anticipated to include karst-specific field check meetings and a karst awareness video.

INDOT has made a mitigation commitment requiring the designer to abide by Rule 5 requirements found in 327 IAC 15-5, specifically, Item B1 of the Erosion Control Plan, which states:

> This item is included in the rule to place an emphasis on identification of pollutants that are associated with construction activity. In the past, the emphasis has been on sediment reduction; however, the rule requires the plan preparer to identify other potential pollutants and their sources. Potential pollutant sources include material and fuel storage areas, fueling locations, exposed soils, leaking vehicles and equipment, etc.
>
> To satisfy this item, the plan needs to contain a written description of the expected pollutants that could enter storm water during the construction operation, and where those potential pollutants might be generated. In addition, the plan preparer should include

discussion of measures or operational activities that will be initiated to minimize the danger of pollutants entering storm water.

Several erosion and sediment control methods that could be utilized in steep terrain could include surface stabilization measures, runoff control measures, sediment barriers and filters, and other measures including surface roughening and the use of retaining walls where appropriate. Surface stabilization measures could include such measures as temporary seeding, erosion control blankets, and riprap slope protection. While, runoff control measures could include temporary and permanent diversions, water bars, rock check dams, and temporary slope drains. In addition, sediment barriers and filters could include silt fence, filter tubes/socks, and vegetative filter strips.

In areas where alternative drainage is not possible, mitigation and treatment for karst features receiving highway drainage will include the implementation of water quality treatment or abatement measures for highway runoff prior to its release toward karst features. Such measures include peat and sand filters, gravel filters, vegetative buffers, and lined spill or runoff containment structures. These structures could be constructed in appropriate locations along the highway to detain and/or treat highway runoff prior to discharge. Monitoring is required by the Karst MOU to assure that the drainage discharged from these structures has minimal impact on karst features.

Special planning, where appropriate and practicable, will be conducted by INDOT to ensure that highway derived runoff is dispersed through natural vegetation and/or an engineered treatment system before entering the groundwater system. Also, where appropriate and practicable, special planning should be conducted so that construction does not sever recharge features by sedimentation or impervious cover.

Class V injection well permits may be required for this project. A Class V well is a system used to inject non-hazardous fluids underground. Fluids are injected either into or above an underground source of drinking water and are regulated by the Underground Injection Control (UIC) program under the Authority of the Safe Drinking Water Act. Most of the Class V well permits anticipated within Section 5 would be authorized by rule because there will be measures in place as part of sinkhole mitigation under the Karst MOU. For example, such a permit could be required by USEPA Region 5 if a Class V injection well is located within the karst region of the state, a sole source aquifer area, a state designated source water protection area for a public water supply; or, anywhere untreated fluids discharged through a Class V well may otherwise endanger an underground source of drinking water. While the specific karst features requiring a Class V injection well are not known at the EIS stage of the Section 5 project, they are likely to be related to sinkholes if they are modified to receive Section 5 stormwater drainage as part of final design. If there are measures in place to prevent contamination of groundwater, a Class V well could be authorized by rule rather than by a permit. A Class V Well Inventory Form would need to be provided to USEPA Region 5 prior to construction of a Class V injection well so that USEPA could determine if a Class V injection well permit will be required for any Class V wells. For the I-69 project, if the inventory information provided indicates that any injection well would likely contaminate any underground source of drinking water, a permit would be required. Any permit would need to be applied for and obtained prior to construction of the Class V well.

The Karst Report (**Appendix Y**, *Final Karst Report [Redacted]*) identifies additional BMPs that will be considered for implementation for the project and includes additional information pertaining to mitigation. Under Step 8 of the Karst MOU, a monitoring and maintenance plan will be developed for affected karst features. A listing of karst feature treatment circumstances which may require BMP implementation, BMPs that may be implemented, and a numerical cross-reference to applicable but not karst specific INDOT *Standard Specifications*, such as Standard Specification 205 pertaining to soil liners, is included in **Table 7-3** below. This listing is not intended to be all-inclusive. These and other BMPs identified in the Tier 2 Section 5 FEIS, ROD, *Final Karst Feature and Groundwater Flow Investigations Report*, and the 1993 Karst MOU will be considered for implementation on a case by case basis.

