APPENDIX Y1

Redacted Section 2 Tier 2 Biological Assessment

I-69 Section 2 (SR 64 to US 50)
Tier 2 Biological Assessment

November 2009

Table of Contents

PROJECT DESCRIPTION *6*

INDIANA BAT (Myotis sodalis) *29*

ACTION AREA *29*
Tier 1 Summer Action Area 29
Tier 1 Winter Action Area 30
Tier 2 Expanded Summer Action Area 31

TIER 2 INDIANA BAT SURVEYS *32*
Maternity Colonies 32
Forest Characteristics 34

IMPACTS *40*
Direct Impacts 40
Indirect Impacts 73
Cumulative Effects 80

MITIGATION *90*
Mitigating Direct Loss of Indiana bat Habitat 90
Specific Mitigation Areas: 92
Conservation Measures 114

LITERATURE CITED *120*

Figures

Figure 1. Section 2 Location Map *8*

Figure 2: Initial Typical Sections Mainline *9*

Figure 3: Typical Sections, US 50 ..... *10*

Figure 4: Typical Sections- Crossroads and Connector Road *11*

Figure 5: SR 61/ SR 56 Interchange at Petersburg *13*

Figure 6: North Pike Interchange at Blackburn Road *14*

Figure 7: South Daviess County Interchange at SR 57 ..... *16*

Figure 8: US 50 Interchange at Washington *18*

Figure 9: Proposed Interstate and Local Access *24*

Figure 10: Proposed Interstate and Local Access *25*

Figure 11: Proposed Interstate and Local Access *26*

Figure 12: Proposed Interstate and Local Access *27*

Figure 13. Forest Sampling Transect Locations *39*

Figure 14. Patoka River Maternity Colony Tree Cover Impacts *43*

Figure 15. Flat Creek Maternity Colony Tree Cover Impacts *44*

Figure 16. East Fork Maternity Colony Tree Cover Impacts *46*
Figure 17. Veale Creek Maternity Colony Tree Cover Impacts *47*
Figure 18. Patoka Creek Maternity Colony Connectivity *52*
Figure 19. Flat Creek Maternity Colony Connectivity *53*
Figure 20. East Fork Maternity Colony Connectivity *55*
Figure 21. Veale Creek Maternity Colony Connectivity *57*
Figure 22. Noise Meter Locations *69*
Figure 23. Induced Growth TAZs *78*
Figure 24. Legal Drains *86*
Figure 25. Mitigation Sites *94*

Tables

Table 1: Summary of NEPA and Section 7 Consultation History for I-69 Tier 1 & Tier 2 ..... *4*
Table 2: Description of Proposed Local Service Roads *20*
Table 3. Section 2 Forest Transect Snag Data *35*
Table 4: Forests and Tree Cover Direct Impacts for Maternity Colonies *48*
Table 5: Forests and Tree Cover Direct Impacts for the Remaining Summer Action Area *49*
Table 6. Connectivity and Distance to Impacts from known Indiana bat Roost Trees and Indiana bat Capture Points *58*
Table 7: Wetlands and Ponds Direct Impacts in the Maternity Colonies *61*
Table 8: Wetlands and Ponds Direct Impacts in the Remaining Action Area *62*
Table 9. Direct Impacts and Mitigation *92*
Table 10. Section 2 Mitigation Site Anticipated Credits Summary *95*

Appendices

Appendix A – Forest Transect Data Forms

Appendix B – Preferred Alternative Atlas

Appendix C –Legal Drain letter

Appendix D – Overall Impact Summary

Appendix E – Indirect Development Land Use Analysis

Appendix F- Mitigation Site Documentation

Appendix G- Mitigation Site Documentation

Appendix H- Mitigation Site Documentation

Appendix I- Mitigation Site Documentation

Appendix J- Mitigation Site Documentation

Appendix K- Mitigation Site Documentation

Appendix L- Mitigation Site Documentation

Appendix M- Mitigation Site Documentation

Appendix N- Mitigation Site Documentation

Appendix O- Mitigation Site Documentation

Appendix P- Mitigation Site Documentation

Appendix Q- Mitigation Site Documentation

Appendix R- Mitigation Site Documentation

Appendix S-Bat Habitat Pole Plan

*Appendices F, Q and R have been removed because the mitigation properties are still undergoing the acquisition process

INTRODUCTION

The study area for Section 2 begins approximately one-half mile north of SR 64 near Oakland City. It continues to US 50 east of Washington. It is approximately 28.6 miles in length. It is a part of the larger project I-69 Evansville to Indianapolis.

This Tier 2 Biological Assessment (the Tier 2 BA) for Section 2 of I-69 Evansville to Indianapolis project (the Section 2 Project) contains updated information on reasonably certain Section 2 Project impacts and proposed mitigation since the Tier 1 Biological Assessment Addendum (Tier 1 BA Addendum) dated March 7, 2006. This Tier 2 BA provides the U. S. Fish and Wildlife Service (USFWS) with plans and impacts of the Project, based on the final Preferred Alternative (including access roads) as defined in the Tier 2 Section 2 Revised Draft Environmental Impact Statement (Section 2 Revised Tier 2 DEIS) and subsequent refinements. This Tier 2 BA addresses the specific impacts associated with the Preferred Alternative for the Project, and must be reviewed in concert with the Tier 1 documents[1], surveys, and the Section 2 Revised Tier 2 DEIS to obtain a full understanding of the proposed actions, mitigation, and findings. The Preferred Alternative in this BA is a more refined preferred alternative than was presented in the DEIS. Therefore, the impacts will match or will be more comparable to the impacts for the Refined Preferred Alternative that will be presented in the FEIS. A summary of the consultation activities ongoing with the USFWS are presented in Table 1 (Table 5.17-1, Section 2 Revised Tier 2 DEIS).

The content of this Tier 2 BA is governed by Paragraph 4 of the Terms and Conditions imposed in the Incidental Take Statement of the Revised Tier 1 Biological Opinion (Tier 1 Revised BO), for the Evansville to Indianapolis I-69 Project, issued by the USFWS to the Federal Highway Administration (FHWA) on August 24, 2006.

As more fully documented below, FHWA and the Indiana Department of Transportation (INDOT), based on a review of the data presented in this Tier 2 BA and other relevant project documents, have reached a determination that the overall impacts to the species as discussed

[1] The Tier 1 documents include: Tier 1 Record of Decision (ROD) issued by the FHWA on March 29, 2004, the Tier 1 FEIS, issued by FHWA on December 7, 2003, the Tier 1 Biological Assessment Addendum, issued by FHWA on March 7, 2006 and the Revised Tier 1 Biological Opinion, issued by USFWS on August 24, 2006. Tier 2 Documents include the Section 2 Revised Tier 2 DEIS, issued in April 2009.

in the Tier 2 BA remain consistent with the findings in the Tier 1 Revised BO. Also, FHWA and INDOT have reached a determination that the specific impacts within the Section 2 Tier 2 project are consistent with those analyzed in the consultation documented in the Tier 1 Revised BO. FHWA and INDOT request formal consultation on a "Likely to Adversely Affect" conclusion for the Indiana bat.

The bald eagle (*Haliaeetus leucocephalus*) was officially removed (delisted) from the list of threatened and endangered species on August 8, 2007, and will no longer be afforded protection under the Endangered Species Act (ESA). The bald eagle continues to be protected under the Bald and Golden Eagle Protection Act (BGEPA). This Section 2 BA does not include an evaluation of impacts to the bald eagle. Potential impacts to this species are discussed in the Section 2 National Environmental Policy Act (NEPA) document. Conservation measures developed for the bald eagle as part of the Tier 1 BA and Tier 1 BA Addendum will be completed despite the species delisting. [2] The Section 2 Revised Tier 2 DEIS stated that the bald eagle has been known to nest in Gibson County, north of the Section 1 corridor in an area that is part of the Patoka National Wildlife Refuge (Snakey Point). Personal communication with John Castrale from the Indiana Department of Natural Resources, who provided an excel sheet of bald eagle locations current to 2009, showed that the closest bald eagle location was approximately 1.8 miles away from the Section 2 Preferred Alternative. This is a longer distance than was presented in the DEIS (1.5 miles) because the nest location moved, the nest is now 0.3 miles farther away from the alignment. The Tier 1 BO determined that if less than 50 acres of forest was impacted within the Patoka River area and the East Fork of the White River area then there would be no detrimental impact to the bald eagle. It is anticipated that less than 20 acres of forest will be impacted within these areas, which falls well below the 50 acre threshold.

