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Habitat Conservation Plan

for the

Six Points Road Interchange and Associated Development

Project No. DEM-070-3(196)68
Des. No.: 9500900

This project proposes the construction of a new interchange on I-70 at Six Points Road in Hendricks and Marion Counties, Indiana. Also included are the improvement of Six Points Road from I-70 north to US 40 and the extension of Six Points Road on new alignment southeast from I-70 to SR 67. The Six Points Road Interchange project includes access ramps from I-70 to serve the new Midfield Terminal Complex proposed for the Indianapolis International Airport and the realignment of I-70 between the Six Points Road Interchange and the I-70/I-465 interchange. Associated development includes future aviation-related development south of Interstate 70 to be accessed from Indianapolis International Airport via aircraft taxiways and vehicular structures over the interstate and continued commercial and industrial development within the AmeriPlex area south of I-70.

US Department of Transportation
Federal Highway Administration

Indiana Department of Transportation

Indianapolis Airport Authority

Indianapolis Department of Public Works

Indianapolis Department of Metropolitan Development

Hendricks County Board of County Commissioners

prepared pursuant to
Endangered Species Act of 1973, Section 10

in consultation with the
US Department of the Interior
Fish and Wildlife Service

March 18, 2002

Executive Summary

Project No. DEM-070-3(196)68
Des. No. 9500900

Six Points Road Interchange and Associated Development

This plan details the proposed highway improvement projects and the development anticipated to follow implementation of those projects, the potential for incidental takings of the Indiana bat *(Myotis sodalis),* and the mitigation and monitoring programs to be developed and executed as compensation for those takes.

An Interagency Task Force composed of the Federal Highway Administration, Indiana Department of Transportation, the Indianapolis Airport Authority, the Indianapolis Department of Public Works, the Indianapolis Department of Metropolitan Development, and the Hendricks County Board of County Commissioners proposes to construct a new interchange on I-70 in the vicinity of Six Points Road in Hendricks and Marion Counties, Indiana. The project also includes the improvement of Six Points Road north from the new interchange to US 40 and the extension of Six Points Road (as AmeriPlex Boulevard) on new alignment from the interchange southeast **to** SR 67. The Six Points Road Interchange will include directional ramps and collector/distributors to provide access to the proposed new Midfield Terminal Complex at the Indianapolis International Airport. An additional element of the overall project will be the realignment of I-70 from the Six Points Road Interchange to the I-70 /1-465 interchange. Associated development includes future aviation-related development south of Interstate 70 to be accessed from Indianapolis International Airport via aircraft taxiways and vehicular structures over the interstate and continued development of AmeriPlex.

For the purposes of this Habitat Conservation Plan (HCP), all six of the Task Force Agencies are applicants to the US Fish and Wildlife Service under Section 10 of the Endangered Species Act. Additionally, consultation between the Federal Highway Administration and the US Fish and Wildlife Service will be conducted under Section 7 of the Endangered Species Act.

The Indiana Department of Transportation will be the lead agency for the overall project, including the construction of the various components of the proposed project related to the Six Points Road Interchange and the realignment and lowering of I-70 . The Federal Highway Administration will provide oversight and guidance for the Indiana Department of Transportation. Other members of the Task Force will be the lead agency for other construction activities under their direct jurisdiction. Mitigation required for the loss of potential Indiana bat habitat resulting from the proposed project will be funded and administered by the Task Force. Highway projects will be funded and administered through the Indiana Department of Transportation. The Indianapolis Airport Authority will be the lead agency responsible for monitoring, reporting, and maintaining all mitigation areas within the HCP area. The Indianapolis Department of Public Works, the Indianapolis Department of Metropolitan Development, and the Hendricks County Board of County Commissioners will oversee private development within the proposed project area and the development of local infrastructure.

This proposed interchange project has a preliminary estimated total construction cost of approximately $170,350,000. Documentation under the Major Investment Study requirements of 23 CFR 450 has been

prepared by the Indianapolis Metropolitan Planning Organization. That document was prepared based on consultation with all parties to this project conducted on January 20, 1995. This project is in conformance with the Clean Air Act Amendments.

Because of the limitations associated with the levels of available Federal funding, it is anticipated this project will be constructed in phases. The initial construction effort will include the outermost ramps on the Six Points Road Interchange. Construction of those ramps would create a fully functioning diamond interchange, providing service to the area until funding becomes available and the demand warrants the remainder of the ultimate improvement.

The proposed Six Points Road Interchange project has been the subject of numerous studies conducted by State and local agencies beginning in 1968. The most recent studies are the *1993 Plan for Marion County* and the *1994 Interchange Access Study.* The Federal Highway Administration has approved the proposed new Six Points Road Interchange as an additional access to the Interstate highway system. The exact location of the proposed interchange has varied through the years, but is now confirmed as being located in the Six Points Road corridor. It will align with the Eastern Hendricks County North-South Corridor Improvement north of US 40. This location also accommodates construction of a new access to the Indianapolis International Airport as proposed by the Indianapolis Airport Authority.

Principal impacts associated with the planned roadway improvements are related to the acquisition of the additional right-of-way. The proposed improvements will occupy approximately 231 hectares (570 acres) of right-of-way. The conversion of this right-of-way to highway purposes will require the modification of approximately 2.4 hectares (5.8 acres) of wetland habitat and approximately 37.6 hectares (93.7 acres) of potential habitat for the federally endangered Indiana bat *(Myotis sodalis).* An additional consequence of the right-of-way acquisition will he the relocation of approximately four residences and ten mobile homes. No commercial or industrial structures and no non-profit properties will require relocation. None of the anticipated acquisitions impact any structures on or eligible for the National Register of Historic Places. Similarly, no archaeological sites currently known to be on or eligible for the National Register will be impacted by the proposed construction.

As part of the early coordination process, seventeen Federal, State, and local agencies having either jurisdiction or special expertise in areas related to the project were contacted. In an effort to ensure the anticipated impacts of the proposed project are considered, those organizations were asked to provide comments and input into the preparation of the Environmental Assessment for the proposed Six Points Road Interchange (American Consulting Engineers, Inc, 1995).

The regulatory and resource agencies having the greatest involvement with the project include the Corps of Engineers, the US Fish and Wildlife Service, the Indiana Department of Natural Resources, and the Indiana Department of Environmental Management. Because the project will impact wetland and water resources, a Section 404 Permit from the Corps of Engineers and a Section 401 Water Quality Certification from the Indiana Department of Environmental Management will be required. As a result of construction within the floodway of the East Fork of White Lick Creek and several tributaries, a Permit for Construction in a Floodway will be required from the Indiana Department of Natural Resources. Additionally, because the project will impact suitable habitat for the endangered Indiana bat, the US Fish and Wildlife Service has been consulted under Section 7 and Section 10 of the Endangered Species Act. Extensive coordination has taken place and is ongoing with regard to these project impacts.

The Habitat Conservation Plan addresses potential impacts to suitable Indiana bat habitat within the general *area* bordered by Stafford Road on the north, the AmeriPlex Development on the east, the Section Line west of Six Points Road on the west, and County Road 650S/Flynn Road extended on the south (Figure 1.2). This area totals approximately 1448 hectares (3,579 acres). The general area encompassed by the Plan may experience commercial and industrial development for several years beyond the period of impact associated with the specific Six Points Road Interchange project. It is anticipated development will occur over a period extending as long as fifteen years. The purpose of the Plan is to assure the continued existence of suitable habitat to support the Indiana bat in the project area.

Under this Habitat Conservation Plan, the anticipated impacts to identifiable suitable Indiana bat habitat within the geographical limits of the Plan resulting from the proposed interchange and related roadway improvements, the proposed airport improvements south of I-70 , and private development within AmeriPlex will he avoided, minimized, and mitigated as necessary. Approximately 247 hectares (611 acres) of forested land, wooded pasture, fencerows, wooded riparian corridors, and open immature woodlots potentially suitable for Indiana bat roosting and foraging habitat are located within the proposed HCParea. Of the 247 hectares (611 acres) of Indiana bat habitat, 139 hectares (344 acres) of potential habitat within the boundaries of the Habitat Conservation Plan will be impacted by the proposed project.

Mitigation will be provided for all impacts to potential Indiana bat habitat resulting from the proposed project and associated development. This mitigation commitment will result in planting 140 hectares (345 acres) of hardwood seedlings, preservation of 151.2 hectares (373.7 acres) of existing Indiana bat habitat in perpetuity, limitations on tree clearing, implementation of a monitoring and reporting plan, and implementation of educational programs for both the public and contractors. See Section 12.0 of this document for further details on the proposed mitigation measures put forth for this HCP.

Of the 247 hectares (611 acres) of forested land and wooded pasture within the HCP area potentially suitable for roosting and foraging habitat, mitigation for 109 hectares (267 acres) has not been addressed in this HCP because it is not proposed that they be disturbed by the proposed project or associated development or because they are located in an area where private development may occur outside of AmeriPlex. Private development on privately owned land within the HCP boundary could potentially impact 37 hectares (91 acres) of Indiana bat habitat. Those impacts will not be mitigated for as part of the HCP and are not included in the HCP. Those parcels are not controlled by the HCP applicants and the proposed project does not involve any impacts to Indiana bats on those parcels.

The Indianapolis Airport Authority is the agency designated to monitor and maintain the mitigation program as outlined in this HCP, which will be physically implemented by either the Indiana Department of Transportation, the Indianapolis Department of Public Works, or by the Indianapolis Airport Authority. Seedling planting and permanently protected areas will occupy land under the ownership of the airport. Planting and preservation areas will be concentrated to the greatest extent feasible along the relocated channels of the East Fork of White Lick Creek and North Creek, along the existing channel of the East Fork of White Lick Creek, and adjacent to the Indianapolis International Airport conservation management area. The mitigation planting and preservation areas will create a large riparian area surrounding the relocated creeks around the perimeter of the Six Points Road Interchange with I-70 .

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1.0 Introduction

An Interagency Task Force composed of the Federal Highway Administration, the Indiana Department of Transportation, the Indianapolis Airport Authority, the Indianapolis Department of Public Works, the Indianapolis Department of Metropolitan Development, and the Hendricks County Board of County Commissioners proposes to construct a new interchange on Interstate 70 (I-70) in the vicinity of Six Points Road in Hendricks and Marion Counties, Indiana.

The project also includes the improvement of Six Points Road north from the new interchange to US 40 and the extension of Six Points Road (as AmeriPlex Boulevard) on new alignment from the interchange southeast to State Road 67 (SR 67). The Six Points Road Interchange will include or accommodate construction of directional ramps and collector/distributors to provide access to the proposed new Midfield Terminal Complex at the Indianapolis International Airport. An additional element of the overall project will be the realignment of I-70 from the Six Points Road Interchange to the 11-465 interchange.

Associated development includes future aviation-related development south of I-70 to be accessed from the Indianapolis International Airport via aircraft taxiways or vehicular structures over the interstate. The associated development also includes continued commercial and industrial development within the AmeriPlex area south of I-70 .

During the initial planning and environmental investigations for this and other related projects at the Indianapolis Airport, suitable habitat for the federally endangered Indiana bat *(Myotis sodalis)* was identified. Studies indicated the presence of nine species of bats within the proposed project area, including the Indiana bat. The proposed interchange and roadway improvements, as well as anticipated associated development within the proposed project area, will result in incidental take of the Indiana bat. To mitigate for the unavoidable incidental take of the Indiana bat, the Task Force agencies have entered into an agreement to prepare and implement a Habitat Conservation Plan (HCP) addressing potential impacts to the Indiana bat habitat over a broad geographical area including the proposed project (Figures 1.1, 1.2 and 1.3). The HCP outlines measures to avoid, minimize, and mitigate impacts associated with the proposed interchange, future aviation-related development associated with the Indianapolis International Airport, and private development within AmeriPlex. This Habitat Conservation Plan was prepared in consultation with the US Fish and Wildlife Service. For the purposes of this HCP, all six of the Task Force Agencies are applicants to the US Fish and Wildlife Service under Section 10 of the Endangered Species Act. Additionally, consultation between the Federal Highway Administration and the US Fish and Wildlife Service will be conducted under Section 7 of the Endangered Species Act in conjunction with authorization of the project under Section 10 procedures.

The Indiana Department of Transportation will be the lead agency for the overall project planning effort, including the construction of the various components directly related to the Six Points Road Interchange and the realignment and lowering of I-70 , and will be responsible for funding mitigation required for the improvement related to highway projects. The Hendricks County Board of Commissioners will be responsible for the improvement of Six Points Road from Stafford Road to US 40. The Indianapolis Department of Public Works will be responsible for the extension of AmeriPlex Boulevard from Stanley Road to SR 67. The Indianapolis Airport Authority will be the lead agency responsible for the implementation of the Midfield Terminal Access ramps from I-70 and the development of taxiways and service vehicle roads over relocated I-70 . The Task Force will be responsible for funding mitigation required for impacts to the Indiana bat due to the proposed project.

The Indianapolis Airport Authority currently owns or will own the parcels to be used for mitigation and has extensive experience in conservation management. As a result and because of their previous experience with Indiana hat monitoring and mitigation, the Indianapolis International Airport will be responsible for monitoring, reporting, and maintenance activities for all Indiana bat mitigation areas. The remaining partners within the Task Force will contribute monetarily to the project and will contribute other resources as needed.

This plan includes commitments for mitigation of all reasonably anticipated Indiana bat habitat losses within that geographical area. The HCP discusses methods to avoid, minimize, and mitigate impacts to the Indiana bat, provide long-term conservation planning in the project vicinity, and contingencies for future development. It is intended to be a working document, which provides planning tools and guidance for minimizing the incidental takings and assures the continued existence of habitat for the Indiana bat in the study area.

The applicants have requested that the expiration date for the Section 10(a)(1)(B) permit be fifteen years from the date of issuance for the permit. This allows the Applicants to take the Indiana bat within the geographical boundaries identified in the HCP until that date. All mitigation and monitoring will be completed within this time frame. Existing Indiana bat habitat, which has been identified for permanent protection, and all other mitigation lands to be constructed by this project within the IICP area and the Indianapolis International Airport Conservation Area will be preserved in perpetuity. After the expiration of this permit, any "take" within the said geographic boundaries will require reauthorization unless previously deferred based on agreements between the US Fish and Wildlife Service and the Task Force. The terms and conditions contained in the HCP do not expire and are covered by enforcement authority of Section 11(b) of the Endangered Species Act.

2.0 Project Purpose and Status

The purpose of this Habitat Conservation Plan (HCP) is to evaluate the environmental impacts of the proposed project on the Indiana bat and to provide mechanisms to avoid, minimize, and mitigate for any incidental take of the Indiana bat within the proposed project area. This Habitat Conservation Plan is not intended to meet any of the requirements of the National Environmental Policy Act for either the Interagency Task Force or the US Fish and Wildlife Service.

Information regarding the purpose and need, alternatives examined, and the preferred alternative for the proposed interchange project included in this document is summarized from the Environmental Assessment for the Six Points Road Interchange (American Consulting Engineers, Inc., 1995) written to fulfill the National Environmental Policy Act (NEPA) requirements for the proposed interchange.