Table 7-3: Best Management Practices (BMPs) in Karst Terrain

Best Management Practice (BMP)	Description	Numerical Reference to INDOT Standard Specification (where applicable)
Ditch Lining		
Compacted clay liner	Lined ditches can be utilized to prevent erosion. The hydraulic analysis in design will determine the water flow and velocity to select the proper lining. This will not only reduce erosion, but limit the sediment transport into karst features.	205 describes the installation of pond liners, synthetic liners and soil liners and could be adapted to this work.
Geosynthetic clay liner	This is an effective method to protect groundwater penetration along a road side ditch.	205 describes the installation of pond liners, synthetic liners and soil liners and could be adapted to this work.
Flexible membrane liners	Beneficial since these will conform to undulating topography.	205 describes the installation of pond liners, synthetic liners and soil liners and could be adapted to this work.
Concrete, portland cement or asphalt	Can be used although not as aesthetic as the other options.	607 describes paved side ditch construction for both concrete and asphalt work.
Sinkhole – Bridging		
Culvert or bridges	The INDOT Drainage Design Manual will be used to size the openings of bridges and culverts. Unique backwater conditions created by karst features will be evaluated further in design to assure proper detention storage. If a karst feature cannot be avoided, filled or capped, the roadway should span the feature and be anchored (reinforced) into competent bedrock. Cuts into bedrock should be minimized when possible.	714, 715, 723 describe different culverts and concrete boxes and 3-sided structures that can be installed.

Table 7-3: Best Management Practices (BMPs) in Karst Terrain

Best Management Practice (BMP)	Description	Numerical Reference to INDOT Standard Specification (where applicable)
Reinforcing within cave	The mortar will coat and strengthen the cave walls.	708 describes pneumatically placed mortar (shotcrete).
Ground modification	Can strengthen soils by injecting concrete or lime.	203 describes soils modification with chemical.
Geopier with cap	Typically installs quicker than traditional piers or piles; will provide strength to wide range of soils.	INDOT does not directly address Geopier, but 701 gives requirements for piles and piers.
Piles with cap	Traditional method for vertical reinforcement of soils.	710 addresses pile installation.
Sinkhole – Filling		
Rock pads	Works where the velocity of the storm water needs to be decreased to prevent erosion.	205 describes rock splash pads as an erosion control measure.
Large rock fill	Effective for slope stability issues.	203 describes placing large rock fill before backfilling with structure backfill or borrow.
Compaction grouting	Useful where soil is loose or soft and does not need a large area for installation.	A standard would have to be written for this.
Cement grouting	Effective where there are significant voids and cracks in load bearing rock.	206 describes the process for grout injection.
Dynamic compaction	Will increase the density of the soil, even soil below the groundwater; best for granular soils.	203 describes excavation and backfilling requirements as well as chemical soil modification.
Excavation, overlapping geotextiles, soil backfill	If a sinkhole is located within the new right-of-way, yet has a very small drainage area, then capping is more appropriate (versus installing a catch basin and standpipe).	203 describes excavation and backfilling requirements as well as chemical soil modification.
Excavation, concrete cap, soil backfill	If a sinkhole is located within the new right-of-way, yet has a very small drainage area, then capping is more appropriate (versus installing a catch basin and standpipe).	203 describes excavation and backfilling requirements as well as chemical soil modification.

Table 7-3: Best Management Practices (BMPs) in Karst Terrain

Best Management Practice (BMP)	Description	Numerical Reference to INDOT Standard Specification (where applicable)
Other		
Avoidance	The alternatives have been screened for the number of karst features that may be affected. As design further details the road's cross section and alignment at a particular karst feature, avoidance should continue to be considered if cost-effective and within appropriate design criteria.	
Alternative drainage	Redirecting highway runoff away from karst recharge features. Will be implemented where feasible. In some areas, this is not an option due to karst features being distributed across the corridor.	
Earth berm construction	Provides a natural look to the erosion control.	205 describes diversion berms of earth or rock as an erosion control method.
Gabion berm construction	May be appropriate at very steep slopes (>10%).	Recurring provision 625-R-194 describes the requirements and placement of gabions.
Open standpipe installation	A chimney (standpipe), catch basin and rock filter is a common BMP for sinkholes located within the right-of-way of the new road. These were used in the SR 37 project.	A standard would have to be written for this.
Concrete catch basin installation	A chimney (standpipe), catch basin and rock filter is a common BMP for sinkholes located within the right-of-way of the new road. These were used in the SR 37 project. They can be enhanced to include a special basin to act as a hazardous material trap (HMT) that can be specially drained to avoid the adjacent watershed.	720 describes catch basins and installation.
Natural vegetative buffers	Could be constructed in appropriate locations to detain/treat runoff prior to discharge. Same season re-vegetation should occur when possible.	Section 621 describes installation of vegetative cover, as well as timeline for when they must be installed, and the method for installation.
Peat/sand/gravel filters	Could be constructed in appropriate locations to detain/treat runoff prior to discharge.	205 describes placement of erosion control and filtering devices as an erosion control measure.