The eastern fanshell mussel (*Cyprogenia stegaria*) was found to not likely be adversely affected in the Tier 1 BO. A commitment was made on page v of the Tier 1 BA to resurvey the East Fork of the White River during the Tier 2 process to verify this finding was still valid. Field surveys were conducted in 2004 and 2005 for unionids (native mussels) at three sites in the Section 2

[2] The Federal Highway Administration and Indiana Department of Transportation submitted to the USFWS the certification of compliance with the Incidental Take Statement, included in the Revised Tier 1 BO, as part of an application for an expedited Bald and Golden Eagle Protection Act (Eagle Act) permit pursuant to the new regulations at 50 CFR 22.28, which apply to projects previously exempted from the take prohibition for bald eagles under Section 7 of the Endangered Species Act (ESA). The bald eagle permit was granted by USFWS on June 25, 2009 under permit number MB218918-0.

Table 1: Summary of NEPA and Section 7 Consultation History for I-69 Tier 1 & Tier 2

Date	Event / Action
May 18, 1999	Agency review meeting held to discuss tiered approach for this project.
January 5, 2000	Notice of Intent to undertake Tier 1 NEPA study for I-69 between Evansville and Indianapolis is published in Federal Register.
February 3, 2000	INDOT and FHWA hosted a "Scoping Meeting" with environmental review agencies.
June 5, 2001	INDOT and FHWA convened an agency review meeting to discuss the "Purpose and Need Statement." A substantial portion of this meeting was devoted to discussing the type of agency coordination required in Tier 1 and Tier 2 of this study. The specific requirements of each agency were discussed in terms of its legal and regulatory responsibilities.
November 27, 2001	INDOT and FHWA convened an agency review meeting to discuss the "Screening of Alternatives" for I-69 (included environmental information).
December 21, 2001	BFO sent comments on the Draft Level 2 Alternatives Analysis Report for the Evansville to Indianapolis I-69 study including endangered species and critical habitat.
March 14, 2002	Federally listed species were reviewed and appropriate tables were prepared listing the species, their number and status and presented to the USFWS at the BFO.
June 4 and 5, 2002	A BFO biologist took a two-day bus tour of I-69 alternatives focused on environmentally sensitive areas with INDOT, FHWA, United States Environmental Protection Agency (USEPA), and Indiana Department of Natural Resources (IDNR).
June 2002	Through informal consultation with the Service, INDOT agreed to shift the common alignment of Alternative 3A, B, and C to be beyond the range of bats that forage around and hibernate in a cave, which is Designated Critical Habitat for the Indiana bat in Greene County
June 27, 2002	FHWA sent a letter to BFO requesting a list of federally listed species and Designated Critical Habitat that may be present in the I-69 study area of 5 alternatives being carried forward for detailed analysis in the DEIS.
July 1, 2002	BFO sent FHWA a species list for all 5 alternatives that included 6 species and one cave Designated Critical Habitat for the Indiana bat that may be present within the proposed project counties.
July 31, 2002	INDOT and FHWA released the Tier 1 DEIS for public comment. The DEIS had been approved on July 22.
November 14, 2002	BFO comments on the Tier 1 DEIS are combined with those of the National Park Service and sent in a single letter from the Department of the Interior's Washington Office to FHWA.
January 9, 2003	Gov. Frank O'Bannon announced Alternative 3C as INDOT's recommendation as the "preferred alternative" for I-69.
February 21, 2003	FHWA requested a species list for the preferred alternative, 3C.
February 28, 2003	FHWA sent BFO a letter requesting comments on the four variations of Alt. 3C around the City of Washington.
March 11, 2003	An Agency Coordination Meeting was held at BFO to discuss a Conceptual Tier 1 Forest and Wetland Mitigation Plan, Sections of Independent Utility, the proposed Patoka River crossing, and how the Sec. 7 consultation would be undertaken.
March 13, 2003	BFO sent FHWA a letter listing 3 species that may be present in the Alternative 3C Study Area, Indiana bat, bald eagle, and fanshell mussel.
March 14, 2003	BFO sent FHWA a letter advising FHWA to choose one of the two eastern routes around Washington (variation "WE1" was specifically recommended) as they were less likely to have adverse effects on Indiana bats or bald eagles because impacts to forest and wetlands would be smaller.
March 26, 2003	BFO was sent a Draft BA addressing effects to Alt. 3C on Indiana bats, bald eagles, and fanshell mussels and requested review and comments.
May 30, 2003	BFO returned comments on Draft BA.
June 15 – July 2003	BFO assisted INDOT and FHWA in developing Conservation Measures to be included in the BA that would avoid and minimize incidental take of Indiana bats and bald eagles.
July 21, 2003	BFO received a revised BA and letter from FHWA requesting formal Section 7 consultation for the effects of Alt. 3C of I-69 on Indiana bats and bald eagles. The letter also requested concurrence that the fanshell mussels were not likely to be adversely affected by Alt. 3C. The 135-day formal consultation timeframe began.

Table 1: Summary of NEPA and Section 7 Consultation History for I-69 Tier 1 & Tier 2(Cont)

Date	Event / Action
August 22, 2003	BFO sent FHWA a letter acknowledging receipt and completeness of the formal consultation initiation package, which informed FHWA that the Service expected to provide a final Biological Opinion no later than December 3, 2003. Based on information contained in the BA, the USFWS also provided the FHWA written concurrence with its determination that the fanshell mussel was "not likely to be adversely affected" by the proposed construction, operation, and maintenance of Alternative 3C of I-69.
August – November 2003	BFO consulted with FHWA/INDOT to gain clarification on various issues resulting in several revisions to the Tier 1 BA.
November 28, 2003	BFO sent FHWA/INDOT a draft Biological Opinion for review.
December 2, 2003	FHWA/INDOT returned comments on the draft BO to BFO.
December 3, 2003	BFO sent FHWA/INDOT the Final Biological Opinion for Alternative 3C of I-69.
December 2003	INDOT released Final EIS with Alt. 3C named as its preferred alternative.
February 2004	FHWA issued a Record of Decision approving the Alt. 3C corridor.
Summer 2004	Tier 2 mist net surveys revealed the presence of 13 maternity colonies and scattered occurrences of male Indiana bats throughout the Alt. 3C corridor.
Fall-Winter-Spring 2004 and 2005	Tier 2 surveys at caves within 5 miles of the Alt. 3C corridor revealed limited seasonal use by Indiana bats at a small number of caves without previous documented use by Indiana bats
Summer 2005	Additional mist netting and radio-tracking located additional Indiana bat roost trees within the 13 maternity colony areas.
July 1, 2005	FHWA and INDOT met with USFWS and agreed to reinitiate formal consultation on Tier 1 of I-69 in light of all the new information on Indiana bat maternity activity and hibernacula in the project area
Fall 2005	BFO and project consultant staff held weekly meetings in order to guide development of the Tier 1 BA Addendum
February 2006	FHWA, INDOT, and USFWS signed a Pre-consultation Agreement
March 7, 2006	FHWA submitted a Tier 1 BA Addendum to the USFWS with a letter requesting to reinitiate formal consultation for the Indiana bat
June & July 2006	BFO consulted with FHWA/INDOT/project consultants to gain clarification on various issues discussed within the BA Addendum
July 10, 2006	BFO reviewed and submitted comments on the Tier 1 Re-evaluation Report for I-69, which outlined anticipated impacts resulting from the interstate being a toll road
July 17, 2006	BFO met with FHWA/INDOT/project consultants to discuss findings of the Tier 1 Re-evaluation report and other issues. It was agreed to expand the Winter Action Area to include an additional cave, which would necessitate FHWA/INDOT/project consultants to provide additional data to BFO and an effects determination on the cave as Critical Habitat. It was mutually agreed to extend the formal consultation period to accommodate these changes.
July 20, 2006	BFO received a letter from FHWA stating that it determined that I-69 "may effect, but is not likely to adversely affect" the cave as Critical Habitat for the Indiana bat. Additional information was provided regarding impacts around this cave and revised data for the revised Winter Action Area.
July 26, 2006	USFWS provided FHWA a Draft of the revised BO and Incidental Take Statement.
August 10, 2006	FHWA/INDOT return comments on the draft revised BO to BFO.
August 24, 2006	BFO sent FHWA/INDOT the final Revised BO for Alternative 3C of I-69.
May 18, 2007	BFO sent FHWA a letter noting intention to prepare an individual Tier 2 BO for each Tier 2 section, BFO concludes will be "likely to adversely affect" for the Indiana bat and/or bald eagle. Each will be a stand-alone document rather than being appended to the 2006 Revised Tier 1 BO.
February 14, 2008	BFO provided revised tree clearing dates of April 1 through September 30.
January 2009	Section 2 Tier 2 DEIS published.
April 2009	FHWA issued a Revised Tier 2 Draft Environmental Impact Statement for Section 2 to document revisions to stream impacts.
June 15, 2009	USDOI response letter was submitted which included the USFWS comments.
November 2,2009	Meeting with USFWS on Veale Creek Maternity Colony.