The US Fish and Wildlife Service has prepared the Environmental Assessment for Issuance of an Endangered Species Act Section 10(a)(1)(B) incidental 'fake Permit for the Indiana bat *(Myotis sodalis)* to the Interagency Task Force Proposing the Six Points Road interchange and Related Development to fulfill the NEPA requirements for the Federal action (by the Service) of issuance of the Incidental Take Permit. Analysis of alternatives investigated and the preferred alternative with regard to issuing an Incidental Take Permit are detailed in the US Fish and Wildlife Environmental Assessment.

2.1 Purpose and Need for the Project

The purpose of the project is to add an additional interchange on I-70 in the vicinity of the Hendricks/Marion County Line and construct various other roadway improvements in conjunction with the new interchange. Recent industrial development near the airport, coupled with residential and commercial development in the surrounding area, has intensified the need for the proposed improvements. This project will also accommodate access to the Midfield Terminal Complex proposed for construction at the Indianapolis International Airport and other future aviation-related activities and allow for additional commercial and industrial development on privately owned land within the AmeriPlex area. Economic benefits anticipated from the improved transportation facilities include the airport development and new and expanded industries drawn to the airport's economic generator, along with enhanced public safety. These benefits justify construction of this project.

For further reference to the purpose and need for the project, refer to the Environmental Assessment for the Six Points Road Interchange (American Consulting Engineers, Inc., 1995).

2.2 Project Components and Status

Local and state transportation officials have been aware of the need for an interchange on I-70 in the airport vicinity for many years. This project first appeared on the official *Thoroughfare Plan for Marion County* in 1968. Numerous studies have been undertaken to determine the most desirable interchange location, the scope of the project, and the construction timetables. In the *1993 Thoroughfare Plan for Marion County*, the Bridgeport Road Interchange (now the Six Points Road interchange) was listed as Priority B and was scheduled for construction in 1992-1996 (now in 2000-2006 MPO plan). Bridgeport Road (now AmeriPlex Boulevard) south of was assigned Priority D with construction scheduled for 2002-2005 (now in 2000-2006 MPO plan). I-70 from Bridgeport Road to 1-465 was listed, but not given a priority rating (now in 2000-2006 MPO plan).

The master plan for Indianapolis International Airport adopted in 1975 recommended the construction of a midfield passenger terminal to replace the existing terminal. With increasing congestion in the terminal and on the airport roadways due to growing passenger volume and increased freight traffic, the Airport Authority Board has initiated preliminary planning for the proposed Midfield Terminal (included in current Airport Master Plan Up-date). The Midfield Terminal will replace the existing terminal and reroute both passenger and air freight traffic south of the airport. Additionally, future aviation-related

development may occur south of I-70 to be accessed from the Indianapolis International Airport via aircraft taxiways or vehicular structures over the interstate.

As a result of the wide variety of transportation options around the Indianapolis International Airport, several business parks, including industrial and distribution centers, have been constructed. AmeriPlex is a large commercial development south of I-70 and the proposed airport expansion and north of SR 67. This development is comprised of multiple large industrial and distribution buildings as well as warehouses and office buildings. The Indianapolis Department of Capital Assessment Management (now the Indianapolis Department of Public Works) and the Indianapolis Department of Metropolitan Development have made various economic development incentive commitments to the developers of AmeriPlex.

As planning has advanced to this point, the following phases of construction are currently proposed:

- ❑ Currently Planned Phased Construction (approximately 2002-2011)
  - o Six Points Interchange (to include separation structure over I-70 , connectors to Stanley Road on the south and Stafford Road on the north, ramp for westbound I-70 to Six Points Road, and ramp for Six Points Road to eastbound I-70)
  - o Six Points Road (Stafford Road to US 40)
  - o AmeriPlex Boulevard extension eastward from Stanley Road
  - o AmeriPlex Phase IV Development
  - o Airport access ramps
  - o Collector-distributor system linking interchange ramps
  - o Realigned/lowered portion of I-70
  - o Access to area south of I-70 available for aviation-related development via aircraft taxiways and vehicular structures over the interstate (anticipated to occur at the same time as realignment and lowering of , if funding allows)
  - o Clear approach glide slopes as necessary for runway safety
- ❑ As traffic volumes warrant and funding is available
  - o Remaining directional ramps for Six Points Interchange
  - o I-70 /1-465 interchange modifications
  - o Aviation-related development south of I-70 .

Environmental studies and preliminary engineering for the proposed project began in January 1995. Initial construction efforts, including the realignment of White Lick Creek, North Creek, Middle Creek, and South Branch, are expected to begin during the 2002 construction season. The initial construction effort will include the proposed creek channel relocations, to be followed a year later by initiation of construction of the Six Points Road Interchange basic diamond configuration and the realigned/lowered portion of I-70 east of the Six Points Road Interchange in 2004.

3.0 Description of the Affected Environment

The proposed project is located in eastern Hendricks and western Marion Counties in central Indiana. Most of the project area is rural in nature, but extends into the west edge of the greater Indianapolis metropolitan area, to the east edge of the growing Plainfield commercial/industrial district, and the south

edge of the Indianapolis International Airport. The small communities of Six Points and Bridgeport are located at the north end of the project. Another small community, Camby, is located near the south project terminus.

Historically, land use in this area evolved much the same as is typical for central Indiana. Original woodland was cleared for farming. Gradually, due to the close proximity to a major city, residential development increased. Several small subdivisions and many residential corridor developments are scattered throughout the project study area. Several major public utility easements cross through the area. The remaining land use is dominated by agricultural parcels (primarily consisting of row crops), scattered woodlots, and the Indianapolis International Airport's Conservation Management Area.

The Indianapolis International Airport's Conservation Management Area is an area that extends from approximately County Road 700 South on the north to County Road 1050 East on the east to approximately the middle of Section 19 on the south and to State Road 267 on the west (Figure 3.1). The conservation area contains approximately 765 hectares (1,890 acres), of which 173 hectares (428 acres) (23%) are restored wetland or Indiana bat habitat, approximately 121 hectares (298 acres) (16%) are interim Indiana bat habitat, 90 hectares (223 acres) (12%) are buffer areas or potential mitigation and restoration areas, and 128 hectares (317 acres) (17%) are airport owned parcels not included as Indiana bat habitat. The remainder of the land, 253 hectares (625 acres) (33%) is privately owned.

The East Fork of White Lick Creek bisects the proposed project area. Indiana bat habitat consisting of numerous small to medium-sized woodlots, wooded corridors, fallow areas with scattered trees, and open fields with mature trees are scattered within the proposed project area. Through mist netting and radio telemetry conducted by the Indianapolis Airport Authority, Indiana bats have been shown to utilize the area extending from approximately Stafford Road on the north to Flynn Road on the east to the Hendricks- Morgan County Line on the south and to State Road 267 on the west (Figure 3.1) as roosting and foraging habitat. Several woodlots within the project vicinity and the Indianapolis International Airport Conservation Management Area contain documented roosting habitat, including the primary roasting habitat for a maternity colony, for the Indiana bat.

Approximately 247 hectares (611 acres) of forested land, wooded pasture, fencerows, wooded riparian corridors, and open immature woodlots potentially suitable for Indiana bat roosting and foraging habitat are located within the proposed HCP area.

Further discussion of the Affected Environment is detailed in the Environmental Assessment for the proposed Six Points Interchange (American Consulting Engineers, Inc., 1995). A determination of Incidental Take Levels within the HCPboundary is detailed in Section 5.0 of this document.

4.0 Alternatives Including the Proposed Action

This section briefly describes a range of project alternatives, including all "reasonable alternatives" under consideration for the proposed project and those "other alternatives" eliminated from detailed study. Included is a discussion of how and why the "reasonable alternatives" were selected for detailed study and why "other alternatives" were eliminated. This section is provided as background information on various alternatives examined and is not intended to fulfill National Environmental Policy Act requirements. For further information regarding alternatives examined for the proposed project, see the Environmental Assessment for the proposed Six Points Interchange (American Consulting Engineers, Inc., 1995).

4.1 No-Action Alternative

Under the No-Action Alternative, only short-term minor traffic enhancement activities such as safety and maintenance improvements would be performed to the roadway system. No new interchange or north-south connector route would be constructed. Interstate access to the proposed airport Midfield Terminal Complex would not be provided. Existing and projected access and system capacity problems would continue. Significant degradation of land-based access associated not only with the airport but also with related industrial development would be expected to occur. This alternative did not meet the need for the proposed project and was discarded.

4.2 Transportation System Management Alternative

Transportation System Management (TSM) activities are efforts to maximize the efficiency of the existing transportation system. The TSM approach to improving the existing transportation system focuses upon seeking solutions to immediate transportation problems, finding ways to better manage transportation, maximizing urban mobility, and treating all modes of surface transportation as coordinated. Specifically, the transportation system management alternative considered:

- High occupancy vehicles for the northeast corridor of I-69/SR 37 from Fishers to downtown Indianapolis;
- Ramp metering along I-70 from the northeast inner loop interchange in downtown Indianapolis to the east leg of 1-465; and
- Ramp metering along the northeast quadrant of 1-465 beginning at the 1-465 Interchange at Michigan Road eastward to the 1-465/I-70 East interchange.

While these improvements would have some benefit, they would not satisfy the need for additional interstate access and were therefore discarded from further discussion.

4.3 Mass Transit Alternative

A Mass Transit Alternative was not considered feasible due to the rapidly changing transportation needs in this region. The primary needs are not only to increase capacity, but also to establish additional access routes to new and relocated industrial and commercial facilities, as well as the Midfield terminal and expanded airfreight facilities to be constructed at Indianapolis International Airport. Interstate access and a high-volume artery through the project area are needed to transport both people and materials. The

Mass Transit Alternative cannot address these needs and was therefore discarded from further consideration.

4.4 Build Alternatives

Many studies have been completed, evaluating possible transportation needs and solutions in the project area (refer to the Environmental Assessment for the proposed Six Points Interchange (American Consulting Engineers, Inc., 1995) for details). Several "build alternatives" have been proposed. The principal differences in the various build alternatives are the locations of the interchange and improvements to the north-south connector roads. Locations and alignments are discussed for all alternatives, but only the preferred alignment is discussed in detail. These alignments are shown on a USGS quadrangle map following the discussion of the alignment. All of the various build alternatives would result in an incidental take of the Indiana bat through removal of suitable roosting and foraging habitat either directly or indirectly.

The Preferred Alternative was chosen by the Task Force in consultation with the US Fish and Wildlife Service and other resource agencies based on numerous environmental factors including impacts to the Indiana bat and other natural resources, socio-economic concerns, and engineering factors including the location of Midfield Terminal, runways, and alignment with other projects in the vicinity.

4.4.1 Alternative A

This alternative proposed a new interchange at Bridgeport Road. The north-south connector would begin on Camby Road about 1.22 kilometers (0.75 mile) east of SR 67. It would extend north (on new alignment) about 610 meters (2,000 feet) where it would curve left to cross SR 67 at a right angle. This crossing of SR 67 is about 760 meters (2,500 feet) southwest of Milhouse Road. About 150 meters (500 feet) northwest of SR 67 it would again curve north and extend about 760 meters (2,500 feet) before starting a long curve west to intersect Flynn Road. The alignment would continue northwest to intersect Stanley Road about 396 meters (1,300 feet) south of I-70 . Alternate A would then curve northerly along existing Stanley Road and Bridgeport Road to County Road 450 South. It would then curve northwesterly and extend on new alignment to Six Points Road, following it to US 40. This alternative was discarded due to direct conflicts between Bridgeport Road and the northern-most railway at Indianapolis International Airport. In addition, the alignment following Bridgeport Road does not align with the Eastern Hendricks County North-South Corridor planning study which utilizes the general Six Points Road (County Road 1050 East) corridor north of US 40. See Figure 4.1.

4.4.2 Alternative B

With this alternative, the new I-70 interchange would be located at the existing Six Points Road grade separation. The north-south connector would begin at the same point as Alternative A and follow the same alignment across SR 67. In this alternative, the tangent across SR 67 would be extended to Milhouse Road. The alignment would follow existing Milhouse Road to Flynn Road, then extend west on new alignment to about mid-way between County Roads 1075 East and 1050 East. Alternate B would then follow a gentle curve to intersect existing Six Points Road, which it would follow to US 40. The basic elements of this alternative have been included in the recommended improvement. The location of the interchange with I-70 for the preferred alternate has been shifted northeast to improve the angle of intersection. In addition, the proposed intersection with SR 67 has been shifted further northeast for the preferred alternate to a more desirable location. Sec Figure 4.2.

4.4.3 Alternative C

This alternative would be largely the same as Alternative A except the portion of the north-south connector north of County Road 450 South would follow existing Bridgeport Road to about County Road 300 South. It would then extend northwest on new alignment to intersect US 40 at a point just east of the Marion-Hendricks County Line. Alternative C has been discarded for the same reasons as Alternative B. It is in conflict with the northern airport runway and does not align with the selected corridor north of US 40 in Hendricks County. See Figure 4.3.

4.4.4 Alternative D

This alternative was the same as Alternative 13, but with an additional I-70 interchange in the vicinity of Hanna Avenue. That additional interchange was intended to specifically serve the Airport Industrial Development Area south of . The concept of a new interchange to serve the Airport Industrial Development Area (AmeriPlex) has been discarded as a result of the interchange justification study report prepared for the Six Points Road Interchange. The spacing between the Six Points Road Interchange and the /1-465 interchange is not sufficient to accommodate an additional interchange under Federal Highway Administration policies. See Figure 4.4.

4.4.5 Preferred Alternative E - Interchange East of Six Points Road

The preferred alternative includes the development of the Six Points Interchange including Six Points Road improvements to the north, the AmeriPlex Boulevard extension, the Midfield Access ramps from for Indianapolis International Airport, the realignment of I-70 , future aviation-related development south of to be accessed from the Indianapolis International Airport via aircraft taxiways or vehicular structures over the interstate, commercial and industrial development in AmeriPlex. Those elements of the above-referenced improvements which will be funded in part by Federal Highway Administration funding have been addressed in an Environmental Assessment for the Six Points Road Interchange project (American Consulting Engineers, Inc., 1995), which received Federal Highway Administration concurrence on October 25, 1994. The following section describes each component of the proposed project. The anticipated impacts to the Indiana bat due to this project are discussed in Section 5 of this document. See Figure 4.5.

4.4.5.I Six Points Road Interchange

The project proposes construction of a new interchange on , centered about 550 meters (1,800 feet) east of the existing Six Points Road overpass. The Six Points Road interchange will be developed initially as a basic diamond configuration with provision for including directional ramps for high volume movements and a collector-distributor system and additional ramps leading to the airport access ramps as demand warrants. Realigning a portion of Six Points Road to a perpendicular crossing of at this location will provide optimum alignment with minimal ramp construction. Ramps to and from the east will connect to and through the airport interchange access ramp system directly and via the collector-distributor system. Directional ramps will carry westbound to southbound Six Points Road (AmeriPlex Boulevard). A second directional ramp will carry southbound Six Points Road to eastbound I-70 . A loop in the northeast quadrant will carry traffic from northbound Six Points Road to

westbound . A loop in the southeast quadrant will carry traffic from eastbound to northbound Six Points Road. A westbound collector-distributor (C-D) extending through the interchange area will connect northbound and southbound Six Points Road traffic to westbound . An eastbound C-D extending through the interchange will connect eastbound to northbound and southbound Six Points Road.