Table 7-3: Best Management Practices (BMPs) in Karst Terrain

Best Management Practice (BMP)	Description	Numerical Reference to INDOT Standard Specification (where applicable)
Spring boxes	Use to protect spring discharge.	205 describes placement of erosion control and filtering devices as an erosion control measure.
Energy dissipation devices (e.g. scour holes, riprap linings, stilling basins)	Use at culvert and storm sewer outlet locations to prevent erosion to existing channels. Will be based on INDOT's Drainage Design Manual.	Section 616 describes riprap placement and type for energy dissipation and scour protection.
Agencies (IDNR, IDEM, USFWS) attend field checks/meetings	Meet during later design in effort to negate/minimize adverse effects.	Would need special standard provision; Indiana Design Manual defines the parties required to attend field checks during design, and Section 105 defines coordination procedures and agencies the contractor must include and coordinate with.
Notify the USFWS & IDNR if a state/federal listed species is observed during construction	Work will stop within the project area and these agencies will be notified.	Would need special standard provision; Section 107 describes contractor's responsibilities to follow permits, laws, responsibility to the public.
Newly discovered cave during construction	Karst experts will be consulted to determine the significance of the cave.	Would need special standard provision; Section 107 describes contractor's responsibilities to follow permits, laws, responsibility to the public.
Geogrid or geotextile layers	Could be installed in the lower reaches of embankments, embankment foundations or roadway subgrades.	214 describes geogrid installation requirements.
Operation/Maintenance		
Discovery of karst features previously not known	Examination of areas that receive runoff from highway to detect soil piping or opening of buried karst features.	A standard would have to be written for this.
No-mowing, low salt or no-spray zones and associated signage	Implemented in order to increase vegetative groundcover and filter runoff prior to leaving right-of-way.	Section 621 describes "Do Not Spray" and "Do Not Mow" signage and placement.

Table 7-3: Best Management Practices (BMPs) in Karst Terrain

Best Management Practice (BMP)	Description	Numerical Reference to INDOT Standard Specification (where applicable)
Routine maintenance and inspection of treatment/containment structures	Verify capacity, integrity and operational efficiency of structure.	Section 205 describes the type and frequency of inspection of temporary erosion control devices; INDOT assumes responsibility of permanent devices after final acceptance of the project.
Emergency response plan	To be developed post-NEPA, as stated in Step 11 of the Karst MOU.	
Installation of signage alerting public that all spills are potentially hazardous	In order to increase public awareness in sensitive areas.	Would need a special provision; 802 describes sign placement and type for unique sign types.
Low Salt or No-spray Zones	Zone will extend from the Section 4 interchange to approximately 200 feet north of Chambers Pike (this includes all karst areas within Section 5).	

Note:

INDOT has not developed standard specifications for every conceivable mitigation need which may be encountered. If specific field conditions require a mitigation measure for which INDOT presently has no Standard Specification, then a Unique Special Provision could be developed and approved by INDOT.

The following impact reduction recommendations have been made for four karst Areas of Importance in Section 5:

1. Lemon Lane Landfill / Illinois Central Spring (ILCS) Superfund Site

   The following four measures are recommended for reduction of roadway contribution to the Lemon Lane Landfill/ILCS recharge area:

   - Maintain the eastern boundary of the SR 37 right-of-way with any required mainline expansion or new access roads to the west, away from landfill.
   - Shifted the proposed Vernal Pike grade crossing north to connect with 17th Street in all alternatives and use of an overpass rather than rock cut for use of underpass in Alternatives 7, 8, and Refined Preferred Alternative 8.
   - INDOT has made a mitigation commitment to prevent drainage from increasing above the existing SR 37 levels extending along the eastern side of SR 37 that is within the Lane Landfill/ILCS recharge area to address USEPA and IDEM concerns regarding changes in existing groundwater flow. Coordination with USEPA and IDEM has occurred throughout the Section 5 study and will continue through the design phase. Design plans for construction in this area will be provided to USEPA and IDEM for review with a requested two week turnaround time for comment.
   - Blasting is not anticipated and will not be allowed adjacent to the site to prevent damage to the monitoring system (see **Figure 5.21-5**).