Note: BFO = Bloomington Field Office, USFWS

study corridor: the South Fork Patoka River, the Patoka River, and the East Fork of the White River--all three of which are contained within the Patoka River and the lower East Fork of the White River watersheds. No eastern fanshell mussels were found in those surveys. The Patoka River and the South Fork Patoka River surveys extended 100 meters both upstream and downstream of the centerline of the corridor. The survey at the East Fork of the White River extended 2,000 meters downstream of the DEIS Alternative A and 700 meters upstream of Alternative B. In the revised Tier 1 BO, USFWS confirmed its original opinion that the I-69 project is "not likely to adversely affect the eastern fanshell mussel." A commitment has been made of $25,000 to go towards creating a pamphlet for information on the eastern fanshell mussel.

PROJECT DESCRIPTION

Section 2 Preferred Alternative: See Figure 1 and Appendix B

Description: Starts one-half mile north of the Section 1 SR 64 interchange (near Oakland City) and proceeds to approximately one-half mile north of US 50 east of Washington.

Length: 28.6 miles

Right-of-way Width: The right of way width typically averages approximately 320 feet. The Section 2 right-of-way varies from 220 feet at the Patoka Bridge to approximately 700 feet in the bifurcated area. The South Daviess interchange has the widest right-of-way of all the interchanges at 1,550 feet.

Right-of-way Area: 1,701.9 acres

Typical Sections: Typical section drawings for the initial mainline design, crossroads and connector roads, and US 50 are shown in Figures 2-4.

Schedule: The Section 2 Revised Tier 2 DEIS discusses scheduling on page 5-11:

> INDOT may consider phased construction for some elements of this project. The elements considered for construction some time after the initial construction of Section 2 include: the North Pike Interchange, the South Daviess Interchange,

> and access features associated with these two interchanges. These project elements would be constructed when warranted and as funding becomes available...In the event that the construction of some elements of the overall project is deferred to a later time, impacts from the project in the short term would be lower than those shown in this document.

The current construction schedule for Section 2 identifies initial construction to begin in 2010.

Relocations:

1. Sixty-five (65) residential homes
2. Three (3) commercial businesses
3. One (1) institution-Brenton Chapel Church of Christ

Rest Areas: There are no rest areas planned in Section 2.