4.4.5.2 Six Points Road Improvements

Six Points Road will be reconstructed to serve as the north leg of the interchange. North of , the alignment of Six Points Road generally follows the existing roadway. The typical roadway section proposed for Six Points Road north of consists of two lanes 3.6 meters (12 feet) wide in each direction separated by a 4.8 meter (16 feet) continuous left-turn median. The northern terminus of Six Points Road must coincide and be compatible with the long-range plans for the proposed Eastern Hendricks County North-South Corridor. Hendricks County is currently working to complete the engineering on the segment of this roadway between US 36 and US 40. Due to the existing residences, businesses, and a church near the community of Six Points, the alignment of Six Points Road at US 40 will be located approximately 100 meters (330 feet) east of the existing intersection.

4.4.5.3 AmeriPlex Boulevard Extension

South of , a new roadway, to be known as AmeriPlex Boulevard, will be constructed extending east from the south end of the interchange to intersect SR 67. The typical roadway section proposed for Six Points Road south of I-70 consists of three lanes 3.6 meters (12 feet) wide each direction separated by a 4.8 meter (16 feet) continuous left-turn center median. The extension of AmeriPlex Boulevard east of SR 67 would begin on Camby Road about 1.22 kilometers (0.75 mile) cast of SR 67. It would extend north on new alignment about 610 meters (2,000 feet) where it would curve northwest to cross SR 67 at a nearly right angle. This crossing of SR 67 is about 760 meters (2,500 feet) southwest of Milhouse Road. The tangent across SR 67 would be extended to Milhouse Road. An interchange will ultimately be constructed at the intersection with SR 67. The interchange will be developed southeast of existing SR 67 and will also provide a grade separation over the railroad tracks paralleling SR 67.

4.4.5.4 Indianapolis International Airport Midfield Terminal Access Ramps

The Indianapolis International Airport Midfield Terminal access will be a trumpet-type interchange centered about 425 meters (1,400 feet) cast of the existing Bridgeport Road overpass. In 2000, the Indianapolis Airport Authority initiated detailed planning associated with development of a new Midfield Terminal. Dual northbound ramps into the airport will come from westbound I-70 in the northeast quadrant and a ramp over all I-70 lanes from the eastbound C-D (access from Six Points Road northbound, Six Points Road southbound, and eastbound). A dual-lane southbound ramp from the airport will carry traffic over I-70 to eastbound I-70 . A separate ramp will carry southbound traffic from the airport to the westbound C-D with access to westbound, northbound Six Points Road, and southbound Six Points Road.

4.4.5.5 Realignment of I-70

Beginning east of SR 267, this project proposes to modify I-70 through the 1-465 interchange. Traffic projections indicate the typical roadway section for I-70 between 1-465 and the Six Points Road

Interchange should be widened to provide four lanes each 3.6 meters (12 feet) wide in each direction with a median including a concrete barrier wall. West of the Six Points Road Interchange, the existing six-lane divided roadway section will be maintained. The Indiana Department of Transportation has a proposed project to improve the interchange with I-70 at SR 267, which is proposed to occur concurrently with the realignment and lowering of I-70 east of the Six Points Road interchange. To accommodate reconstruction phasing, maintenance of traffic and future airport plans, it has been proposed to relocate and depress a portion of I-70 between the proposed Six Points Road Interchange and 1-465 to provide clearance for a pair of airplane taxiway bridges and pair of ground support vehicle bridges over the interstate. This is to provide access between Indianapolis International Airport's main airfield and future aviation-related development that may occur south of I-70 .

The existing 1-465/I-70 interchange is a partial cloverleaf configuration with only the northeast loop missing from a full cloverleaf. This interchange will be up-graded at some time in the future with ramps constructed, relocated, or reconstructed as necessary to accommodate projected future traffic demands. The Indiana Department of Transportation is developing an overall evaluation of the 1-465 system southwest of Indianapolis that will be the basis for improvements to both the I-70 interchange as well as other components of the system.

4.4.5.6 Aircraft Taxiway and Vehicular Structures over I-70

The proposed airport taxiway and vehicular overpass structures will provide access between future aviation-related development south of I-70 and the existing airport. There will be no vehicular traffic access to I-70 at this location. It is anticipated preliminary work associated with the proposed taxiways will be accomplished at the time is realigned and depressed, reducing the duration and extent of I-70 traffic disruption at the time the taxiways are constructed. This work may include construction of pier foundations, piers, and retaining walls.

4.4.5.7 Commercial and Industrial Development within the Study Area

In addition to the anticipated habitat losses associated with the construction of the roadway improvements discussed previously, the study area is experiencing significant commercial and industrial development. An economic development study prepared to assess the impact of expansion of facilities at Indianapolis International Airport and the presence of significant land-based transportation facilities in the Indianapolis region predicted approximately 80 acres of development per year in the general vicinity of the airport and Plainfield for the next two decades. It appears the current rate of development may be greater than the forecast rate. That development will predominantly convert agricultural land, but there will be some loss of potential Indiana bat habitat.

The City of Indianapolis is cooperating with the Holladay Group to provide infrastructure in the AmeriPlex area south and southeast of the proposed Six Points Road interchange along AmeriPlex Boulevard. It is important to note the AmeriPlex area has been experiencing significant development without the proposed interchange and is anticipated to continue to develop. Impacts to the Indiana bat (and the mitigation provided for those impacts) as a part of the private development within AmeriPlex are included in this HCP. Impacts to Indiana bats (and any permitting and mitigation requirements) as a result of private development not associated with AmeriPlex are the responsibility of the private landowners and are not considered in this HCP.

4.4.5.8 Clearing of Approach Areas for Runways

The Indianapolis International Airport currently operates three runways. Runways 5L/23R and 5R/23L arc the two primary parallel runways and extend in a northeast-southwest orientation. Runway 14/32 is a cross-wind runway extending in a northwest-southeast orientation. The approach areas and associated approach slopes for the primary parallel runways extend over the Habitat Conservation Planning Area (Figure 4.5). For safety reasons and to comply with Federal Aviation Regulations and the Airport Zoning Ordinance of Marion County, Indiana, the Indianapolis Airport Authority will be required to remove trees reaching a certain height within the approach areas for each of the runways. Potential impacts related to that loss of habitat are identified in this HCP and the mitigation package proposed herein reflects that potential loss of suitable habitat.

5.0 Environmental Consequences

Environmental consequences of the proposed development of the interchange and associated development are anticipated to result in the incidental taking of the Indiana bat due to the removal of foraging and roosting habitat. Additional environmental consequences due to the proposed project are discussed in the Environmental Assessment for the proposed Six Points Interchange (American Engineers, Inc., 1995).

5.1 Determination of Anticipated Incidental Take Levels for the Preferred Alternative E Interchange East of Six Points Road

The potential for incidental taking of the Indiana bat is anticipated to result from the loss of roosting and foraging habitat within the proposed project area. Cutting or removal of an Indiana bat roost tree when bats are present in the tree is likely to result in bats being injured or killed. Project applicants will avoid killing or injuring roosting bats by removing trees in the project area only between September 15 and April 15, when summering Indiana bats are not anticipated to be present.

The area of impacts to the Indiana bat for the proposed project includes approximately 139 hectares (344 acres) of potential habitat within the boundaries of the Habitat Conservation Plan. The general area includes portions of the East Fork of White Lick Creek watershed. The creek, as are most of its tributaries, is lined with a riparian band of mature trees. The remainder of the impact area is cropland, abandoned farm ground, pasture, isolated woodlots, fencerows, open woodlots, and residential or farm parcels. The isolated woodlots, wooded corridors, and forested floodplains within the proposed project area have high tree species diversity and canopy cover suggestive of potentially suitable Indiana bat foraging and roosting habitat.

Approximately 247 hectares (611 acres) of forested land and wooded pasture potentially suitable for roosting and foraging habitat is located within the proposed HCP area. The Six Point Interchange and associated highway related projects will directly result in the loss of approximately 37.6 hectares (93.7 acres) of potential Indiana bat habitat. This includes approximately 19.8 hectares (49.3 acres) of mature woodlots, 9.9 hectares (24.7 acres) of mature scattered trees or immature woodlots, 0. hectares (1.1 acres) of drainageway or fencerow, and 7.5 hectares (18.6 acres) of open field with scattered large trees. Those areas will be cleared of trees that will destroy their function as potential bat habitat.

Development within the HCP boundaries associated with future aviation-related development the Indianapolis International Airport may result in the loss of an estimated 35.9 hectares (88.9 acres) of potential Indiana bat habitat. This includes approximately 14.5 hectares (36 acres) of mature woodlots, 8.3 hectares (20.5 acres) of mature scattered trees or immature woodlots, 0.9 hectares (2.3 acres) of drainageway or fencerow, and 12.2 hectares (30.1 acres) of open field with scattered large trees. Those areas will be cleared of trees that will destroy their function as potential bat habitat.

Within the 35.9 hectares (88.9 acres) of Indiana bat habitat impacted by future aviation-related development approximately 8.1 hectares (20.1 acres) may require clearing for safety concerns. These include impacts within Tracts 30, 31, 45, and 46 (Figure 12.1). These will be deferred until required by the airport and impacts may not occur within the 15-year term of the HCP. All mitigation for these impacts will be conducted as part of the HCP mitigation. Tree seedlings will be planted and monitored as though the impacts occurred during the period of the HCP even though existing woodlots will continue to serve as habitat until clearing is required. Portions of the woodlots may be preserved indefinitely depending upon clearing requirements. The US Fish and Wildlife Service will be contacted prior to any clearing within these woodlots to ensure compliance with the HCP and all permits. No clearing will be conducted between April 15 and September 15.

Development within the HCP boundaries associated with private development within the AmeriPlex industrial park may result in the loss of an estimated 65.5 hectares (162 acres) of potential Indiana bat habitat. The area impacted by AmeriPlex includes approximately 24.4 hectares (60.2 acres) of mature woodlots, 9.8 hectares (24.2 acres) of mature scattered trees or immature woodlots, 28.5 hectares (70.5 acres) of open fields with scattered large trees, 2.8 hectares (7 acres) of vegetated drainageways or fencerows. Those areas will be cleared of trees that will destroy their function as potential bat habitat.

Existing Indiana bat habitat will be preserved in perpetuity, a monitoring program will be implemented, and educational outreach opportunities will be implemented in addition to the proposed seedling plantings as mitigation for the various impacts to Indiana bat habitat resulting from the interchange and associated development. Approximately 71.2 hectares (174.9 acres) of existing Indiana bat habitat will be preserved within the HCP boundary and 80 hectares (197 acres) of Indiana bat habitat outside the HCP boundary, but within the documented foraging range of the Indiana bats, will be preserved. The majority of the parcels to be preserved are located within the Indianapolis International Airport Conservation Management Area. See Section 12.0 of this document for further details on the proposed mitigation measures put forth for this HCP.

6.0 Delineation of HCP Boundaries

The Habitat Conservation Plan addresses potential impacts to suitable Indiana bat habitat within the general area bordered by Stafford Road on the north, Flynn Road south of I-70 on the east, the Section Line west of Six Points Road on the west, and County Road 650S/Flynn Road extended on the south (Figure 1.2). This area totals approximately 1,448 hectares (3,579 acres). Where the HCP boundary follows an existing roadway, the boundary is the existing centerline of the roadway. Under this Habitat Conservation Plan, the anticipated impacts to identifiable suitable Indiana bat habitat within the geographical limits of the Plan resulting from the proposed interchange and related roadway improvements, the proposed airport improvements south of I-70 , and private development within AmeriPlex will be mitigated. These proposed impacts to Indiana bat habitat within the HCP boundary

will occur within 15 years of the date of issuance of the incidental take permit. The purpose of the Plan is to assure the continued existence of suitable habitat to support the Indiana bat in the project area.

Under this Habitat Conservation Plan, the anticipated impacts to identifiable suitable Indiana bat habitat within geographical limits of the Plan resulting from the proposed interchange and related roadway improvements, the proposed airport improvements south of I-70 and associated with the Midfield Terminal access, and private development within AmeriPlex will be mitigated.

Private development on privately owned land within the HCP boundary could potentially impact an additional 37 hectares (91 acres) of Indiana bat habitat, including 7,2 hectares (17.5 acres) of scattered trees or immature woodlot, 3.3 hectares (8.1 acres) of vegetated drainageway or fencerow, 3.2 hectares (7.8 acres) of open field with scattered large trees, and 23.4 hectares (57.7 acres) of mature forested areas. Those impacts will not be mitigated for as part of the HCP and are not included in the HCP. Those parcels are not controlled by the HCP applicants and the proposed project does not involve any impacts to Indiana bats on those parcels.

7.0 Collection and Synthesis of Biological Data for the Indiana Bat

The Indiana bat is a medium-sized bat with a head and body length ranging from 41 mm to 49 mm. It is a monotypic species, which occupies much of the eastern half of the United States. Large, hibernating populations are found in Indiana, Missouri, and Kentucky. However, populations and individual records have been reported from 22 other Eastern and Midwestern states. The Indiana bat is the only Federally listed threatened or endangered species considered likely to occur in the proposed project area. As such, this HCP will focus on conservation of Indiana bat habitat, specifically summer roosting and foraging habitat.

Beginning in 1991, the Indianapolis Airport Authority has conducted numerous Indiana bat studies in or adjacent to the proposed project area. These studies were conducted by 3D/Environmental, Inc. (3D) from 1991-1996 and American Consulting, Inc./Dr. John 0. Whitaker, Jr. from 1997-1999. This work was performed pursuant to the Biological Opinion and Incidental Take Statement issued by the US Fish and Wildlife Service (USFWS) on March 2, 1992 (amended on April 20, 1995 and March 31, 1999) for development of several areas of Indianapolis International Airport property. As a result of these and other studies, the following information has been gathered regarding the Indiana bat populations in the area and the available summer habitat.

7.1 Status

The Indiana bat was listed as a Federally endangered species by the USFWS on March 11, 1967. As such, legal protection of this species was provided under the Endangered Species Act of 1973 (Public Law 93-205), as amended in 1982 (Public Law 97-304). The most serious threat to the Indiana bat is the destruction and disturbance of winter habitat and deforestation of summer nursery and roosting sites.

In 1983, a Recovery Plan for the Indiana bat was approved (Brady, *et. al).* The objectives of this recovery plan are:

- Protection of hibernacula;
- Maintenance, protection, and restoration of summer nursery habitat;
- Population monitoring through winter censusing;
- Public education; and
- Continued research to determine life history characteristics and habitat requirements.

The Recovery Plan was revised in the late 1990's and the Draft Revised Indiana Bat Recovery Plan was published for review in March 1999. Although the revised recovery plan has not been approved, the listed objectives have been incorporated into this HCP in anticipation of the plan's approval. To fulfill the Draft Recovery Plan's stated goal of de-listing the Indiana bat within 12 years of implementation of the Recovery Plan, the following actions have been determined to be necessary.