2. Bennett's Dump Superfund Site

   The following three measures are recommended for reduction of roadway contribution to the Bennett's Dump recharge area during subsequent design phases:

   - Limit paving and construction to the existing SR 37 and SR 46 mainline and intersection.
   - INDOT has made a mitigation commitment to prevent drainage from increasing above the existing SR 37 levels extending along the northwest quadrant of the SR 37/SR 46 interchange area to address USEPA and IDEM concerns regarding changes in existing drainage at this site. Design plans for construction in this area will be provided to USEPA and IDEM for review with a requested two week turnaround time for comment.
   - Blasting is not anticipated and will not be allowed adjacent to the site to prevent damage to the monitoring system (see **Figure 5.21-6**).

3. SR 45/2nd Street – SR 37 Interchange Buried Sinks

   The following two measures are recommended during design for reduction of roadway contribution to the SR 45/2nd Street – SR 37 Interchange Buried Sinks area:

- Limit paving and construction to the existing SR 37 and SR 45/2nd Street mainline and intersection.

- Care should be taken to ensure that the final design of SR 37 and SR 45/2nd Street interchange considers sinkholes which no longer have the appearance and function of sinkholes, but have the potential to destabilize the roadbed and adjacent lands.

4. Cave A Recharge Area

Several treatment options are available for consideration of potential mitigation measures in implementation of the Karst MOU to reduce roadway impacts to the Cave A recharge area and maintain the existing base flow levels in the system:

- Engineered wetland sediment and contaminant reduction systems.

- Linear peat sand filters and/or vegetated swales along the roadway or at the terminus of lined storm water control structures.

- Sinkhole sediment and contaminant traps.

- Runoff and storm water detention/retention systems, treatment, and infiltration galleries.

- Control of “first flush” (or initial stormwater runoff which typically will have higher contaminant concentrations) volumes with designed overflow into natural drainage systems.

7.4 Environmental Mitigation Costs

Environmental mitigation costs for Section 5 Refined Preferred Alternative 8 were determined on the following basis and can be found in **Table 7-4**. The estimated costs are in year 2015 dollars, and were determined using year 2007 dollars multiplied by an inflation factor (shown on **Table 7-4**) to account for estimated cost increases over time. Cost of some mitigation identified in **Section 7.3**, *Section 5 Mitigation Measures and Commitments*, is difficult to estimate and is not included below. Some of these measures are part of the construction costs (CSS, noise mitigation), and other measures have been and/or will be incorporated into the design in a fashion that will not be quantifiable in regard to specific quantities and cost (i.e. parking and turning areas, equipment maintenance areas, etc.). Mitigation costs are similar between Alternatives 4 and 5 ($29M and $28M, respectively) but are higher than those calculated for Alternatives 6, 7, 8, and Refined Preferred Alternative 8 ($16M to $18M).

1. **Wetland Mitigation**—The acreage needed for wetland mitigation was determined for each alternative based on the expected impact acreage, type of wetland, and jurisdiction. Section 5 alternatives wetland impacts to aquatic bed, emergent, scrub/shrub, and forested wetlands (within the construction limits) would range from approximately 3.43 acres (Refined Preferred Alternative 8) to 16.06 acres (Alternative 5). Ratios described in **Section 7.3.9**, *Wetland Impacts*, were used to estimate the number of acres needed to mitigate impacts to wetlands. Mitigation for wetland impacts (not including open water) ranges from approximately 10.61 acres (Refined Preferred Alternative 8) to 53.23 acres (Alternative 5). (Note: The precise amount of mitigation that will be required will be determined during the permitting process.) The cost of this mitigation, including purchasing suitable parcels, designing and constructing wetlands, as well as administrative costs, was estimated at $39,600 per acre (adjusted for inflation). Wetland mitigation cost for the Refined Preferred Alternative 8 would be approximately $420,000 in 2015 dollars.

2. **Forest Mitigation**—The acres needed for forest mitigation were determined for each alternative based on the expected impact acreage. For the I-69 Evansville to Indianapolis project as a whole, the acreage needed for mitigation was determined by using a 3 to 1 ratio (with the goal being 1 to 1 for reforestation, to replace direct impacts, and 2 to 1 for preservation of existing forests). The cost of this mitigation, including securing suitable parcels, site design and planting of trees, as well as administrative costs, was estimated at approximately $19,800 per acre (adjusted for inflation). The potential impacts to upland forests due to the proposed I-69 project vary from approximately 227.66 acres (Refined Preferred Alternative 8) to 433.16 acres (Alternative 4). The Refined Preferred Alternative 8 will require 682.98 acres (including reforestation and preservation) of forest mitigation, costing approximately $13,523,000 in 2015 dollars.