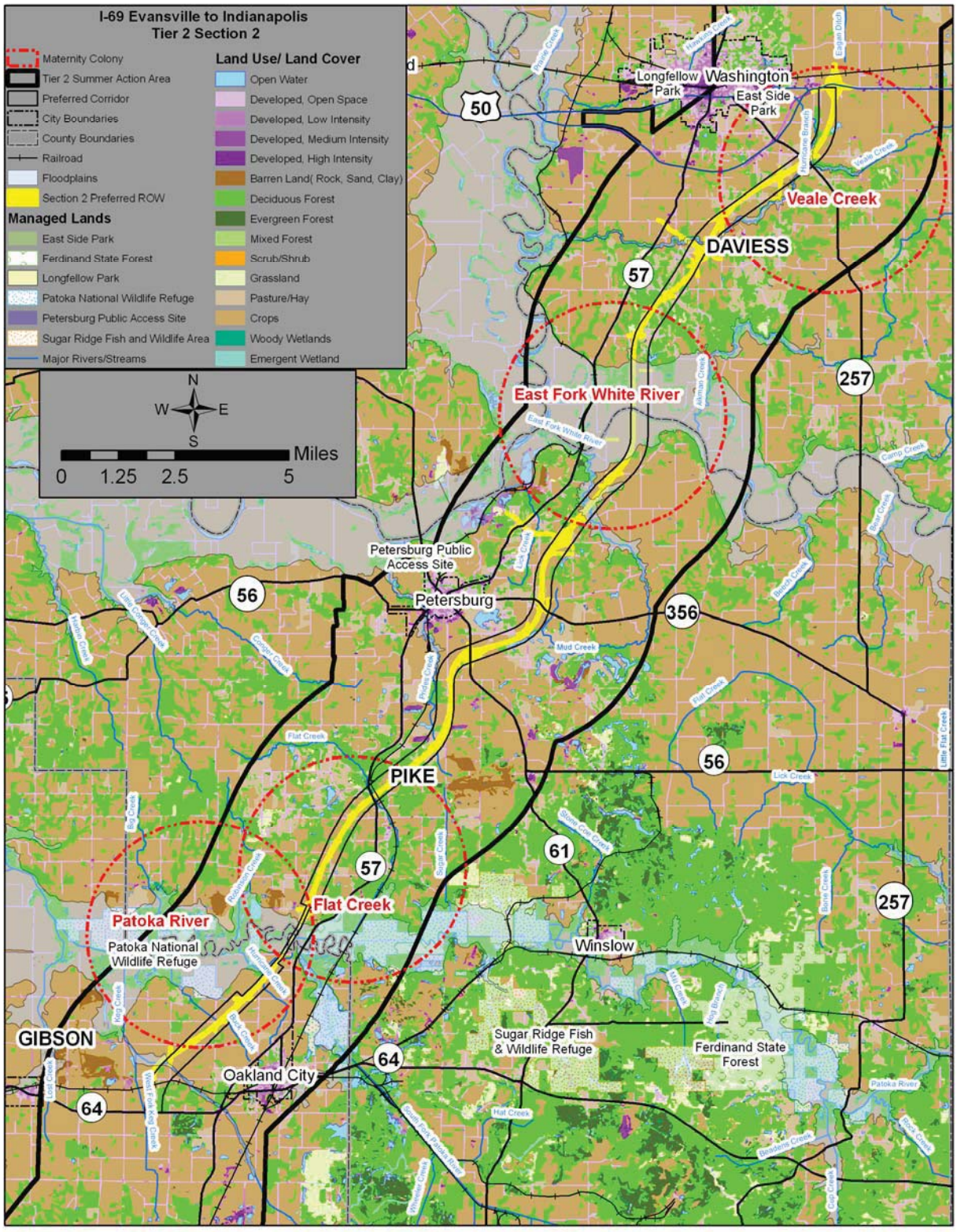


Figure 1. Section 2 Location Map

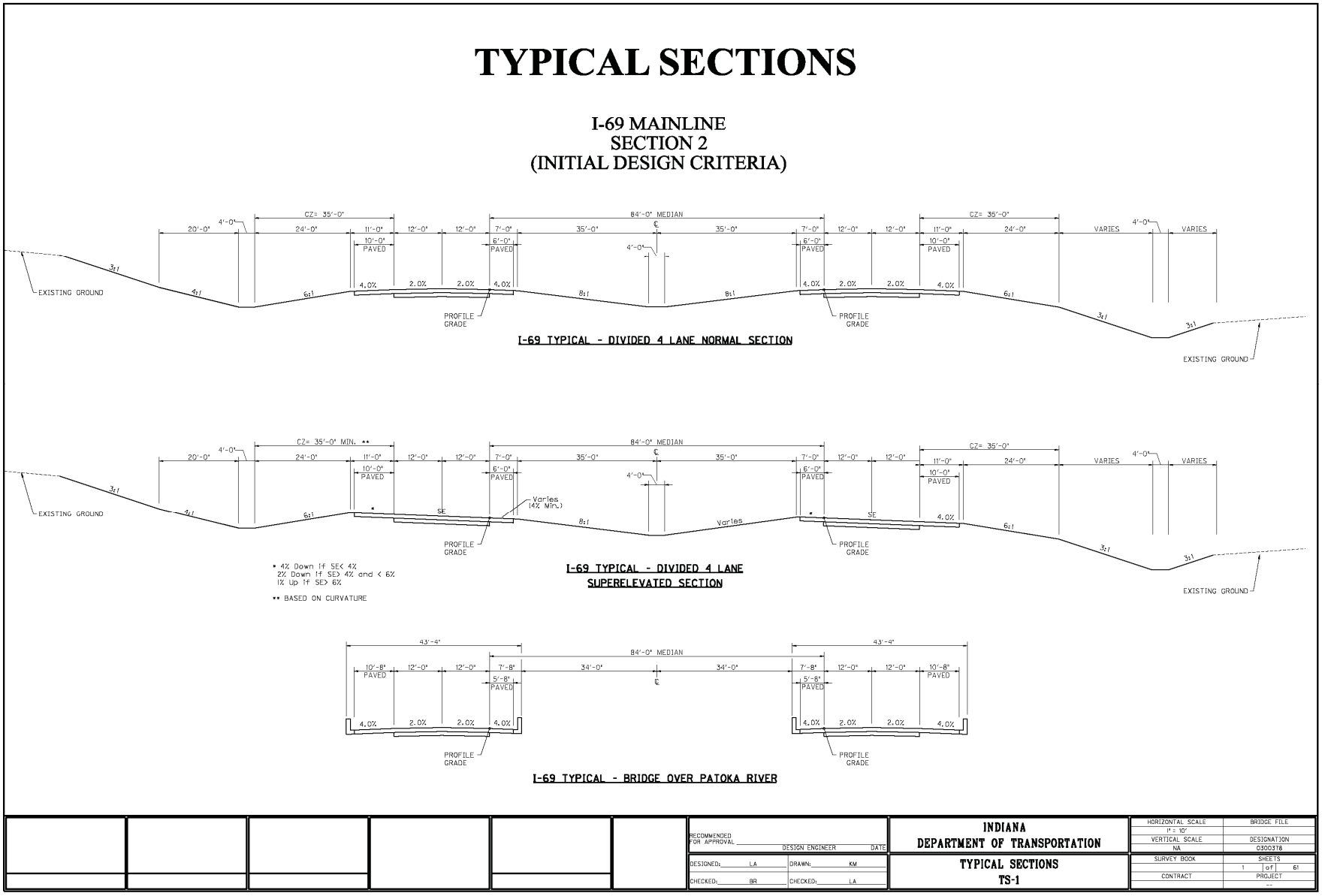
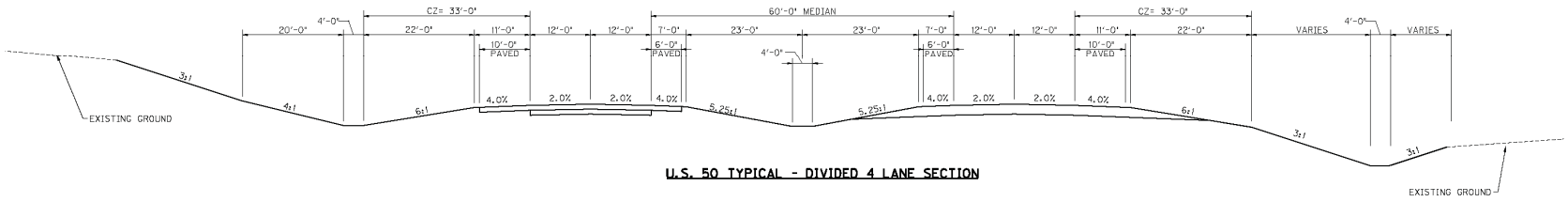


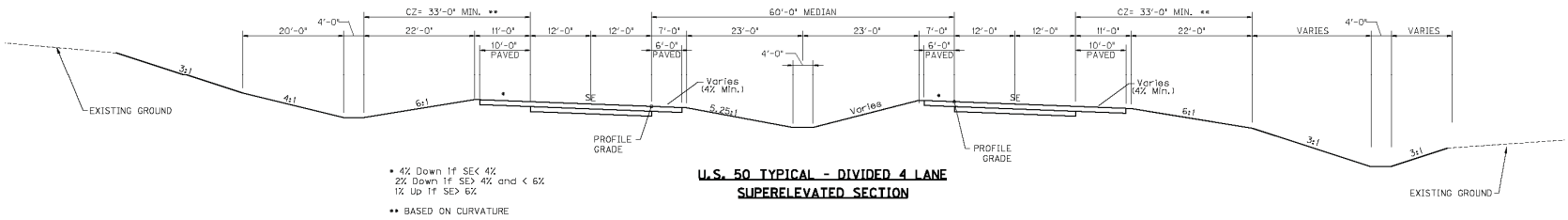
Figure 2: Initial Typical Sections Mainline

TYPICAL SECTIONS

US 50
SECTION 2



U.S. 50 TYPICAL - DIVIDED 4 LANE SECTION



* 4% Down if SE< 4%
2% Down if SE> 4% and < 6%
1% Up if SE> 6%

** BASED ON CURVATURE

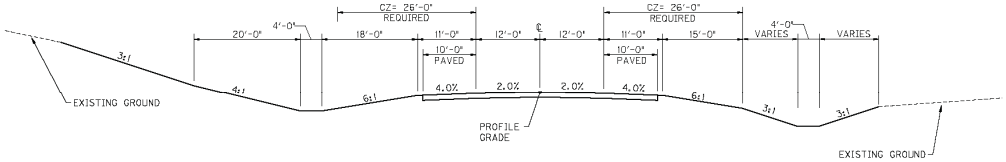
U.S. 50 TYPICAL - DIVIDED 4 LANE
SUPERELEVATED SECTION

						RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1" = 10' / BRIDGE FILE
								VERTICAL SCALE NA / DESIGNATION 0300378
						DESIGNED: LA / DRAWN: KM	TYPICAL SECTIONS TS-2	SURVEY BOOK / SHEETS 1a of 61
						CHECKED: BR / CHECKED: LA		CONTRACT / PROJECT --