- Conduct research necessary for the survival and recovery of the Indiana bat including research on the ecology and life history of the Indiana bat, genetics, potential effects of chemical contamination on summer habitat, and measuring the effects of cave modifications;
- Obtain information on populations, distribution, status, and trends including monitoring the status of populations in hibernacula, monitoring the status of populations in summer habitat, and re-establish a central banding authority;
- Protect and maintain Indiana bat populations including restoring abandoned hibernation caves, protect the Indiana bat during hibernation, and provide maternity roosts through silvicultural processes;
- Provide information and technical assistance outreach including promoting awareness of the needs of Indiana bat; and
- Coordinate and implement the conservation and recovery of the Indiana bat by communicating with land managers and researchers.

The proposed project area contains known summer roosting and foraging habitat for the Indiana bat. As such, the maintenance, protection, and restoration of this habitat are primary goals of the HCP for Indiana bat conservation in the vicinity of the Six Points Road Interchange. In addition, obtaining data on the ecology and life history of the Indiana bat at the summer roosting site and monitoring the known population arc important parts of the monitoring program proposed in the HCP. Therefore, the implementation of the HCP will complement the Recovery Plan and provide valuable data for the eventual recovery of the Indiana bat.

7.2 Summer Habitat

Most Indiana bats migrate seasonally between winter hibernacula and summer roosts. Female Indiana bats emerge from hibernacula in late March or early April, followed later by the males. Most populations leave their hibernacula by late April, but some males spend the summer in and around the hibernacula.

Female Indiana bats migrate while pregnant and give birth to **a** single young in June or early July. During that time, they join together in nursery colonies beneath the loose bark of trees. Some of these summer nursery colonies may contain up to 100 bats. Emergence counts at the maternity colony in the vicinity of the Indianapolis International Airport Conservation Management Area confirmed a colony of as many as 146 individuals in 1999. Scattered records suggest male bats disperse throughout their entire range during the summer, but little is known about their roosting habitats.

The two most important factors affecting the summer habitat for the Indiana bat are roosting and foraging habitat. The following sections detail important factors for both types of habitat as well as data concerning the ecology of the known maternity colony within the HCPboundaries.

7.2.1 Roosting Habitat

Indiana bats return yearly to the same summer roost location following their spring migration. Known roost trees and nursery colonies occur primarily in riparian and upland forests adjacent to ephemeral and permanent streams. Indiana bats roost in large, dead or live trees, with loose bark and occasionally in tree hollows. Primary roost trees are generally greater than 40 centimeters (15.7 inches) diameter at breast height (dbh) and partially exposed (3D, 1995b). Ideal roosting habitat consists of forest with 60-80 percent overstory canopy cover, overstory trees greater than 40 centimeters (15.7 inches) dbh, more than 40 live trees per hectare (16.2 live trees per acre) larger than 22 centimeters (8.7 inches) dbh for future roost habitat, more than 15 potential roost trees per hectare (6 potential roost trees per acre), and less than 30 percent subcanopy cover (3D, 1995b). Secondary roost trees are generally greater than 18 centimeters (7.1 inches) dbh and less exposed than primary roost trees (3D, 1995b).

Tree structure, especially exfoliating bark, appears to be the most important factor in determining roost suitability. Bats have most often been found in trees having thick bark which, after death, is retained in loose slabs for a relatively long time. Trees used most frequently as nursery colonies had more than 35 percent exfoliating hark. Additionally, tree size and exposure are important factors influencing roost selections. Roost trees are generally large trees partially exposed to sunlight in a forested area with 80 percent or greater cover. It is assumed that thicker bark, larger trees, and exposure to sunlight play important factors in temperature regulation within the roost tree and the creation of microclimates within the roost.

Secondary factors that influence roost selection include proximity of roosting habitat to foraging habitat and the density of roost trees within a woodlot. Indiana bats, especially female bats that are nursing, do **not** travel very far from their roost to forage (personal communication with Laborda, 1998). Ideal roosting habitat is within 4,000 meters (2.5 miles) of foraging habitat. Indiana bats captured and monitored using radio telemetry near the Indianapolis International Airport traveled as much as 3,725 meters (2.3 miles) from their roost to the center of their foraging area, with a average distance traveled of approximately 1,300 meters (0.8 mile). The maximum recorded distance a bat has traveled to forage during the Indianapolis Airport Authority's project was 4,660 meters (2.9 miles), with the average maximum distance of approximately 3,500 meters (2.2 miles) (3D, 1995; 3D, 1996; American Engineers, Inc., 1998; American Engineers, Inc., 1999; AMERICAN CONSULTING, INC., 2000).

Indiana bats are known to use multiple roost sites within a single woodlot. Kurta and Williams' radio tracking results indicated on the average Indiana bats used 2.1 roosts and changed roosts every four days.

As a result, one of the factors that influence the suitability of a woodlot for habitat is the availability of individual roost trees within that woodlot. Gardner, *et. al* 199I, and Gardner, 1992, suggested the optimal density of roost trees within a woodlot is 17 potential roost trees per hectare (6.9 potential roost trees per acre) in uplands and 27 potential roost trees per hectare (10.9 potential roost trees per acre) in floodplains. Because the bats prefer large dead trees, a potential roost tree has a limited lifespan of five to ten years. As a result, the number of smaller live roost trees within a woodlot is important to the long-term sustainability of the woodlot as Indiana bat habitat.

Mist netting for the Indianapolis Airport Authority's project during the summer of 1996 revealed the presence of an Indiana bat maternity roost tree used by several of the bats, as well as an alternative roost near the maternity tree. The maternity tree is a dead shagbark hickory *(Carya ovata)* located in the interior of a woodlot approximately 0.6 kilometer (0.4 mile) south of I-70. Estimates were that 100 bats used the maternity tree in 1996 (3D, 1996). Monitoring of the maternity tree continued in 1997 and 1998. During 1997, at least 70 Indiana bats were observed emerging from the maternity tree during an emergence count (America Engineers, Inc., 1998). In 1998, at least 139 Indiana bats were observed emerging from the same maternity tree (American Engineers, Inc., 1999). At least 146 Indiana bats were observed emerging from that maternity tree in 1999 (AMERICAN CONSULTING, INC.., 2000).

Additional monitoring and radio telemetry in 1997 revealed the presence of a second maternity roost tree (America Engineers, Inc., 1998). The second maternity tree, a large eastern cottonwood *(Populus deltoides),* was in a woodlot adjacent to the East Fork of White Lick Creek southeast of the shagbark (personal communication with Laborda, 1998).

Indiana bat monitoring was conducted on a limited basis during the summer of 2000 by Indiana State University as part of their ongoing research on bats and their habitat. An Indiana bat was netted, radio tagged, and tracked to another potential roost tree (eastern cottonwood) along the East Fork of White Lick Creek south of the existing Conservation Management Area near the Indianapolis International Airport (personal communication with Laborda, 2000). It is unclear if that roost tree is potentially a third primary roost or another secondary roost tree.

The two known primary roost trees utilized by the Indiana bat in the project area are a shagbark hickory snag and a dead eastern cottonwood. The shagbark hickory snag primary roost has a dbh of 59.3 cm (23.3"), height of 17.8 m (58.4') and a canopy cover of 40 percent. This tree is in an upland woodlot near an ephemeral stream. Bats were observed in this tree during the 1998 season from April 5 through October 8. The number of bats utilizing the tree, as determined by emergence counts, varied from night to night and peaked on July 15, 1998, with 139 bats and on July 15, 1999, with 146 bats.

The cottonwood primary roost had a dbh of 110.50 cm (43.5"), height of 28.3 m (92.8'), and a canopy cover of 30 percent. During the 1998 field season, bats were observed in this tree from April 1I through June 29 when heavy storms significantly damaged the tree. The number of bats utilizing the tree as determined by emergence counts varied from night to night and peaked on May 20 with 64 hats. No bats were observed using this roost following the June 29, 1998, storm. This roost was located within the riparian corridor of the East Fork of White Lick Creek (American Engineers, Inc., 1999).

The potential third primary roost tree is located along the East Fork of White Lick Creek in Morgan County south of the existing Indianapolis International Airport mitigation area. This tree is a dead

eastern cottonwood with a dbh of 80 cm (31.5"), height of 16.8 m (55'), and a relatively open canopy. Bats were observed in this tree during the 2000 season in late August. An emergence count at this tree indicated the presence of 71 bats (personal communication with Laborda, 2000).

Radio telemetry of Indiana bats found at the Indianapolis International Airport confirms the use of multiple secondary roosts. One male Indiana bat was discovered on June 26, 1995, roosting in an artificial roost structure erected and maintained as part of mitigation program developed under the Indianapolis Airport Authority's Incidental Take Statement. That bat was radio tagged and tracked to five artificial roost structures and two naturally occurring roosts (3D, 1995). This was the first known occurrence of an Indiana bat using artificial structures.

During the 1998 and 1999 field seasons, radio telemetry was used to locate secondary roost trees. Emergence counts were conducted at both the primary and secondary roost locations. In addition to the two primary roost trees located in the project area, twelve alternate roosts were documented in 1998 using telemetry and emergence counts and twelve alternative roosts were documented in 1999. Three of the alternative roosts documented in 1999 were previously documented in 1998. All alternate roosts identified in 1998 were located in the same woodlot as the shagbark hickory primary roost tree. Of the alternate roost trees identified in 1999, nine were located in the same woodlot as the shagbark hickory primary roost tree, two were located within a woodlot northeast of the shagbark woodlot, and one was located within the same woodlot as the cottonwood primary roost tree.

The tree species utilized during the 1998 field season for secondary roosts were sugar maple *(Acer saccharum),* shagbark hickory, shellbark hickory *(Carya laciniosa),* mockernut hickory *(Carya tomenlosa),* honey locust *(Gleditsia triacanthos),* black walnut *(Juglans nigra),* eastern cottonwood, white oak *(Quercus alba),* and northern red oak *(Quercus rubra).* The dbh of the alternative roost trees ranged from 9.6 cm (3.8") to 75.0 cm (29.5"), with an average of 40.3 cm (15.9"). Tree height ranged from 5.5 m (18.0') to 34.8 m (114.2'), with an average of 23.8 m (78.1'). Canopy cover ranged from 60 to 90%, with an average between 70 to 75 percent (American Engineers, Inc., 1999).

The tree species utilized during the 1999 field season for secondary roosts were shagbark hickory, slippery elm *(Ulmus rubra),* and American elm *(Ulmus americana).* The dbh of roost trees ranged from 26 cm (10.2") to 64.8 cm (25.5") with an average of 37.5 cm (14.8"). Tree height ranged from 8.8 meters (28.8') to 29.9 meters (98.1'), with an average of 20.3 meters (66.6'). All trees were in a healthy, mature woodlot with a canopy cover estimated to be above 70 percent for each alternate roost tree (AMERICAN CONSULTING, INC., 2000).

7.2.2 Foraging Habitat

Indiana bats use riparian forest, upland slopes and ridge tops, clearing edges between forest and croplands, and early successional areas for foraging. Ideal foraging habitat for the Indiana hat consists of riparian and upland forest with 50-80 percent overstory canopy cover and less than 40 percent of the forest composed of small [5-12 centimeter (2-5") dbh] trees. Overstory provides protective cover and substrate for insect prey species and larger trees provide open space for maneuverability. Additionally, ideal habitat occurs within 20 meters (65.6") of permanent water and is within an analysis area with at least 30 percent forested cover (3D, 1995). Streams without riparian vegetation do not appear to be suitable foraging habitat. Bats forage at a height of 2 to 30 meters (6 to 100 feet) under riparian and floodplain trees and in upland forests.

Indiana bats feed primarily on moths and aquatic insects. Food sources are predominately Lepidoptera (moths) and Coleoptera (beetles), occasionally with Diptera (flies), Trichoptera (caddisflies), and Plecoptera (stoneflies). Both upland and riparian forest foraging areas appear to be required in order to maintain the diversity of food sources preferred by the Indiana bat.

Foraging habitat is occupied by Indiana bats from mid-April to mid-September. LaVal *et. al.* (1977) and LaVal and LaVal (1980) found adult males forage predominately in upland forest around tree crowns. Both sexes foraged in riparian and upland habitat. Time spent in each habitat type was proportionate to the habitat availability. Vertically, foraging was most common in the canopy of upland forest, occasional in the subcanopy, and never in the shrub layer. Bats forage in the canopy of riparian and non-riparian woodlands and travel in the open subcanopy over streams.

The use of foraging habitat can change during the course of the summer. During early summer, foraging is generally restricted to riparian habitats closer to roost trees. After the young of the year became volant, foraging activity is extended to single trees and other floodplain forested edge. Upland hedgerows, open pasture, cornfields, and treeless creeks are not generally used by foraging bats. Young Indiana bats are capable of flight within a month of birth. They spend the latter part of summer foraging to accumulate fat reserves for fall migration and hibernation.

Bats use many different roosts in a short period of time (3D/Environmental, 1995b), but generally remain loyal to one foraging area, traveling over 3,000 meters from a roost to the center of their foraging range. Bats displayed high night fidelity in their selection of foraging ranges. Most bats captured during the Indianapolis Airport Authority's program concentrated foraging efforts within and around isolated woodlots, many of which contain ephemeral streams tributary to the East Fork of White Lick Creek, and agricultural lands.

During the 1995-1996 monitoring years, four of the radio-tagged bats appeared to utilize some of the riparian forest along the East Fork White Lick Creek. Forest cover comprised 14.1-18.1 percent of the composite foraging range of each hat while agriculture land (52.8-64.9 percent coverage) was the most abundant cover type within the foraging range of each bat (3D, 1995; 3D, 1996).

During the 1999 field season, telemetry data was utilized to estimate the amount of time spent by each bat foraging over various habitat types. Agricultural and wetland areas were utilized the most with an average of 48.8 percent (20-84%) of time spent by the nine bats tracked over crop fields. Upland forests were utilized an average of 45.8 percent of the time (14%-79%) and riparian habitat was utilized an average of 5.9 percent (1%-26%).

7.3 Winter Habitat

Based on data collected during hibernacula counts in 1995, the total estimated population of Indiana bats was 352,000, half of which were found in hibernacula in Indiana. Fifty percent of all Indiana bats wintered in only four caves, three of which are in Indiana. Hibernacula counts have shown continued declines since the 1995 count.

7.4 Breeding

Bats mate in the autumn after migration. The females store sperm over the winter hibernation and fertilization is delayed until spring (Wimsatt, 1944). Females emerge from hibernation and migrate away from hibernacula. Females are pregnant as they migrate and when they arrive at the roost trees. Parturition takes place from mid-June to early-July. Lactating females have been caught as early as June 11, extending through July 29 in Indiana. Juveniles become volant between early-July and early-August. Independent juveniles and post-reproductive females have been found at the caves as early as July 18 in Missouri and July 31 in Indiana, although most do not arrive until mid-August.

During the 1998 Indiana bat survey at the Indianapolis International Airport, seven juvenile Indiana bats were mist netted. Three newly volant juveniles were captured on July 12. These individuals were too small to be radio tagged. Additionally, four juveniles were captured mid-August. All four of these individuals were radio tagged and tracked (American Engineers, Inc., 1999).