3. **Other Riparian Areas—"**Riparian areas" refer to non-wetland land located immediately adjacent to streams. The width of these riparian areas can vary, and is generally wider in the upland areas where topography is more rugged and narrower in the flatter lowlands where agricultural fields use more of the land (see **Section 5.19.2.3**, *Analysis*, for further details on riparian areas). In general, impacts to these riparian areas are expected to be mitigated through the forest mitigation program wherever possible, but in some instances may be

treated separately. Some riparian areas are wooded but do not meet the USDA's technical definition of "forest". These areas are therefore not included in the forest mitigation, but instead mitigated at the 1 to 1 ratio for mitigation of other (non-wetland) riparian habitat, at an estimated cost of $19,800 per acre (Year 2015 costs).

Refined Preferred Alternative 8 would impact 107.27 acres of non-wetland riparian area, 97.89 acres of which are forested and would be mitigated under the forest mitigation program. The remainder (9.38 acres) would be mitigated at the 1 to 1 ratio for mitigation of other (non-wetland) riparian habitat, at a total cost of $186,000.

4. **Noise Impact Mitigation**—While a final determination on noise abatement for Refined Preferred Alternative 8 will be made during the design phase, three potential barrier locations (west side of SR 37 at Tapp Rd., east side of SR 37 at SR 45, and SR 48/3rd Street) have been identified based on INDOT feasibleness and reasonableness criteria, and public input in accordance with the requirements set forth in the *INDOT Traffic Noise Analysis Procedure.* During final design, an additional noise analysis will be performed to more accurately determine barrier performance, barrier characteristics (length and height), and the optimal barrier location for any potential noise barriers that may be recommended for noise abatement. The three potential noise barriers included for Refined Preferred Alternative 8 are estimated to cost approximately $1.73M, $0.76M, and $1.78M, for a total of $4.27M. Because this would be included in the construction costs of the project, these costs are not included in the mitigation costs listed in **Table 7-4**.

5. **Karst**—Karst mitigation measures include avoidance and minimization of impacts during project planning, construction-related mitigation measures such as implementation of BMPs, and post-construction mitigation measures such as water quality monitoring, BMP monitoring, and visual inspection of areas receiving highway drainage. Mitigation measures related to the physical construction of the highway and associated BMPs are included in the project construction cost estimates. An additional amount of up to $1 million was applied to the entire I-69 project to represent potential cost for karst mitigation. These mitigation measure costs included in the $1 million estimate are: water quality monitoring, BMP monitoring and inspection, or other measures described in the monitoring and maintenance plan that will be prepared per the Karst MOU. Of the $1 million, $500,000 is applied to Section 5. As stated above, this mitigation commitment addresses such measures as water quality monitoring and BMP monitoring. Much larger expenditures (included in the project construction cost estimate) are being made during construction to safeguard karst resources.

6. **Stream Mitigation**—The acres needed for stream mitigation were determined based on the expected impact acreage. IDEM and USACE criteria call for mitigating stream impacts based on the length of impact. Mitigation ratios will be determined in consultation with IDEM and USACE. Assuming a 1 to 1 ratio, the required mitigation for natural stream and bridge impacts would be approximately 26,389 linear feet for Refined Preferred Alternative 8. The mitigation acreage estimates presented are useful in determining mitigation costs. Stream mitigation will be completed to adequately mitigate for linear feet of stream impacts in coordination with both the USACE and IDEM during the permitting process of the Section 5 project.

The cost of this mitigation, which could include securing suitable parcels, site design, stream stabilization projects, erosion control devices, stream mitigation and monitoring plans, filter strips, planting of woody and herbaceous vegetation to stabilize banks and provide foraging cover for many species, as well as administrative costs, was estimated at $39,600 per acre (adjusted for inflation). Refined Preferred Alternative 8 would impact 6.41 acres of natural streams. Based on a 1 to 1 mitigation ratio, the mitigation cost associated with the preferred alternative would be approximately $254,000 in 2015 dollars for Refined Preferred Alternative 8.