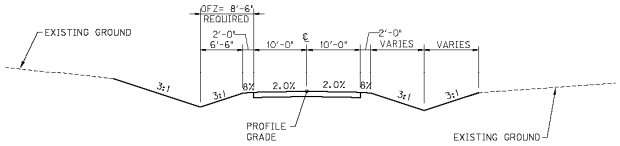
Figure 3: Typical Sections, US 50

TYPICAL SECTIONS

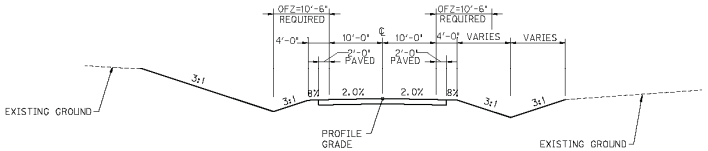
I-69 CROSSROADS & CONNECTOR ROADS
SECTION 2



RURAL ARTERIALS (MAJOR COLLECTORS)
S.R. 61
S.R. 257
S.R. 356
BLACKBURN ROAD CONNECTION TO S.R. 57
CR 375 S. CONNECTIONS TO S.R. 57



RURAL LOCAL ROAD, (3R)



LOCAL AGENCY RURAL COLLECTOR (3R-MINOR COLLECTOR)
PIKE Co. Rd. 650N
DAVIESS Co. Rd. 300S
DAVIESS Co. Rd. 450S
TROY / HORRALL ROAD

GIBSON CO.	PIKE CO.	DAVIESS CO.
Co. Rd. 950E	Co. Rd. 300W	Co. Rd. 550S
Co. Rd. 50N	Co. Rd. 200S	Co. Rd. 125W
CONNECTOR ROAD 1	Co. Rd. 200W	Co. Rd. 50W
	Co. Rd. 50W	Co. RD. 250S
	Co. Rd. 300N	Co. Rd. 125E
	Co. Rd. 475N	Co. Rd. 150S
	Co. Rd. 750N	
	CONNECTOR ROAD 3	
	CONNECTOR ROAD 4	

						RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1" = 10' / BRIDGE FILE
						DESIGNED: LA DRAWN: KM	TYPICAL SECTIONS TS-4	VERTICAL SCALE NA / DESIGNATION 0300378
						CHECKED: BR CHECKED: LA		SURVEY BOOK / SHEETS 2a of 61
								CONTRACT / PROJECT --

Figure 4: Typical Sections- Crossroads and Connector Road

Interchanges

The Section 2 Revised Tier 2 DEIS discusses interchanges on page 5-43:

> With either alignment alternative, four interchanges are proposed on I-69 within Section 2. These are the SR 61/56 interchange at Petersburg, the North Pike County interchange at Blackburn Road, the South Daviess County interchange at SR 57, and the US 50 interchange at Washington. In order to minimize near future project costs, two of these interchanges, North Pike and South Daviess, are currently being considered for deferral until additional funding might become available. Under a deferral scenario, the mainline and two of the interchanges (SR 61/56 and US 50) would be built in the initial construction of Section 2. Either or both of the other two interchanges (North Pike and South Daviess) would be constructed at a later date. All land use impacts and accessibility analyses presented here assume the construction of all four interchanges.
>
> **SR 61/56 Interchange at Petersburg** (Figure 5):

The Section 2 Revised Tier 2 DEIS discusses the SR61/SR 56 interchange on pages 5-43 to 5-44:

> The SR 61/56 interchange, located about one mile southeast of Petersburg, will provide direct access to the heart of the Petersburg community, including the business district. This interchange will benefit the city of Petersburg with better access to places of interest in Pike County, be it commuter or recreational trips. This interchange would be located 13 miles north of the SR 64 interchange west of Oakland City in Section 1 and four miles south of the North Pike County interchange…
>
> … The preferred [alternative interchange] will require the relocation of Brenton Chapel Church, four residences, and one home-based business. It may also be necessary to revise the location of driveway entrances for some properties.

This interchange will utilize a full-diamond configuration.

> **North Pike County Interchange at Blackburn Road** (Figure 6):

The Section 2 Revised Tier 2 DEIS discusses this interchange on page 5-44:

> The area around the North Pike County interchange is primarily agricultural in nature, with scattered residences and forested areas. The North Pike County interchange would be a diamond interchange on a new roadway connecting to a realigned Blackburn Road and SR 57. SR 57 would be relocated to improve sight distances, which is especially important due to high truck volumes in this area. The new roadway would have partial access control, meaning access