During the 1999 field season, four pregnant females were captured: two on June 3, one on June 17, and one on June 29. Additionally, three juveniles were captured on July 13, July 22, and July 30. Two lactating females were captured: one on July 22 and the other on July 30. All but the pregnant female captured on June 29 were radio tagged and tracked (American Engineers, Inc., 2000).

8.0 Compliance with Federal and State Regulations

As with any significant construction project, the proposed Six Points Road Interchange and related elements will require compliance with various Federal and State Regulations. Compliance with many of these regulations includes acquisition of various permits from federal and state agencies prior to initiation of construction. The following discussion addresses compliance with the various regulations, permits required, and the coordination underway to obtain these permits.

8.1 Section 7 of the Endangered Species Act

The HCP Applicants chose to address the impacts to the Indiana bat due to the road construction, as well as commercial development and airport improvements that will occur in the area following the road construction within one document. However, even though the HCP participants chose to address the road construction impacts within this HCP, the FHWA is required to fulfill Section 7 consultation requirements for this project due to their federal agency status. Therefore, the biological opinion prepared for this action will address the adequacy of the HCP in fulfilling the Section 7 consultation requirements of the FHWA. In addition, the biological opinion prepared for this action will evaluate the Service's issuance of an incidental take permit pursuant to Section 10 of the Endangered Species Act. This Section 10 incidental take permit will authorize takings of the Indiana bat resulting from proposed road construction, commercial development, and airport expansion and improvements. Both Section 7 and Section 10 consultation are proceeding concurrently.

8.2 Section 404 of the Clean Water Act

Waters of the United States, including wetlands, are within the jurisdiction of the US Department of the Army Corps of Engineers under Section 404 of the Clean Water Act (33 CFR 320-331). "Waters of the United States" is a broad term, which describes all interstate waters and any water that affects interstate

traffic or commerce. This includes rivers, streams, wetlands, and many ditches. If filling or dredging operations are proposed to occur within Waters of the Unites States, either a Pre-Construction Notice or a Permit is required from the Corps of Engineers under Section 404.

The proposed project is anticipated to impact approximately 2.4 hectares (6 acres) of emergent and forested wetlands, approximately 3.25 acres of borrow pit and approximately 3,546 meters (11,635 feet) of stream. The length of the East Fork of White Lick Creek to be relocated by the proposed project has a sparsely wooded riparian corridor, which has been heavily impacted by residential and agricultural activities. This portion of the creek provides minimal habitat for the Indiana hat compared with portions of the East Fork of White Lick Creek downstream of County Road 600 South, which has a naturalized riparian corridor. Impacts to forested riparian corridors which provide Indiana bat habitat within the HCP boundaries have been included in the anticipated take levels and the proposed mitigation measures.

Early coordination has been on-going with the US Army Corps of Engineers, the Indiana Department of Environmental Management, the Indiana Department of Natural Resources, and the US Fish and Wildlife Service. Project planning to minimize the area of impact and to mitigate the unavoidable impacts is continuing. Application for an individual Section 404 Permit will be made to the Louisville Corps of Engineers during the review and public comment period for this document.

Impacts to forested and emergent wetlands are scattered throughout the proposed project area, and have been minimized to the greatest extent possible. Unavoidable impacts are proposed to be mitigated at a location that lies between the Indianapolis International Airport's previously constructed wetland cells and the East Fork of White Lick Creek. The proposed mitigation plan includes creation of emergent and forested wetland within the floodway of the East Fork of White Lick Creek, completing an approximately 80-acre restored block of habitat including Indiana bat habitat, created emergent and forested wetlands, and naturalized buffer areas.

As part of the overall proposed project, portions of the East Fork of White Lick Creek, Middle Creek, North Creek, and South Branch will be relocated around the perimeter of the proposed interchange to minimize long-term recurring impacts on these creeks. The creek relocations involve impacts to the creek channels and removal of potential Indiana bat habitat surrounding the creek channels. Mitigation for impacts to the Waters of the US and to the potential Indiana bat habitat outside the creek corridor includes creation of new naturalized stream channels within a forested riparian corridor. Wherever possible, mitigation plantings for Indiana bat habitat will be used for reforestation of the riparian corridors.

Both the proposed wetland mitigation and creek relocation plans are being prepared in consultation with the US Army Corps of Engineers, the Indiana Department of Environmental Management, the Indiana Department of Natural Resources, and the US Fish and Wildlife Service. Further details on the proposed wetland and creek relocation plans will be included in the Wetland Mitigation Plan and the Creek Relocation Plan. A summary of the proposed monitoring of the wetland mitigation and creek relocations is included in Section 13 of this document.

8.3 Section 106 of the National Historic Preservation Act

Section 106 of the National historic Preservation Act (16 USC Section 470f) and the Section 106 regulations (36 CFR Part 800) require any federal agency having jurisdiction over a project which will be funded or licensed by a federal agency take into account the project's effect on historic properties.

The agency must offer the Indiana State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation a reasonable opportunity to comment on the project's potential effect on historic or cultural resources. A historic property is any district, building, structure, object, or site that is either listed in or eligible for the National Register of Historic Places.

The archaeological reconnaissance conducted for the proposed project identified sixty-one previously unrecorded archaeological sites. Many of those sites have only historic components and are associated with residences removed by either the Indianapolis Airport Authority or the construction of . Eight sites were recommended for further testing or avoidance. Of these sites, five were avoided by the proposed interchange and three were investigated further, although none were found to he potentially eligible for inclusion on the National Register. Coordination with the State Historic Preservation Officer has been completed and the Federal Highway Administration has issued a Determination of No Historic Properties affected for the proposed Six Points Road Interchange. Concurrence from the parties is anticipated to be completed in April 2002.

8.4 State Threatened and Endangered Species

The Indiana hat is listed as endangered by the State of Indiana. Under Indiana law (Indiana Code 14-22-34) and Fish and Wildlife Administrative Rules (310 IAC 3.1-2-7) vertebrates and mollusks classified as endangered in Indiana are protected from "take." "Take" under Indiana law means to harass, hunt, capture, or kill or attempt to harass, hunt, capture, or kill, wildlife. Because of the nature of activities to be carried out under this Habitat Conservation Plan, it is not anticipated that "take", as defined by Indiana law, will occur. The clearing of Indiana bat habitat will occur during the period when bats are not known to be present at the site. There will be no potential for felling trees containing roosting bats or harassing bats with the operation of logging equipment in the immediate vicinity of their roosts. The definition of "take" under the ESA differs from the definition under Indiana law. The habitat alteration which will occur as a result of the proposed project will result in a "take" as defined in the ESA.

Indiana Fish and Wildlife Administrative Rules (312 TAC 9-10-18) allow for limited take permits for State-endangered species (provided that the species is also a federally proposed or federally listed species) under specific circumstances. If the proposed project plans change such that direct mortality or harassment of bats is anticipated *(i.e.,* take will occur as defined by State law), then the Indiana Department of Natural Resources will be contacted and a State permit for take will be pursued.

The handling of Indiana bats to fulfill monitoring requirements associated with this I-ICP will require a state permit as well as a federal permit. The Indianapolis Airport Authority will insure that individuals carrying out monitoring have the required permits.

8.5 Section 401 of the Clean Water Act

The Indiana Department of Environmental Management (IDEM) administers the Section 40I Water Quality Certification (WQC) Program. It is necessary to obtain Section 401 Water Quality Certification from the Indiana Department of Environmental Management under provision of the Clean Water Act Amendments for any project requiring a Section 404 Permit from the Corps of Engineers. IDEM reviews the proposed activity to determine if it will comply with Indiana's water quality standards.

Coordination has been initiated with the Indiana Department of Environmental Management. Application for Section 401 Water Quality Certification will be made to the Indiana Department of Environmental Management concurrently with submittal of the application for a Section 404 Permit.

8.6 Construction in a Floodway

A series of Construction in a Floodway permits will be required from the Indiana Department of Natural Resources (3I0 IAC 6) for construction of the several bridges associated with this project and the placement of fill for the roadway embankments. The purpose of these permits is to ensure the hydraulic design is adequate to accommodate flood discharges so the project will not increase the potential for or extent of upstream or downstream flooding. These permit applications arc currently under review by the Indiana Department of Natural Resources.

8.7 Rule 5 Erosion Control

The purpose of 327 IAC I5-5 (Rule 5) is to reduce pollutants, principally sediment as a result of soil erosion, in storm water discharges into surface waters of the state. The requirements of Rule 5 apply to all persons who are involved in construction activity (which includes clearing, grading, excavation and other land disturbing activities) resulting in the disturbance of two hectares (five acres) or more of total land area. If the land disturbing activity results in the disturbance of less than two hectares (five acres) of total land area, but is part of a *larger common plan of development or sale* (such as the development of a subdivision or industrial park), it is still subject to storm water permitting. Because the total proposed project will be constructed over multiple years in scveral phases, it is anticipated several Rule 5 Erosion Control Plans will be required. Plan review and approval is administered by local Soil and Water Conservation District in the county (Marion or Hendricks Counties) where the disturbance will occur.

8.8 Federal Aviation Administration Permit

The close proximity of this project to the Indianapolis International Airport may dictate the need to obtain a permit from the Federal Aviation Administration. The planned Six Points Road Interchange and the Midfield Terminal Complex access ramps from I-70 include multi-level ramp configurations to accommodate the project traffic volumes safely and efficiently.

Under Federal Aviation Administration regulations, a permit is required when a permanent installation such as traffic signs or high mast lighting is erected or when construction equipment such as a crane is adjacent to a public airport. A permit is required if such installation or equipment extends to a height greater than an imaginary surface extending outward and upward at a slope of 100:1 for a horizontal distance of 6,100 meters (20,000 feet) from the nearest runway of an airport having at least one runway at least 975 meters (3,200 feet) long. The Federal Aviation Administration will be consulted to determine the need for permits related to the proposed improvements.

In addition to the Federal Aviation Administration's airspace requirements, the Airport Zoning Ordinance of Marion County Indiana will also be reviewed, since in some cases it may be more restrictive than height limitations of the Federal Aviation Regulations.

9.0 Indirect Project Effects

The proposed project and anticipated industrial and commercial developments are likely to have indirect effects within the project area including increased noise levels, impacts to air quality and water quality, increased light levels, and land use changes within the project vicinity.

As part of the mitigation proposed within this IICP, existing Indiana bat habitat will be preserved and new Indiana bat habitat will be created by planting of seedlings. The proposed preservation and plantings will create several large blocks of unfragmented Indiana bat habitat within the project vicinity to be preserved in perpetuity. The goal of the proposed mitigation is to preserve Indiana bat habitat and thereby reduce indirect impacts to the Indiana bat within the project area. Additionally, the HCP includes educational and outreach components to educate the public about the Indiana bat within the proposed project area.

10.0 Consideration of Federally Threatened and Endangered Plants

At this time, there are no known federally threatened or endangered plants within the proposed Habitat Conservation Plan area or the proposed project area. A total of ten upland habitat types were identified during the biological assessment prepared for this project. The primary cover types in the area are: Industrial, Commercial, Residential, Highway Right-of-Way, Agricultural, Pasture, Old-field, Mesic Forest, Oak Forest, and Lowland Forest. None of these cover types are anticipated to contain federally threatened or endangered plants in the project area.

11.0 Critical Habitat

No critical habitat for the Indiana bat exists within the proposed project area.

12.0 Minimizing and Mitigating Impact to Indiana Bats

The US Fish and Wildlife Service, as a part of its Biological Opinion and Incidental Take Statement for previous work at Indianapolis International Airport, outlined techniques to avoid and minimize loss of Indiana bat habitat. Following these guidelines, the potential for taking Indiana bats was considered by the US Fish and Wildlife Service to be minimal. By implementing similar guidelines as part of the current project, it is reasonable to assume that this project will have minimal impact on the continued existence of the bat. The following activities will be implemented to avoid, minimize, and mitigate for the impacts to foraging and roosting habitat and for the protection of the Indiana bat:

- Trees will not be cleared between April 15 and September 15.
- Measures to provide permanent replacement of roosting and foraging habitat will be implemented. The proposed replacement includes planting 140 hectares (345 acres) of hardwood seedlings within the approximate area of the project. It is anticipated approximately 54 hectares (134 acres) of the mitigation plantings will be planted

immediately adjacent to the interchange and the creek relocations. The remaining 86 hectares (211 acres) will be planted adjacent to or within the Indianapolis International Airport Conservation Management Area on land owned by the Airport. The replacement areas have been identified in conjunction with the US Fish and Wildlife Service and the Task Force. Of the 54 hectares (134 acres) of proposed mitigation plantings immediately adjacent to the interchange and creek relocations 6.2 hectares (15.3 acres) arc not currently under the ownership of the Task Force although negations to purchase those parcels have begun. If negotiations fail to purchase those parcels, then 6.2 hectares (15.3 acres) of additional mitigation plantings will be provided within the project vicinity. Parcels to be planted will be identified based on consultation between the US Fish and Wildlife Service and the Task Force. Development of the planting areas will be initiated no later than the summer following initiation of construction activities. The planting effort will continue over an approximately five-year period. The planting areas will have a deed restriction attached to the land title to preserve the planted habitat in perpetuity. The Indianapolis Airport Authority will be responsible for maintenance of the mitigation property. Provision will be included in the deed restriction to permit the eventual transfer of land title with the accompanying restrictions to an appropriate conservation agency or land trust. An example Deed Restriction is included in the Appendix to this document. Within these areas, no manipulation of vegetation will occur without concurrence from the US Fish and Wildlife Service. The Service will only concur with management activities that result in a net benefit to the conservation of the Indiana bat on the parcel. See Figure 12.1 for details of the proposed planting areas.

- A monitoring and reporting program will be implemented to assess the success of the seedling planting effort, the continuing existence of the Indiana bat in the study area, utilization of mitigation areas by the Indiana bat, size of the maternity colony population, and location of any newly established or previously unknown primary maternity roost trees. The monitoring and reporting program will resemble the program previously conducted by the Indianapolis Airport Authority. The airport's program has resulted in substantial additions to the scientific knowledge of the Indiana bat.

- Approximately 71.2 hectares (174.9 acres) of existing Indiana bat habitat and 8.8 hectares (21.7 acres) of buffer areas currently owned by the Indianapolis Airport Authority within the boundaries of the HCP area will be permanently protected. The permanently protected areas will have deed restrictions attached to the land title to preserve the replacement habitat in perpetuity. The Indianapolis Airport Authority will be responsible for maintenance of the mitigation property. Provision will be included in the deed restriction to permit the eventual transfer of land title with the accompanying restrictions to an appropriate conservation agency or land trust. An Example Deed Restriction is included in the Appendix to this document. Within these areas, no manipulation of vegetation will occur without concurrence from the US Fish and Wildlife Service. The Service will only concur with management activities that result in a net benefit to the conservation of the Indiana hat on the parcel. See Figure I2.2 for details of the proposed areas to be permanently protected.