7. **Historic and Archaeological**—A value of up to $5 million was applied to the entire I-69 project to represent potential cost to mitigate historic and archaeological impacts. Mitigation funding will also include support of interim reports in Morgan and Monroe counties. Mitigation measures (if necessary) have been finalized in the Section 106 MOA. Pro-rating the $5 million mitigation cost by the proportion of the entire project's length that is in Section 5 shows an estimated cost of $750,000 attributable to Section 5. This cost includes activities specific to Section 5 and other activities related to the Tier 1 MOA, which encompass multiple sections and are yet to be completed such as interim report survey updates for historic properties, and guides, brochures, and educational materials.

8. **Community Planning Program**—On October 29, 2007, INDOT awarded $950,000 in grants to communities located along the I-69 corridor in Southwest Indiana. Within Section 5, Morgan County, the Town of Mooresville, and the City of Martinsville together were awarded a grant for $150,000. On February 1, 2008, Monroe County submitted an application for a $50,000 grant. The City of Bloomington was eligible for this program but chose not to participate. Monroe County was awarded a $50,000 grant, and the Town of Ellettsville was also awarded a grant for $50,000. Local communities used these grants to prepare transportation land use plans, zoning and subdivision ordinances, and special highway corridor "overlay zones" for development. In the second phase of the program, on July 30, 2008, a $100,000 grant was awarded to Monroe County and the Town of Ellettsville. This grant was used for the preparation of the Monroe County Comprehensive Plan (2012). A transportation corridor plan for SR 37/I-69 also was developed by Monroe County in 2010 as a result of the grant program. Grants awarded in this second round of grants brought the total grant awards to $1,500,000 in both rounds. For further details, please see **Appendix T**, *I-69 Planning Grant Program Update*. These previously expended costs are not included in the mitigation costs in **Table 7-4**.

9. **Section 4(f)**—Mitigation includes compensation to the City of Bloomington to reconnect the portion of the trail impacted by the project and to provide other aesthetic improvements identified by the City on property owned by the City within the Wapehani Mountain Bike Park as stipulated in the Wapehani MOA. In addition to the compensated mitigation, , any required for right-of-way will be purchased in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646), as amended in 1987 (Uniform Act).

10. **Context Sensitive Solutions**—These costs include community requested features such as bicycle and pedestrian accommodations and aesthetic treatments. Because this is part of the

construction costs of the project, these costs are not included in the mitigation costs listed in **Table 7-4**.

The total estimated mitigation cost for the Section 5 Refined Preferred Alternative 8 is $16, 093,000 in Year 2015 dollars.

Table 7-4: Mitigation Cost Estimates for Section 5, Year 2015

Criteria	Refined Preferred Alternative 8 Estimated Cost (Rounded)
Wetland Mitigation: 10.61 ac x $39,600 (i.e. $30,000 x 1.32**)	$420,000
Forest Mitigation: 682.98 ac x $19,800 (i.e. $15,000 x 1.32**)	$13,523,000
Riparian (non-forest, non-wetland) Mitigation: 9.38ac x $19,800 ($15,000 1.32**)	$186,000
Stream Mitigation: 6.41 ac x $39,600 (i.e. $30,000 x 1.32**)	$254,000
Karst: $500,000*	$500,000
Historic and Archaeological: 15% of $5,000,000*	$750,000
Section 4(f):* ** Wapehani Mountain Bike Park	$460,000
Total Cost 2015 Dollars:* **	**$16,093,000**

** Cost based on Section 5 percentage of total I-69 project estimates or on grant amount identified during Tier 1.*
*** Year 2007 dollars adjusted to 2015 dollars using 3.5% inflation rate.*
****Wapehani Mountain Bike Park cost is in 2013 dollars (year of anticipated expenditure) and not escalated in total cost. Mitigation cost does not include right-of-way acquisition cost, which already is included under the overall right-of-way costs. North Clear Creek Historic Landscape District mitigation cost is included under Historic and Archaeological.*

Notes:
All cost estimates have been rounded to the nearest 1000.
*The cost estimating methodology is explained in **Appendix D**, Cost Estimation Methodology.*

Chapter 7 Figure Index

(Figures follow this index.)

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Figure 7-1: Public Information Meeting

Figure 7-2: Roadside Native Wildflower Planting

Figure 7-3: Wetland Mitigation Site Before Construction

Figure 7-4: Wetland Mitigation Site During Construction

Figure 7-5: Wetland Mitigation Site During Monitoring Phase

Figure 7-6: Reforestation

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