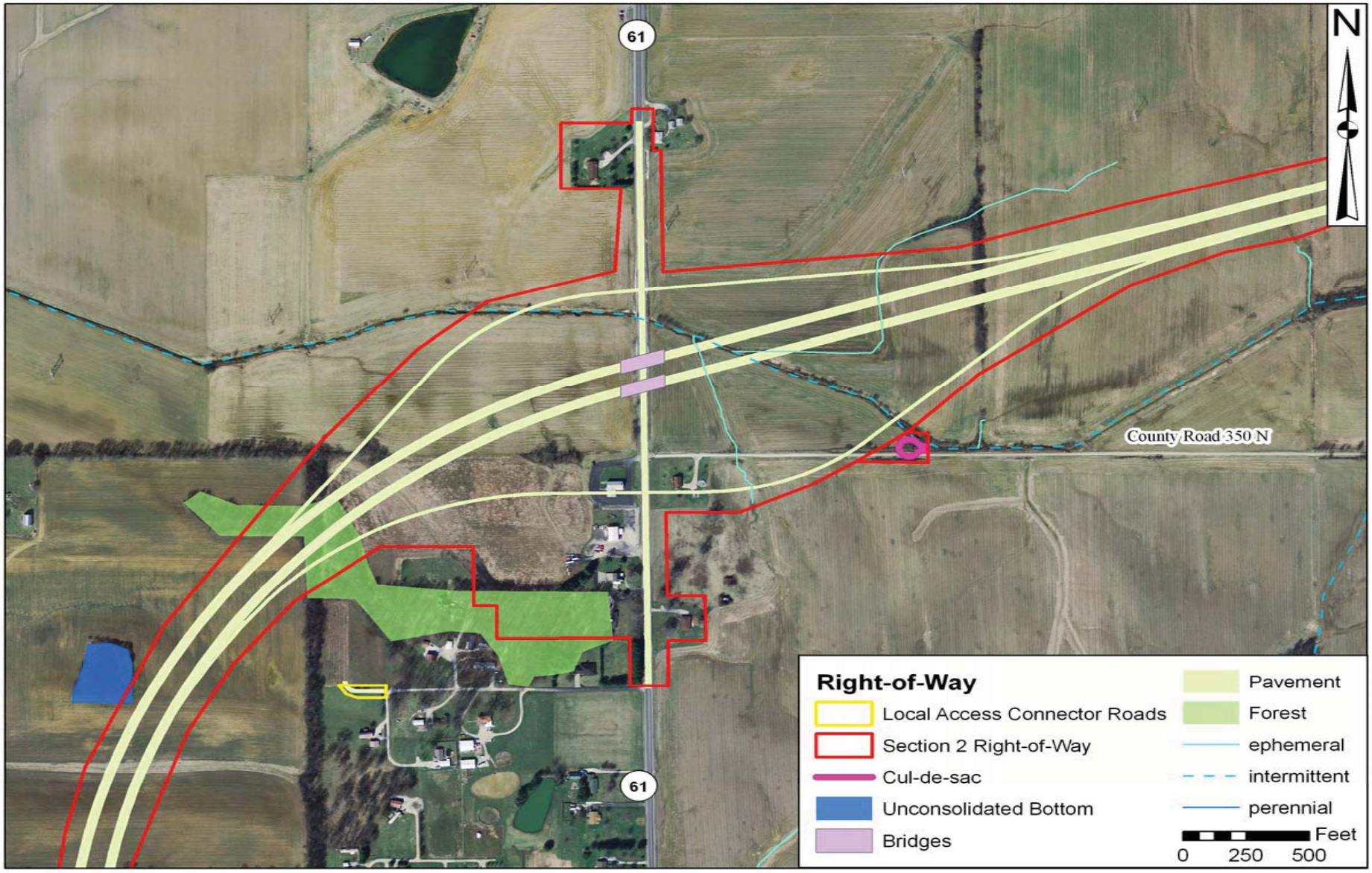


Figure 5: SR 61/ SR 56 Interchange at Petersburg

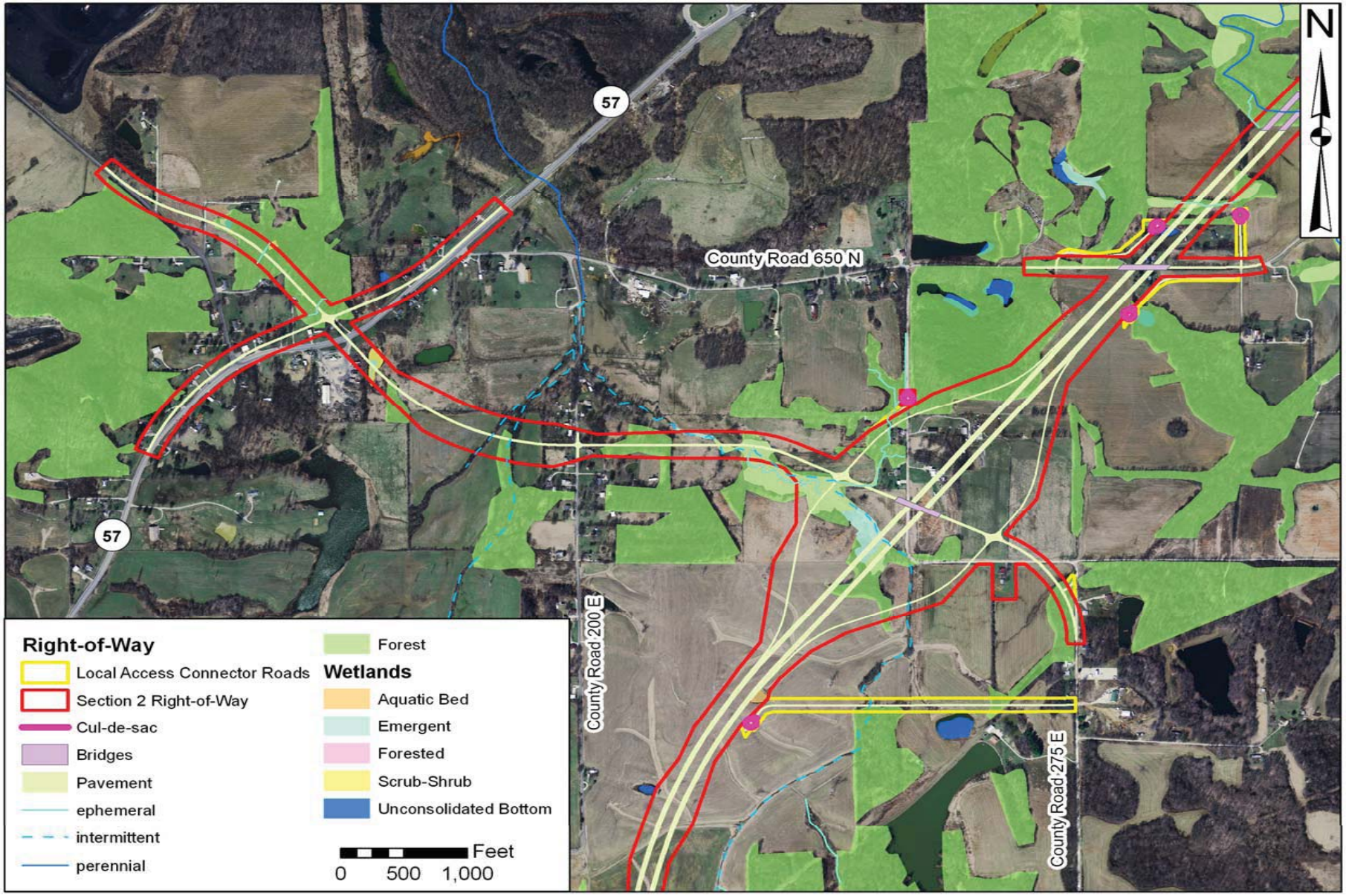


Figure 6: North Pike Interchange at Blackburn Road

> would only be provided at intersections with other public roads. This interchange would be located four miles north of the SR 61/56 interchange, and approximately 7 miles south of the South Daviess County interchange.
>
> The North Pike County interchange is forecasted to have daily ramp volumes of 1,800 to 3,500 vehicles per day, depending on the interchange scenario selected. Without this interchange, spacing between the next nearest interchanges (from South Daviess to SR 61/56) would be at least 11 miles. The North Pike County interchange helps to satisfy the Section 2 Purpose and Need, by diverting coal truck traffic serving Indiana Power and Light (IPL) and Hoosier Energy from SR 57 through the center of Petersburg. For a detailed description of how this interchange helps to relieve truck traffic through the city of Petersburg, see Chapter 3.3.1.3, *Safety of the DEIS*. Additionally, the North Pike County location is well suited to accommodate expanded industrial development on or near the IPL and Hoosier Energy facilities. The interchange is included in the *Pike County Endorsed Plan of I-69 Interchanges.*

This interchange would require thirteen residential relocations and one business relocation. This interchange will connect I-69 to SR 57 near Blackburn Road via a 1.7-mile connector road and would utilize a full-diamond interchange configuration.

South Daviess County Interchange at SR 57 (Figure 7):

The Section 2 Revised Tier 2 DEIS discusses this on pages 5-44 through 5-45:

> The area around the South Daviess County interchange is primarily agricultural in nature, with rolling topography, scattered residences, and forested areas. Access to southern Daviess County would be provided by an interchange …Both full and folded diamond designs were considered at this location... The folded diamond was chosen for the preferred alternative. The interchange is adjacent to Veale Creek and the proposed road connecting the interchange to SR 57 crosses Veale Creek and its associated floodplain area. A new 1.7 mile connector roadway to SR 57 near CR 300 S, about a mile and a half south of the intersection of US 50 and SR 57 on the south side of Washington would be provided and would have partial access control as described above. This interchange would be located seven miles north of the North Pike interchange, and five miles south of the US 50 interchange.
>
> The South Daviess County interchange is forecasted to have between 2,900 and 3,300 vehicles per day using the interchange, depending on the final selection of interchanges and their locations. This interchange would improve travel between I-69 and the southern, central, and western parts of Washington. The City endorsed the interchange by resolution by the Common Council of the City of Washington (July 25, 2005) because this interchange would help to strengthen the growth and development in the vicinity of the US 50/SR 57 intersection by allowing easier access for northbound traffic to this area of existing development, thus helping to satisfy the Section 2 Purpose and Need. Without the interchange,