- Approximately 80 hectares (197 acres) of existing Indiana bat habitat owned by the Indianapolis Airport Authority outside the HCP boundary but within the foraging

range of the Indiana bats will be permanently protected. The majority of the protected habitat will be within the Indianapolis International Airport Conservation Management Area. The permanently protected areas will have a deed restriction attached to the land title to preserve the replacement habitat in perpetuity. The Indianapolis Airport Authority will be responsible for maintenance of the mitigation property. Provision will be included in the deed restriction to permit the eventual transfer of land title with the accompanying restrictions to an appropriate conservation agency or land trust. An example Deed Restriction is included in the Appendix to this document. Within these areas, no manipulation of vegetation will occur without concurrence from the US Fish and Wildlife Service. The Service will only concur with management activities that result in a net benefit to the conservation of the Indiana bat on the parcel. See Figure 12.1 for details of the proposed areas to be permanently protected.

- Additionally, $475,000 to $500,000 of previously unprotected lands will be purchased and protected within the vicinity of the Indianapolis International Airport Conservation Management Area. Potential purchase areas include forested lands adjacent to the East Fork of White Lick Creek or its tributaries, woodlots adjacent to existing Indiana bat habitat or mitigation areas, or other suitable Indiana bat habitat within the foraging range of the Indianapolis International Airport maternity colony. Proposed purchase target areas are outlined on Figure I2.I; however, potential land purchases are not inclusive or limited to the purchase target areas. These lands will be purchased and protection provided within the term of this HCP. The location and suitability of this additional acreage as Indiana bat habitat will be approved by the US Fish and Wildlife Service before its purchase. The permanently protected areas will have deed restrictions attached to the land title to preserve the replacement habitat in perpetuity. The Indianapolis Airport Authority will be responsible for maintenance of the mitigation property. Provision will be included in the deed restriction to permit the eventual transfer of land title with the accompanying restrictions to an appropriate conservation agency or land trust. An example of a Deed Restriction is included in the Appendix to this document. Within these areas, no manipulation of vegetation will occur without concurrence from the US Fish and Wildlife Service. The Service will only concur with management activities that result in a net benefit to the conservation of the Indiana bat on the parcel. See Figure 12.1 for details of the proposed areas to be permanently protected.

- Where possible and appropriate, buffers approximately 50 feet wide will be established around any existing woodlot or mitigation planting areas, which will be maintained in perpetuity. Buffers will be preserved adjacent to protected woodlots only on land owned by the Indianapolis Airport Authority. It is not proposed to acquire additional land to preserve buffers adjacent to woodlots. These buffer areas will be planted in a naturalized herbaceous seed mix and will be allowed to revegetate naturally. Buffers will only be utilized on forested land owned by the Indianapolis International Airport adjacent to developed commercial properties. The need for buffers will be determined by the Indianapolis International Airport in concurrence with the US Fish and Wildlife Service.

- Project personnel, including engineering supervisors and equipment operators, will be instructed about the terms of this HCP and the restrictions imposed by it before construction begins. This will include clear definition of the construction limits and restrictions relative to tree clearing and disturbance to habitat areas outside the construction limits as appropriate. Additionally, all project personnel including contractors will be made aware of the requirements for the disposition of any dead or injured bats found within the project area. All contractors will be made aware of construction restrictions due to the presence of the Indiana bat and these restrictions will be placed in the special provisions of the Construction Specifications.

- An informal public outreach program has been ongoing at the Indianapolis International Airport for several years. Many school groups, scout troops, and students from elementary school through college have toured the Indianapolis International Airport Conservation Management Area with a member of the Indianapolis International Airport Conservation Management Staff. As the proposed project continues, outreach programs may be expanded into the Indianapolis International Airport terminal area and throughout the project area as feasible and appropriate. Potential outreach opportunities include exhibits within the airport terminal and in Task Force members' offices. Development of a greenway corridor along the East Fork of White Lick Creek is being considered. Plans include connecting this development by the City of Indianapolis, the Town of Plainfield, and eventually to the Mooresville Park System southwest of the airport. Other opportunities for outreach will be investigated as they are identified.
- Expand knowledge of the life history characteristics of the Indiana bat colony at the Indianapolis International Airport through monitoring consistent with the goals of Indiana Bat Recovery Plan. The Recovery Plan includes numerous research goals including research on the ecology and life history of the Indiana bat and monitoring the status of populations in summer habitat. The Indianapolis International Airport maternity colony of Indiana bats has already been studied through annual monitoring for five years. Implementation of the HCP includes an additional 15 years of monitoring the same maternity colony. Through this monitoring, large quantities of data will be gathered regarding Indiana bat natural history and roosting and foraging habitat use that could be utilized in the recovery of the species.

For purposes of this plan, it is assumed wooded or forested Indiana bat habitat within the limits of the Habitat Conservation Plan is subject to development if no commitments have been made for preservation within this HCP. Development is anticipated to occur due to the proposed project, future aviation-related development, or private developers. Approximately 139 hectares (344 acres) of hardwood forested and other potential Indiana bat habitat within the boundaries of the Habitat Conservation Plan will be impacted by the proposed project. Approximately 151.2 hectares (373.7 acres) of potential Indiana bat habitat will be preserved within or adjacent to the HCP area and approximately 140 hectares (345 acres) of hardwood forest will be planted within the foraging range of the Indiana bat as mitigation for impacts related to the interchange, airport improvements, and private development within the HCP area.

Table 12.1 enumerates wooded parcels impacted within the HCP area and includes the approximate total size and ownership status (private or public) of those parcels. Figure 12.2 shows the locations of those parcels. Substantial portions of the forested habitat have been acquired by the Indianapolis Airport

Authority as a part of their environmental mitigation program. The airport has operated under provisions of an Incidental Take Permit issued by the US Fish and Wildlife Service under Section 7 of the Endangered Species Act since 1992. The Incidental Take Permit was amended in 1995 to release several Interim Bat Habitat sectors within the vicinity of this project. At that time, additional Indiana bat habitat within the Indianapolis International Airport Conservation Management Area was protected. As part of this HCP, the airport has committed to protect previously unprotected or released forested habitat under its ownership within the Indiana bat foraging range, which is potentially suitable for the Indiana bat habitat.

Table 12.1: Summary of Potential Indiana Bat Habitat within the HCP Area

Tract Number	Description of Parcels										
	Owner	Total Area		Area Protected		Area Impacted by Development					
						Highway		Airport		AmeriPlex	
		Ac.	Ha.	Ac.	Ha.	Ac.	Ha.	Ac.	Ha.	Ac.	Ha.
1	IAA	19.8	8.0	19.8	8.0						
2	IAA	24.6	10.0	24.6 [4]	10.0						
3	IAA	4.1	1.7	4.1 [4]	1.7						
4	IAA	2.9	1.2	2.9 [4]	1.2						
5	PRIVATE	10.1	4.1								
6	PRIVATE	4.8	1.9								
7	IAA	2.1	0.8	2.1	0.8						
8	IAA	18.3	7.4	18.3 [5]	7.4						
9	IAA	13.9	5.6	13.9 [4]	5.6						
10a	IAA	3.5	1.4	1.2	0.5	2.3	0.9				
10b	Private	14.5	5.9								
10c	IAA	1.6	0.6	1.6	0.6						
11	IAA [1]	4.5	1.8			4.5	1.8				
12	IAA [1]	69.4	28.1	60.3 [5]	24.4	9.1	3.7				
13	IAA	5.2	2.1	5.2 [4]	2.1						
14	IAA	11.6	4.8	11.6	4.8						
15	PRIVATE	13.8	5.6								
16	PRIVATE	7.2	2.9								
17	PRIVATE	6.4	2.6								
18	IAA	12.4	5.0			12.4 [5]	5.0				
19	IAA	5.9	2.8			5.9	2.4				
20	IAA	10.0	4.0			10.0 [5]	4.0				
21	PRIVATE [2]	5.0	2.0							5.0 [6]	2.0
22	PRIVATE [3]	4.8	1.9			4.5	1.8			0.3 [6]	0.1
23	PRIVATE	2.4	1.0							2.4 [6]	1.0
24	IAA	16.4	6.6			16.4 [5]	6.6				
25	PRIVATE	1.5	0.6							1.5 [6]	0.6
26	PRIVATE	1.2	0.5							1.2 [6]	0.5
27	PRIVATE	16.8	6.8							16.8 [5,6]	6.8
28	PRIVATE	23.9	9.7							23.9 [6]	9.7
29	IAA [1]	5.4	2.2					5.4	2.2		
30	PRIVATE	12.9	5.2					12.9 [7]	5.2		
31	IAA [1]	3.7	1.5			2.7	1.1	1.0 [7]	0.4		
32a	IAA	21.5	8.7					21.5	8.7		
32b	PRIVATE	5.7	2.3							5.7 [6]	2.3

Tract Number	Description of Parcels										
	Owner	Total Area		Area Protected		Area Impacted by Development					
						Highway		Airport		AmeriPlex	
		Ac.	Ha.	Ac.	Ha.	Ac.	Ha.	Ac.	Ha.	Ac.	Ha.
33	PRIVATE	5.5	2.2							5.5 [6]	2.2
34	PRIVATE	2.5	1.0							2.5 [6]	1.0
35	IAA [3]	5.3	2.1							5.3 [6]	2.1
36	PRIVATE [3]	0.9	0.4							0.9 [6]	0.4
37	PRIVATE [3]	2.4	1.0							2.4 [6]	1.0
38	PRIVATE [1]	3.2	1.3							3.2 [6]	1.3
39	IAA [1]	3.2	1.3							3.2 [6]	1.3
40	IAA [1]	9.0	3.6			1.1	0.4	7.9	3.2		
41	IAA	2.6	1.0			1.0	0.4	1.6	0.6		
42	PRIVATE [1]	13.3	5.4			7.3	2.9				
43	PRIVATE [3]	7.8	3.2								
44	PRIVATE [2]	5.3	2.1								
45	IAA [1]	5.5	2.2					4.4 [7]	1.8	1.1 [6]	0.4
46	IAA [1]	4.5	1.8					1.8 [7]	0.7	2.7 [6]	1.1
47a	PRIVATE [3]	36.2	14.6							36.2 [6]	14.6
47b	IAA [3]	30.1	12.2					30.1	12.2		
48a	IAA [2]	1.1	0.4			1.1	0.4				
48b	PRIVATE [2]	2.0	0.8							2.0 [6]	0.8
49	PRIVATE [1]	3.8	1.5							3.8 [6]	1.5
50a	IAA [3]	9.6	3.9							9.6 [6]	3.9
50b	PRIVATE [3]	15.8	6.4							15.8 [6]	6.4
50c	IAA [3]	2.8	1.1			2.8	1.1				
51	PRIVATE	0.7	0.3							0.7 [6]	0.3
52	IAA [2]	2.3	0.9					2.3	0.9		
53	IAA	1.3	0.5			1.3	0.5				
54	IAA [1]	10.2	4.1	10.2	4.1						
55	PRIVATE [2]	1.2	0.5								
56	PRIVATE [1]	11.5	4.7								
57	PRIVATE [2]	1.6	0.6								
58a	PRIVATE [1]	9.1	3.7							9.1 [6]	3.7
58b	IAA [1]	1.1	0.5							1.1 [6]	0.5
59	IAA [3]	11.3	4.6			11.3	4.6				
	IAA	360.8	146.4	161.9	66.0	65.5	26.4	19.3	7.8	70.9	28.7
	PRIVATE	249.7	100.8	13.0	5.2	28.2	11.2	69.6	28.1	91.0	36.8
	TOTAL AREA	610.5	247.2	174.9	71.2	93.7	37.6	88.9	35.9	161.9	65.5

[1] Mature scattered trees or immature woodlot primarily used for foraging habitat

[2] Vegetated drainageway or fence row primarily used for foraging habitat

[3] Open field with scattered large trees primarily used for foraging habitat

[4] Owned by IAA -- Interim protection under 1992 Incidental Take Permit

[5] Owned by IAA -- Interim protection under 1992 ITP and subsequently released by USFWS in the April 20, 1995 amendment to the 1992 Incidental Take Permit

[6] Part of AmeriPlex Development included in Habitat Conservation Plan

[7] Wooded area within approach for future runway. Impacts to be deferred.

Implementation of the mitigation planting program will be phased over a five-year period. During the first year, the mitigation planting requirement as a result of the impacts associated with the full Six Points Road Interchange construction will be satisfied. Each of the following four years will result in mitigation of 25 percent of the remaining impacts identified within the Habitat Conservation Plan. Impacts resulting from private development, other than AmeriPlex development, are not addressed in this HCP. Private developers working on privately owned parcels within the HCP area will be responsible for coordinating with the US Fish and Wildlife Service individually with regard to compliance with the Endangered Species Act.

It is proposed to use land surrounding the Six Points Road Interchange along and within the floodway of relocated East Fork of White Lick Creek and relocated North Creek in Section 4 (Decatur Township, Marion County) and Section 5 (Guilford Township, Hendricks County), T14N, R2E, as the site for the majority of the mitigation of this project's impacts. Other mitigation sites will be located in southeast Guilford Township, Hendricks County (Sections I7, I8, and I9, TI4N, R2E and Sections 13 and 24, TI4N, RIE) in the vicinity of the Conservation Management Area currently owned by the Indianapolis Airport Authority. See Figure 12.I for reference to the planting areas.

Furthermore, as part of the Section 404 and 401 permitting process, the project will provide approximately 9.6 hectares (23 acres) of replacement wetland habitat. The wetland mitigation will be constructed west of the East Fork of White Lick Creek adjacent to the airport's wetland mitigation site located in the northwest quarter of Section 17, T14N, R2E, Guilford Township, Hendricks County. The exact configuration of this wetland mitigation and restoration will be completed during the Section 404 and 401 permitting process.

Mitigation plantings required for the improvements related to highway projects identified herein will be administered through the Indiana Department of Transportation and will be eligible for federal-aid participation with funds authorized by the Federal Highway Administration. Mitigation plantings required for the loss of potential habitat resulting from development of airport facilities will be administered by the Indianapolis Airport Authority. The Indianapolis Airport Authority is the agency designated to monitor and maintain all mitigation plantings. Mitigation plantings required for the remainder of the proposed project will be administered by the Task Force.

The majority of seedling planting areas will occupy land currently owned by the airport. Planting *areas* will be concentrated to the greatest extent feasible along the relocated channels of the East Fork of White Lick Creek and North Creek. The mitigation planting areas will create a large riparian area surrounding the relocated creeks around the perimeter of the Six Points Road Interchange with I-70.

The initial year's program will be accomplished using the following planting regime. The planting fields will be treated with Round-up® herbicide applied at the rate of 11/2 pints per acre at least ten days prior to being chisel plowed and disked. The seedlings and a nurse cover seed mixture will then be planted and a post-planting pre-emergence herbicide application will be made. Seedlings will be mechanically planted on a 10'x10' grid, yielding approximately of 435 stems per acre. The planting fields will receive two herbicide treatments during their first year to control perennial weeds. Maintenance applications of herbicides may be applied during years 2-5. The fields are generally currently planted to alfalfa or are fallow ground at this time. Maintenance herbicide applications will include a combination of 1/4 ounce of Oust® herbicide and 10 ounces of Milestone® herbicide mixed in 25 gallons of water per acre applied post planting with a two nozzle sprayer at the base of the seedlings. The Oust® herbicide may be deleted

from the spray mixture if, in the opinion of the applicator with the concurrence of the owner, it is determined the soil conditions are too wet and damage to the seedlings may occur. Seeding will occur by either broadcasting or drilling. The nurse cover seed mixture will be comprised of the following species at the specified planting rates. The planting areas will be fertilized with a commercial fertilizer having an analysis of 12-12-12 at the rate of 400 pounds per acre.