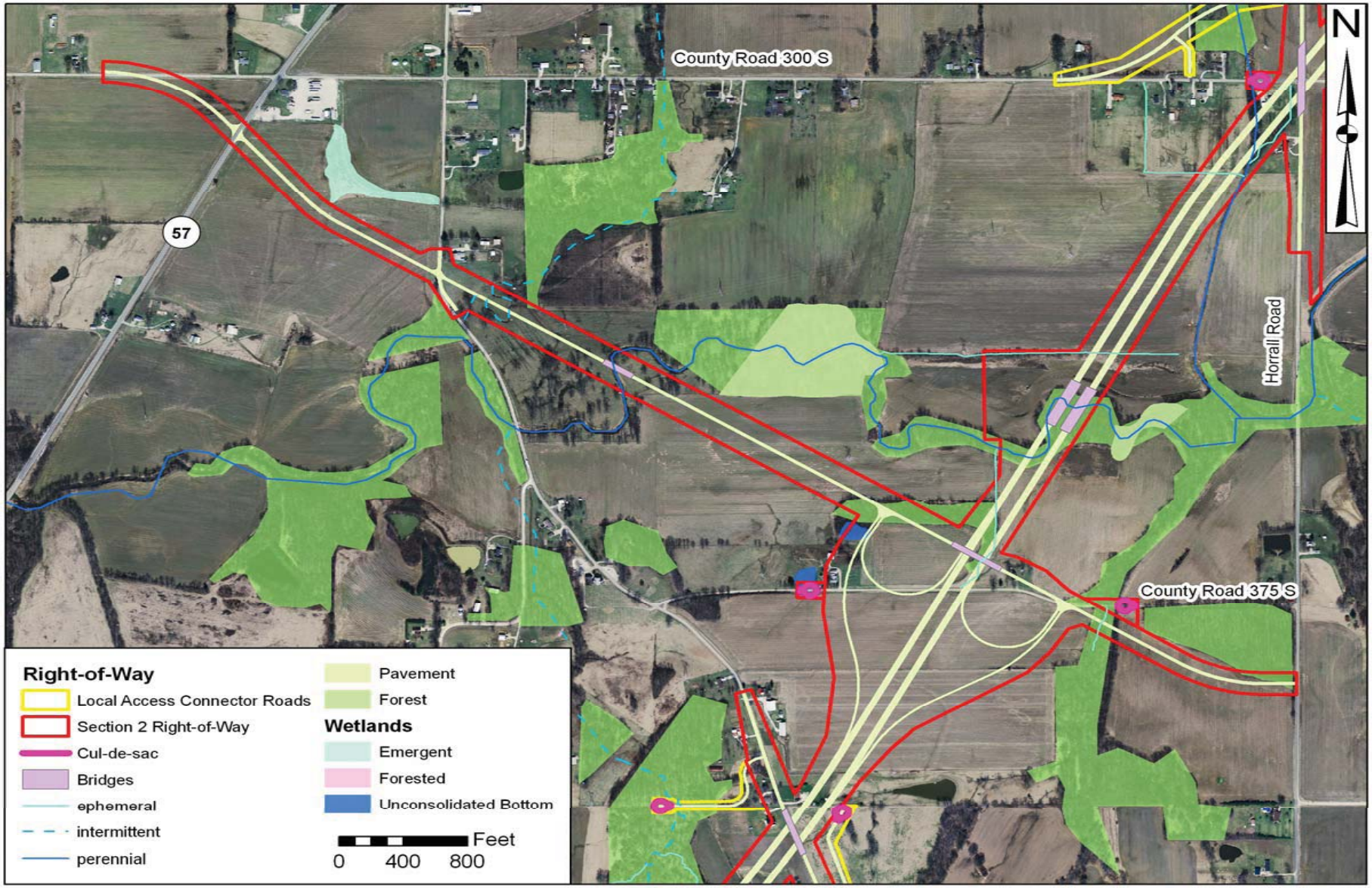


Figure 7: South Daviess County Interchange at SR 57

> spacing between the next nearest interchanges (North Pike and US 50) would be 12.5 miles.[3]

The South Daviess interchange would be a folded-diamond type interchange. This interchange has been modified since the publication of the DEIS.

US 50 Interchange at Washington (Figure 8):

The Section 2 Revised Tier 2 DEIS discusses the US 50 interchange on page 5-45:

> Washington, which is located in western Daviess County, lies to the west of the proposed I-69 alignment. Access to Washington will be provided at US 50, which bypasses the community on the south and ties to East National Highway (Old US 50), which connects to the downtown business district. A new interchange at US 50, according to CAC members, will maximize economic development in this area and promote tourism for the City of Washington. The potential for increased traffic volumes that a new interchange will bring is considered a benefit by CAC members.
>
> The preferred alternative at this location, provides a full diamond interchange at relocated US 50 south of the CSX Railroad. This interchange would be located five miles north of the South Daviess interchange and 13 miles south of the SR 58 interchange in Daviess County, in Section 3.

The full-diamond interchange will require four (4) residential relocations. There will be no commercial relocations within this intersection.

The Section 2 Revised Tier 2 DEIS discusses interchange construction on pages 5-114 and 5-116:

> The North Pike and South Daviess interchanges may be constructed later than the rest of the project in Section 2. The timing of their construction will be based upon funding. All resource impacts in Chapter 5 take into account the impacts of all four interchanges. For traffic impacts, an initial scenario in which only the SR 61/56 and US 50 interchanges are constructed may result in greater traffic impacts than would occur when all four interchanges are in use. Therefore, the analysis of traffic impacts discloses the forecasted traffic impacts for both a two-interchange project (with only the SR 61/56 and US 50 interchanges open) as well as when all four interchanges are in use. If two interchanges are deferred, it is possible that these two interchanges would not be constructed at the same later date, and Section 2 would operate for some time with three interchanges. For this situation, traffic effects would be within the range of effects defined by the two-interchange and the four-interchange scenarios. Since all traffic movements under either of these scenarios would be at Level of Service (LOS) C or better, the three-interchange scenario would also not have any undesirable traffic conditions greater than those presented [for the two-interchange scenario].

[3] Section 2 Tier 2 Revised DEIS, Section 5.3.4.1 "Interchange Access" p (5-44)-(5-45)