Table 12.2: Hardwood Seedlin: Planting Area Seed Mixture

Technical Name	Common Name	Weight (0z.)	% Plants
Agrostis stolonifera	Bentgrass	4	20.8%
Avena sativa	Seed oats	448	5.0%
Cassia chamaecrista	Partridge pea	64	2.8%
Elymus virginicus	Virginia wild rye	64	5.3%
Lolium multiflorum	Annual rye	96	18.9%
Phleum pretense	Timothy	24	25.6%
Trifolium hybridum	Alsike clover	16	9.7%
Trifolium repens	Ladino clover	16	11.9%
	TOTAL SEED MIX	45.75 LBS.	100.00%

The following list identifies species acceptable for the hardwood seedling mitigation planting effort.

Table 12.3: Species List for Mitigation Plantings

Technical Name	Common Name	Indicator
	Trees	
Acer rubrum	Red maple	FAC
Acer saccharinum	Silver maple	FACW
Acer saccharum	Sugar maple *	FACU
Carya cordiformis	Bitternut hickory	FAC
Carya laciniosa	Shellbark hickory *	FACW
Carya ovate	Shagbark hickory *	FAC
Carya tomentosa	Mockernut hickory *	NI
Diospyros virginiana	Persimmon	FAC
Fraxinus americana	White ash	FACU
Fraxinus pennsylvanica	Green ash	FACW
Gleditsia triacanthos	Honey locust *	FAC
Juglans nigra	Black walnut	FACU
Liquidambar styraciflua	Sweet gum	FACW
Liriodendron tulipifera	Tulip tree	FACU+
Platanus occidentalis	American sycamore	FACW
Populus deltoides	Eastern cottonwood *	FACW
Prunus serotina	Black cherry	FACU
Quercus alba	White oak *	FACU
Quercus bicolor	Swamp white oak	FACW+
Quercus falcate	Cherrybark oak	NI
Quercus imbricaria	Shingle oak	FAC-
Quercus lyrata	Overcup oak	OBL
Quercus macrocarpa	Bur oak	FAC-
Quercus palustris	Pin oak	FACW
Quercus prinus	Chestnut oak	FACU-
Quercus rubra	Northern red oak *	FACU
Quercus shumardii	Shumard oak	FACW-

Technical Name	Common Name	Indicator
	Trees	
Tilia americana	Basswood	FACU
Ulmus americana	American elm *	FACW-
Ulmus rubra	Slippery elm*	FAG

** Indicates species known to* be *used as primary or secondary roosts by Indiana bats within the proposed project area*

Seedlings will be either I-0 or 2-0 nursery material. Plants will generally be 11/2' to 2' tall and mixed in a random manner with regard to species identity at the time of planting to avoid large monocultural areas. An effort will be made during randomization and planting to plant species in an appropriate moisture regime. Notes will be included on the planting plans detailing species planting locations.

If available, at least 10 percent of the seedlings planted will be shagbark hickory *(Carya ovata).* At least 25 percent of the seedlings will consist of hickory or oak species. A minimum of nine species must be present in each planting area and no single species may comprise more than 20 percent of seedlings planted in each planting area. At least 10 percent of the planted stems will be shagbark hickory on upland sites and at least 10 percent of the planted stems will be eastern cottonwood *(Populus deltoides)* on stream bank planting areas. If these species are not available at the time of planting, this fact will be documented and other species known to provide high quality Indiana bat roosting habitat will be substituted. The goal of the planting program is for a minimum of 50 percent of all seedlings planted to be hickory, cherry, oak, elm, cottonwood, and other species known to be utilized by the Indiana bat as roost trees.

13.0 Indiana Bat and Section 404/401 Monitoring

The Indiana bat monitoring plan includes mist netting of ten fixed locations along the East Fork of White Lick Creek once during the summer for a total of four net-nights at each station, mist netting at known primary or maternity colony trees, radio tracking and telemetry of all Indiana bats captured, emergence counts at known primary or maternity colony trees to establish numbers of Indiana bats in the area, and monitoring of hardwood tree seedling mitigation plantings. This program closely parallels the level of effort extended for monitoring Indiana bat impacts associated with the I992 Incidental Take Permit issued for previous development at the Indianapolis International Airport. The purpose of this monitoring plan is to:

- Assess the effectiveness of mitigation efforts over time;
- Determine the need for adjustments to management of the Indiana bat habitat and/or wetland systems;
- Identify the need for maintenance activities to ensure compliance with the conditions of the Incidental Take Permit, Section 404 Permit, and the Section 40I Water Quality Certification; and
- Collect valuable scientific data.

Indiana bat mist net surveys, radio telemetry, and emergence counts, as detailed in this HCP, may in some cases be dependent on access to privately owned land. If access to a privately owned parcel for monitoring (e.g. dusk counts at a roost tree) is denied, the US Fish and Wildlife Service (Bloomington Field Office) will be contacted and an alternative to monitoring on that parcel will be determined. This will only affect the location, not the scope, of monitoring as proposed in this HCP.

Any dead bat located on the action areas during construction, mitigation, or monitoring activities, regardless of species, should be immediately reported to the US Fish and Wildlife, Bloomington Field Office, and subsequently transported on ice to that office. No one, with the exception of researchers contracted to conduct bat monitoring activities, should attempt to handle any live bat, regardless of its condition; report bats that appear to be sick or injured to the Bloomington Field Office. The Bloomington Field Office will make a species determination on any dead or moribund bats. If an Indiana bat is identified, the Bloomington Field Office will contact the appropriate Service Law Enforcement office.

The Section 404/401 monitoring plan includes sampling and assessment of mitigation wetlands and the channel relocations as required by the US Army Corps of Engineers Section 404 Permit and the Indiana Department of Environmental Management Section 401 Water Quality Certification. This monitoring plan will include assessment of vegetation including overall survival of plantings, natural recruitment, percent ground cover, diversity, and exotic invasive species. Hydrology and development of hydric soils will be measured within the wetland mitigation area. Physical structure, restoration of the biotic community, water quality, and surrounding habitat will be monitored for the creek relocations. Monitoring for both the mitigation wetland and the channel relocation will be conducted for five years or until approved by the resource agencies. At the end of the five-year monitoring period, the Corps of Engineers and the Indiana Department of Environmental Management will evaluate the success of the wetland mitigation and creek relocations. If remedial action or additional monitoring is warranted, a revised monitoring plan will be implemented in consultation with the regulatory agencies.

13.1 Indiana Bat Mist Net Survey

Mist net surveys to determine the presence of Indiana bats will be conducted annually for the duration of the HCP beginning with the first year of construction and continuing each year construction activities occur on the proposed interchange and highway relocation. It is anticipated 2002 will be the first year of construction under the current project timeline. Therefore, mist netting is anticipated to occur annually from 2002 through 20I6 (or for a total period of fifteen years). An extensive mist net survey will be conducted the first year and every even year; a limited mist net survey will be conducted the second year and every odd year.

The surveys will be conducted during the period recommended by the US Fish and Wildlife Service (currently May 15 to August 15). An extensive mist net survey will include monitoring the ten sites previously selected during the Indianapolis International Airport monitoring program as part of the monitoring program conducted under terms of their Incidental Take Statement and monitoring at known primary or maternity colony trees if access is available. Monitoring of these sites is anticipated to provide the best source of comparative information concerning the status of the bat communities near the airport. Additional sampling stations may be established if one of the original sampling stations is impacted by construction or if continued monitoring suggests a sample location should be relocated for other reasons. For example, Sampling Station G within the project area will be relocated due to the realignment of the East Fork of White Lick Creek. All sample station relocations will be coordinated with and approved by the US Fish and Wildlife Service. Relocation of sample locations will not result in any additional monitoring effort. The mist net survey of the ten sample stations will consist of four net-nights at each sample location. The four net nights will occur over at least two calendar nights.

A net-night is defined as the observation of a single set of mist nets for one calendar night. Nets of varying length and height will be placed over streams and monitored every 20 minutes from dusk until at least 2:00 a.m. Conditions for an acceptable net-night include no precipitation, no full moon, temperatures greater than 50°F, and winds that are still to calm. Standard procedure includes observation of two sets of mist nets for two consecutive calendar nights for a total for a total of four net-nights.

Mist netting will also be conducted in the vicinity of each known primary roost or maternity colony to which access is available until a minimum of two Indiana bats are captured and radio tracked each month of the field season within the guidelines and procedures established herein. A primary roost is a roost that a large percentage of the colony uses consistently and on a daily basis. A roost with a maternity colony of any size, in which young are birthed and raised for some portion of their pre-volant life, will be considered a primary roost. This monitoring regime was selected in 1997 as part of the Indianapolis Airport Authority's monitoring requirements for their 1992 Incidental Take Permit in an attempt to increase the number of Indiana bats captured and radio tagged for telemetry studies. These studies also provide information about the overall bat community surrounding the maternity colonies.

A limited mist net survey will be conducted in alternating years beginning with the second year of the HCP. This limited mist netting will be conducted monthly from May I5 through August 15 at each known primary roost or maternity colony tree to which access is available to determine the continuing presence and approximate population of Indiana bats utilizing each of those trees. Netting will continue at each known primary roost or maternity colony tree until a minimum of two Indiana bats are captured and radio tracked each month of the field season within the guidelines and procedures in the Habitat Conservation Plan. No monitoring of the fixed sample locations will occur during the limited mist net survey.

Data collected on captured bats will include species, age, sex, right forearm length, weight, and reproductive condition. Capture specifics such as vertical location in the net, flight direction, and time of capture will also be recorded. The bats will be released at the net site unharmed within 30 minutes in compliance with procedures designated by the Indiana bat recovery team. All bats captured will be fitted with a numbered, lightweight armband. In addition, Indiana bats captured will be fitted with a radio transmitter (0.70 gram radio transmitter such as Wildlife Materials, Inc., SOPB-2011) and monitored. This monitoring program is designed to monitor the health and location of each maternity colony and to locate new roost trees. All data collected during the mist net survey will be made available for review and/or analysis to the US Fish and Wildlife Service as requested.

13.2 Indiana Bat Radio Telemetry Study

Indiana bats captured during the mist netting survey will be fitted with a radio transmitter. The bats will be tracked as long as the signal can be detected or for a minimum of six nights. Roost trees will be identified if access is available and mapped during daylight hours and used as starting points for the next night's tracking. Triangulations will be conducted from various fixed telemetry stations. Tracking will generally occur from dusk until approximately 2:00 a.m. when the bats have shown a pattern of dormancy. Tracking will generally resume at approximately 4:00 a.m., extending until dawn when the bats have historically shown a tendency to return to their roosts.

When more than one radio-tagged bat is foraging, and signals from the bats can be heard at all telemetry stations, compass readings will be taken every three minutes. If the bats are distant from each other, each bat will be tracked for one-hour increments to collect nightly foraging data for each bat.

If a roost tree is identified from telemetry studies, information will be gathered to document the location of the roost and record site-specific data relative to the roost area. For each tree containing an artificial or natural roost used by an Indiana bat, the species, height, diameter at breast height (dbh), condition (alive or dead), and the percentage of exfoliating bark will be recorded. Distances from the roost tree to the edge of the woodlot and to other roosts used by the bat will be measured. Percent canopy closure above roost trees and habitat cover type near each roost will also be recorded.

Telemetry data will be reported on a geo-referenced aerial photograph (e.g. format from American Consulting, Inc., 2000, which reports on the 1999 field studies). Telemetry locations for each individual radio-tagged bat, as well as survey locations for each roost site, will be superimposed on the aerial photograph. An estimate of error associated with telemetry and survey locations and the methods used to estimate error will be included. All data collected during the telemetry survey will be made available for review and/or analysis to the US Fish and Wildlife Service as requested.

13.3 Indiana Bat Emergence Counts

Emergence (dusk) counts will be conducted at each primary or maternity roost tree to which access is available at least twice weekly throughout the period from March 15 through the bats' departure in the fall to better define the biology of the resident population. Emergence counts provide information concerning the arrival and departure dates of the populations, the number of primary trees used by the colony, the number of individuals present per colony, the approximate reproductive success of the colony, and an indication of the amount of movement between the roost trees. When two or more primary or maternity roost trees are under observation, emergence counts will be conducted at least once weekly at all primary roost trees simultaneously to determine the number of Indiana bat using each roost tree at a specific time. Past emergence counts on the population at the airport have seemed to indicate the entire colony moves from tree to tree collectively. Additional simultaneous emergence counts may provide validation to that observed behavior pattern. All data collected during the emergence counts will be made available for review and/or analysis to the US Fish and Wildlife Service as requested.

13.4 Vegetation Monitoring for Planted Indiana Bat Habitat

The monitoring plan is intended to assess the conditions of the Indiana bat replacement habitat and to determine the effectiveness of mitigation in terms of creating potential Indiana bat habitat. Each of the Indiana bat hardwood seedling planting sites will be monitored annually for a period of five years following establishment of the individual mitigation planting site to determine the effectiveness of mitigation, to establish the presence of appropriate vegetation, and to observe utilization by vertebrate and invertebrate wildlife. Monitoring will also serve to evaluate the success or failure of the natural colonization of hardwood plant species. At the end of the five-year monitoring period, the US Fish and Wildlife Service will evaluate the success of the planted Indiana bat habitat. If additional action or monitoring is warranted, a revised plan will be implemented in consultation with the regulatory agencies.

The first annual report will include a discussion of the plantings as completed to be used as a baseline to evaluate the success of the plantings. A photographic documentation of the site will bc included. The objectives of the vegetation monitoring are to document:

- Survival rates for planted vegetation;
- Rate and quantity of colonization by native trees, shrubs, and herbs to determine the overall survival and percent ground cover over time;
- Diversity of plant species; and
- Rate and quantity of invasion by exotic plant species over time.

The rate of colonization by native hardwood species and the persistence of appropriate vegetation following establishment are parameters frequently measured to indicate the health of developing ecosystems. Monitoring exotic species is also important because some are quite aggressive and may out-compete many native species if left unmanaged. Vegetation will be monitored both qualitatively and quantitatively using two principal techniques — passive sampling and active sampling. Vegetation monitoring of each planting site will occur on an annual basis for five years following planting. Vegetation will be sampled for species frequency and percent cover. Additionally, wildlife species observed using the habitat areas during the monitoring activities will be reported. All data collected through vegetation monitoring will be made available for review and/or analysis to the US Fish and Wildlife Service or other appropriate resource agency as requested.

The success criteria for the Indiana bat habitat plantings is an 80 percent survival rate (350 stems per acre) for planted seedlings at the end of five years. There may be volunteer woody sterns present in planted areas which will be difficult to distinguish from planted seedlings. Volunteer woody stems will be included in the survival counts if they appear to be generally similar in age and condition to the planted seedlings. In addition to the requirement for 350 stems per acre of planted seedlings at the end of five years, the planting areas must also exhibit species diversity. A minimum of nine species must be present in each planting area and an individual species may not account for more than 20 percent of the 350 stems. A minimum of 20 percent of the surviving seedlings should be hickory, cherry, oak, elm, cottonwood, or other species known to be utilized by the Indiana bat as roost trees.

13.5 Monitoring Period

The monitoring program for the Indiana bat as described in Sections 13.I through 13.3 will be conducted annually for the duration of the HCP. It is anticipated substantially all of the land clearing activities impacting areas of potentially suitable summer habitat will be completed during the initial five years of this Habitat Conservation Plan. Consultation with the US Fish and Wildlife Service will be an on-going part. of this program and will determine when or if it is appropriate to alter the annual monitoring effort from the program established within this document.

The Indiana bat vegetation monitoring and the Section 404/40I Monitoring program for the wetland mitigation and the channel relocation will be initiated the season following the planting of each of those mitigation areas and will extend for five years or until the US Fish and Wildlife Service, the US Army Corps of Engineers, and the Indiana Department of Environmental Management have accepted the mitigation measures.

The following table highlights the proposed mitigation and monitoring schedule and reporting requirements for this HCP with regard to the Indiana bat and Section 404/401 Permits.

Table 13.1: Mitigation and Monitoring Schedule

Project Year	Assumed Calendar Year	Indiana bat Mitigation/ Monitoring	Section 401/404 Mitigation/ Monitoring	Reporting Requirements
1	2002	Extensive Mist Net Survey Radio Telemetry Study Emergence Counts	Relocate channels and grade wetland mitigation site	Indiana Bat Monitoring Report
2	2003	Plant 1st seedling areas Limited Mist Net Survey Radio Telemetry Study Emergence Counts Vegetation Survey	Finish channel and wetland mitigation site grading Plant channels and wetland mitigation site	Indiana Bat Monitoring Report Prepare As-Built Section 404 Monitoring Report
3	2004	Monitor 1st seedling planting area Plant 2" seedling area Extensive Mist Net Survey Radio Telemetry Study Emergence Counts Vegetation Survey	Monitor channels and wetland mitigation area	Indiana Bat Monitoring Report Prepare tat Year Section 404 Monitoring Report (wetland and channel relocation as-built plans and project status report)
4	2005	Monitor 1st and 2n' seedling planting areas Plant 3rd seedling area Limited Mist Net Survey Radio Telemetry Study Emergence Counts	Monitor channels and wetland mitigation area	Indiana Bat Monitoring Report (including 1st and 2" seedlin$_n$g areas) Prepare 2 Year Section 404 Monitoring Report (wetland and channel relocation)
5	2006	Monitor 1st-3rd planting areas Plant 4 seedling planting area Extensive Mist Net Survey Radio Telemetry Study Emergence Counts	Monitor channels and wetland mitigation area	Indiana Bat Monitoring Report (including 1st 3rd seedling areas) Prepare 3rd Year Section 404 Monitoring Report (wetland and channel relocation)
6	2007	Monitor 1st-4th seedling planting areas Plant 5 seedling planting area Limited Mist Net Survey Radio Telemetry Study Emergence Counts	Monitor channels and wetland mitigation area	Indiana Bat Monitoring Report (including 1st-4th seedling areas) Prepare 4th Year Section 404 Monitoring Report (wetland and channel relocation)
7	2008	Monitor 1st-5t seedling planting areas Extensive Mist Net Survey Radio Telemetry Study Emergence Counts	Monitor channels and wetland mitigation area	Indiana Bat Monitoring_ Report (including 151-5m seedling areas) Prepare 5th Year Section 404 Monitoring Report (wetland and channel relocation)

Project Year	Assumed Calendar Year	Indiana bat Mitigation/ Monitoring	Section 401/404 Mitigation/ Monitoring	Reporting Requirements
8	2009	Monitor 2nd-5 seedling planting areas Limited Mist Net Survey Radio Telemetry Study Emergence Counts	None	Indiana Bat Monitoring Report (including 2nd-5th seedling planting areas)
9	2010	Monitor 3rd-5th seedling planting areas Extensive Mist Net Survey Radio Telemetry Study Emergence Counts	None	Indiana Bat Monitoring Report (including 3rd-5th seedling planting areas)
10	2011	Monitor 4th-5th seedling planting areas Limited Mist Net Survey Radio Telemetry Study Emergence Counts	None	Indiana Bat Monitoring Report (including 4th-5th seedling planting areas)
11	2012	Monitor 5th seedling planting area Extensive Mist Net Survey Radio Telemetry Study Emergence Counts	None	Indiana Bat Monitoring Report (including 5th seedling planting area)
12	2013	Limited Mist Net Survey Radio Telemetry Study Emergence Counts	None	Indiana Bat Monitoring Report
13	2014	Extensive Mist Net Survey Radio Telemetry Study Emergence Counts	None	Indiana Bat Monitoring Report
14	2015	Limited Mist Net Survey Radio Telemetry Study Emergence Counts	None	Indiana Bat Monitoring Report
15	2016	Extensive Mist Net Survey Radio Telemetry Study Emergence Counts	None	Indiana Bat Monitoring Report

13.6 Indiana Bat Monitoring Report

Field data relative to captures and observations of the Indiana hat will be reported regularly to the US Fish and Wildlife Service in an informal manner as notable events occur. A formal report of findings regarding the Indiana bat will be furnished to the US Fish and Wildlife Service with copies to the Corps of Engineers, the Indiana Department of Environmental Management, and the Indiana Department of Natural Resources no later than March 1 following each monitoring year. All data collected through Indiana bat monitoring will be made available for review and/or analysis to the US Fish and Wildlife Service as requested.

The reporting effort will also include a field review in the company of representatives of the US Fish and Wildlife Service, the Corps of Engineers, the Indiana Department of Environmental Management, and the Indiana Department of Natural Resources in the fall to review areas of specific interest or quality. Additionally, those agencies will be granted access to all mitigation and permanently protected areas for monitoring purposes upon appropriate notification and approval by the Indianapolis Airport Authority (or other managing agency properly assigned in accordance with provisions of this document).

13.7 Section 404/401 Wetland Mitigation Permit Monitoring Activities

The monitoring plan is intended to assess the conditions of the wetland mitigation site and to determine the effectiveness of mitigation in terms of replacing wetland functional values. The exact mitigation and monitoring requirements for the Section 404 Permit and Section 401 Water Quality Certification will be finalized during the permit process. The wetland mitigation site is anticipated to be monitored twice per year for the first two years and annually for years three through five following construction of the mitigation area to determine the effectiveness of mitigation; to establish the presence of appropriate vegetation, soils, and hydrology; and to observe wetland utilization by vertebrate and invertebrate wildlife. Monitoring will also serve to evaluate the success of the natural colonization of wetland and hardwood plant species. At the end of the five-year monitoring period, the US Army Corps of Engineers and Indiana Department of Environmental Management will evaluate the success of the wetland mitigation site based upon agreed-upon success criteria contained in the Section 404 Permit and Section 401 Water Quality Certification. If additional action or monitoring is warranted, a revised plan will be implemented in consultation with those agencies.

The first annual report will include as-built plans, a discussion of any construction which deviated from the plans submitted with the Permit Application, and photographic documentation of the site. A formal wetland delineation conducted in compliance with the Corps of Engineers I987 Manual will be completed and included in the final annual report.

The objectives of the wetland mitigation monitoring are to monitor the:

- Survival rates for planted vegetation;
- Rate and quantity of colonization by native trees, shrubs, and herbs to determine the overall survival and percent ground cover over time;
- Diversity of plant species; and
- Rate and quantity of invasion by exotic plant species over time.

The rate of colonization by native hardwood and wetland species and the persistence of appropriate vegetation following establishment are parameters frequently measured to indicate the health of developing ecosystems. Monitoring exotic species is also important because some are quite aggressive and may out-compete many native species if left unmanaged. Vegetation will be monitored both qualitatively and quantitatively using two principal techniques — passive sampling and active sampling. Vegetation monitoring will occur on an annual basis for five years following planting or until approved by the resource agencies. Vegetation will be sampled for species frequency and percent cover. Additionally, wildlife species observed using the habitat areas during the on-site monitoring activities will be reported.

Hydrologic monitoring will be conducted to:

- Determine if wetland hydrology exists at the wetland mitigation site;
- Monitor effects of hydrologic modifications such as plugging drainage tiles and constructing berms;
- Evaluate components of ground and surface water flow; and
- Locate areas where drainage tiles or areas of high permeability in the soil may be present.

Soil characteristics at each site will he investigated, including the depth to saturated soil during critical periods of the growing season. This will be accomplished by constructing shallow borings or pits with a hand auger or spade at representative points.

A technical report will be prepared and submitted to the US Fish and Wildlife Service Bloomington Field Office, the Louisville District of the Corps of Engineers, the Indiana Department of Environmental Management Office of Water Management, and the Indiana Department of Natural Resources Division of Fish and Wildlife no later than March 1 following each monitoring year. The report will address progress of the overall wetland mitigation effort. The information will discuss the results of monitoring surveys and provide detailed information on necessary maintenance activities. The reporting effort will also include a field review in the company of representatives of those agencies in the fall to review areas of specific interest or quality.

The monitoring report will be prepared to discuss the findings of the field observations of the mitigation site. The annual report will include information on vegetation, hydrology, soils, and wildlife use for the site. In addition, wetland delineation data forms will be submitted for the wetland mitigation site. All data collected through Section 404/401 monitoring will be made available for review and/or analysis to the US Fish and Wildlife Service, Corps of Engineers, the Indiana Department of Environmental Management, or the Indiana Department of Natural Resources as requested.

13.8 Section 404/401 Creek Relocation Permit Monitoring Activities

The monitoring plan is intended to assess the conditions of the creek relocation and to determine the effectiveness of mitigation in terms of replacing stream function and value. The exact mitigation and monitoring requirements for the Section 404 Permit and Section 40I Water Quality Certification will be finalized during the permit process. The creek relocations will be monitored for five years to determine the effectiveness of relocation including physical structure, restoration of biotic community, water quality, and surrounding habitat. At the end of the five-year monitoring period, the US Army Corps of Engineers and the Department of Environmental Management will evaluate the success of the creek relocations based upon agreed-upon success criteria contained in the Section 404 Permit and Section 401 Water Quality Certification. If additional action or monitoring is warranted, a revised plan will be implemented in consultation with those agencies.

A final survey of the grade, shape, and capacity of the new channels will be conducted following construction to verify actual field conditions created reasonably match the proposed design.

Habitat and structure monitoring will be conducted starting in July of the year after the release of water into the relocated channels (anticipated to begin in 2002). Habitat and structure monitoring will be is proposed to be conducted from five established sample points. Three sample points will be located

along the East Fork of White Lick Creek, one just upstream of the relocation, one near the center of the relocation, and one just downstream of the relocation. Two sample points will be located along North Creek, one between Bridgeport Road and the confluence of North Creek with South Branch and one between the South Branch and the East Fork of White Lick Creek. Qualitative Habitat Evaluation Index assessments will be carried out following the Indiana Department of Environmental Management's protocols and calculations. Details of the habitat and structure monitoring will be finalized as part of the Section 404 and 401 permitting process.

Biotic sampling will be conducted starting in July of the year after the release of water into the relocated channels. Fisheries sampling will be conducted from the five established sample points as described in the preceding paragraph. Fisheries assessments and sampling shall be carried out following IDEM's Index of Biotic Integrity protocols and calculations.

Water quality sampling will be conducted in conjunction with the biotic community sampling. Water quality parameters, including but not limited to, temperature, dissolved oxygen, pH, and specific conductivity, will be measured.

All habitat structures and features placed within the realigned stream channels will be available for inspection by the US Army Corps of Engineers, the Indiana Department of Environmental Management, the Indiana Department of Natural Resources, and the US Fish and Wildlife Service. The condition of the reconstructed channels and any potential or real structural failures will be noted. Additionally, any maintenance issues such as the excessive accumulation of sediment or debris will be noted in the monitoring report. The annual inspection will also include an assessment of the biological community present in the stream, the water quality, and the habitat value of the relocated streams.

A technical report will be prepared and submitted to the Louisville District of the Corps of Engineers, the Indiana Department of Environmental Management Office of Water Management, the US Fish and Wildlife Service Bloomington Field Office, and the Indiana Department of Natural Resources Division of Fish and Wildlife no later than March 1 following each monitoring year. The monitoring report will be prepared to discuss the findings of the monitoring survey for the creek relocations. The annual report will include information on physical structure, restoration of biotic community, water quality, and surrounding habitat. The report will include all summary and raw data sheets for the reporting year. Additionally, it will contain a narrative overview of the results of the surveys and a relative comparison to the success criteria. All data collected through Section 404/401 monitoring will be made available for review and/or analysis to the US Fish and Wildlife Service, Corps of Engineers, the Indiana Department of Environmental Management, or the Indiana Department of Natural Resources as requested.

14.0 Unforeseen Circumstances

In the event unforeseen circumstances arise, the parties to this Habitat Conservation Plan, as identified in the Implementing Agreement attached hereto and made a part hereof, will consult with the US Fish and Wildlife Service, the Indiana Department of Environmental Management, the Indiana Department of Natural Resources, and the Corps of Engineers to assess the magnitude of the event, determine the significance of the evcnt with regard to thc Indiana hat's continued existence, and formulate a plan of action as necessary to reestablish the values associated with the HCP which are beneficial to the Indiana bat.

If unforeseen circumstances arise which cannot be resolved within the scope of the yearly mitigation monitoring and/or conservation management of the HCP area, the Task Force will reassess and amend the RCP as necessary. Any amendments to the HCP monitoring plan or conservation management operation will be approved by the US Fish and Wildlife Service before implementation. Any amendment will be documented in the annual progress reports to the US Fish and Wildlife Service.

If the terms and conditions of this Habitat Conservation Plan have been implemented and are being followed and maintained in accordance with the Plan, the "No Surprises" Policy of the US Fish and Wildlife Service shall be incorporated as an element of this Plan. That is, a change in the listing status of the Indiana bat shall not require a revision to the approved Habitat Conservation Plan.

15.0 Funding

The Indiana Department of Transportation, the Indianapolis Airport Authority, Indianapolis Department of Public Works, the Indianapolis Department of Metropolitan Development, and the Hendricks County Board of County Commissioners have formed a Task Force to implement the proposed roadway improvements. These agencies have participated in the engineering cost for the project on a proportional share basis under a formula negotiated between the agencies. The Federal Highway Administration will be providing funding for a portion of the construction cost of the roadway improvements. A portion of the costs associated with designing and constructing the mitigation program for direct roadway project impacts as required by this HCP will be an eligible expense of the federal aid project and will be eligible for FHWA participation.

The agencies party to this HCP will also be participating in the cost to implement this Habitat Conservation Plan.

The Indianapolis Airport Authority is the agency designated to implement the monitoring and reporting required under terms of this Habitat Conservation Plan. The Authority has successfully completed its monitoring and reporting commitment for the Incidental Take Statement issued by the US Fish and Wildlife Service on March 2, 1992 (amended on April 20, I995 and March 31, 1999) for development of several areas of Indianapolis International Airport property. The airport's past program is generally considered to have been successful by all parties involved. Their participation in the current effort is a significant commitment to the success of this program.

16.0 Implementing Agreement

See attached.