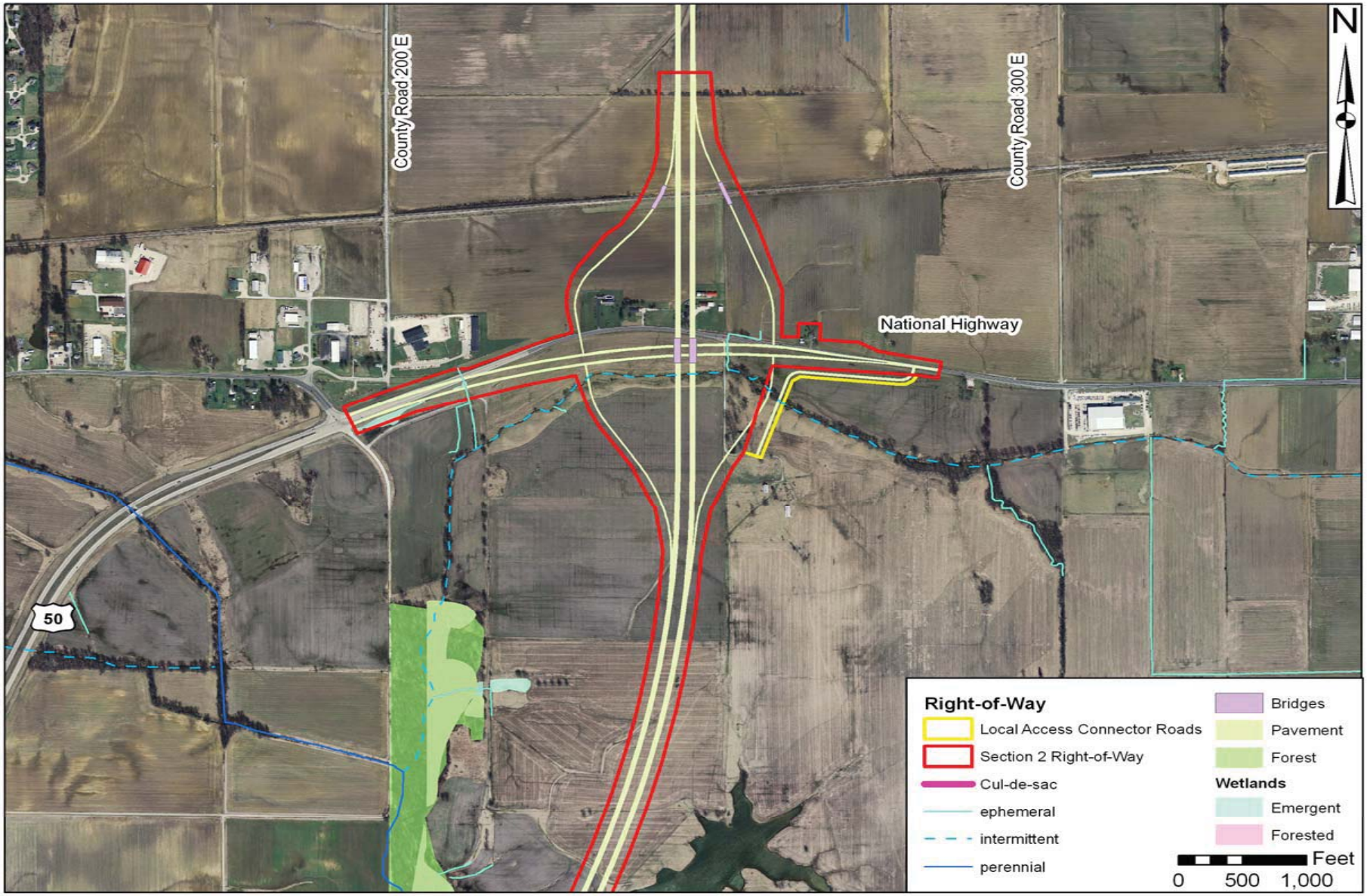


Figure 8: US 50 Interchange at Washington

> The interchanges that are implemented would introduce new at-grade intersections to the crossroads at the interchange ramp terminals… Comparison of the interchange volumes under the four-interchange and two-interchange scenarios shows that there is only a very minor increase in peak hour volumes with the two-interchange scenario. Under the forecasted 2030 Build traffic volumes, all of the ramp terminal intersections would operate at a LOS "B" or better during the peak hour in the four-interchange scenario. Under the two-interchange scenario, two movements which would operate at LOS "B" in the four-interchange scenario drop to LOS "C". This is an acceptable level of service, and signifies only a minor increase in delay at these locations due to additional traffic which would be added to the two built interchanges in a phased-construction scenario.

Grade Separations

The following are proposed locations for grade separations. Final determination of these grade separations will be determined within the Final EIS and will be based on public involvement, resource and local agency comments, and cost. The current access accommodations included in the Preferred Alternative presented in this BA are considered to be a worst case scenario relative to forest and wetland impacts. Any additional adjustment of grade separations, road closures and frontage roads are not expected to result in any net increase in impacts to forest or wetlands. In addition to the following list, the interchanges mentioned above also include grade separations.

- Gibson Norfolk Southern Railroad
- Gibson County Road 950E*
- Gibson County Road 50N*
- Gibson County Road 150N (as part of Patoka Bridge)
- Pike County Road 200S*
- Pike CR 125S (Oatsville Rd.)
- Pike Division
- Pike SR 57, Indiana Southern Railroad, and Flat Creek
- Pike County Road 50W*
- Pike County Road 300N*
- Pike SR 356*
- Pike County Road 650N (Twin Oaks Rd.)*
- Pike County Road 750N*
- Daviess County Road 700S (as part of East Fork of White River bridge)
- Daviess County Road 550S*
- Daviess County Road 450S*
- Daviess County Road 50W*
- Daviess Troy Rd./Horrall Road*
- Daviess County Road 125E*
- Daviess SR 257

*means that an overpass (S-line over I-69) has been selected for this location.

Access Roads

The Section 2 Revised Tier 2 DEIS discussed access roads on page 5-118:

> With construction of I-69 as a limited access facility, many local roads would be severed by the new right-of-way and closed, rerouted, or have a grade separation structure to go over or under the new roadway… It would also be necessary, in certain locations, to construct short segments of roadway to provide access to properties whose access would be cut off by the new right-of-way. It is important to note that some local service roads may not be necessary based on final land acquisition analysis. It may be more cost-effective and appropriate to land-lock a parcel and acquire the entire property than to provide a local service road. This is determined during detailed design.

Where local service roads and existing roads dead end, cul-de-sacs will be provided. Proposed local service roads for the Preferred Alternative are listed in Table 2.

Table 2: Description of Proposed Local Service Roads

Local Service Roads	Description
LSR 1	On the south side of Gibson Co. Rd. 125S west of I-69, this road connects the Francisco Sewage Treatment Plant to Co. Rd. 125S, where direct access was terminated by the construction of I-69.
LSR 2	On the north side of Gibson Co. Rd. 50S west of I-69, this road connects a farm property to Co. Rd. 50S where direct access was terminated by the construction of I-69.
LSR 3	On the south side of Gibson Co. Rd. 50N west of I-69, this road connects a farm property to Co. Rd. 50N where direct access was terminated by the construction of I-69.
LSR 4	On the north side of Pike Co. Rd. 200S east of I-69, this road connects farm properties to Co. Rd. 200S where direct access was terminated by the construction of I-69.
LSR 5	On the west side of Pike Co. Rd. 250W west of I-69, this road connects the northern end of existing Pike Co. Rd. 250W to provide access to farm properties. Access to these properties from Pike Co. Rd. 250W and 50S will be cut off by the construction of I-69.
LSR 8	On the south side of Pike Co. Rd. 50W east of I-69, this road connects to Co. Rd. 50W and provides access to a private property. The existing connection to Co. Rd. 50W was terminated by the construction of I-69.
LSR 8.5	On the north side of Pike Co. Rd. 300N east of I-69, this road provides access to one farm property where direct access to Meridian Rd. 300N will be eliminated by the construction of I-69.
LSR 9	On the west side of SR 61 south of I-69, this extension of a local county road will be required to maintain access to a farm properties where direct access to SR 61 will be eliminated by the construction of I-69.
LSR 9.2	On the south side of SR 356, this extension of Jasper Street will be required to maintain access to residential properties where direct access to SR 356 will be modified by the construction of I-69.
LSR 9.4	On the north side of SR 356, this extension of Pike Co. Rd. 475N will be required to maintain access to farm properties where direct access to SR 356 will be eliminated by the construction of I-69.
LSR 9.6	On the north side of SR 356, this extension of Pike Co. Rd. 475N will be required to maintain access to farm and residential properties where direct access to SR 356 will be modified by the construction of I-69.
LSR 10	On the east side of I-69, north of Pike Co. Rd. 475N, this road provides access to a portion of a

Table 2: Description of Proposed Local Service Roads

Local Service Roads	Description
	private property. The direct access to this portion of the property will be eliminated by the construction of I-69.
LSR 11	On the east side of I-69, southeast of North Pike Co. interchange, this road provides access to two private properties. The direct access to Pike Co. Rd. 200E will be eliminated by the construction of I-69.
LSR 11.5	On the east side of I-69, connecting to a private access road to the underground natural gas wells, this road provides access to a private property. The current access to Pike Co. Rd. 275E will be eliminated by the construction of the North Pike County interchange
LSR 12	On the west side of I-69, connecting to Pike Co. Rd. 275E, this road provides access to a private property. The current access to Pike Co. Rd. 275E will be eliminated by the construction of the North Pike County interchange
LSR 13	On the west side of I-69, northwest of Pike Co. Rd. 650N, this road provides access to a private property. The direct access to Pike Co. Rd. 350E will be eliminated by the construction of I-69,
LSR 13.5	On the east side of I-69, south of Pike Co. Rd. 650N, this road provides access to a private property. The direct access to Pike Co. Rd. 650N will be eliminated by the construction of I-69.
LSR 14	On the east side of I-69, northeast of Pike Co. Rd. 650N, this road provides access to two private properties. The direct access to Pike Co. Rds 650N and 350E will be eliminated by the construction of I-69.
LSR 15	On the east side of I-69, south of Pike Co. Rd. 350E, this road provides access to a private property. The direct access to Pike Co. Rd. 750N will be eliminated by the construction of I-69.
LSR 16	On the west side of I-69, south of the East Fork of the White River, this road connects a large agricultural property to Pike Co. Rd. 350E. The direct access to Pike Co. Rd. 425E will be eliminated by the construction of I-69.
LSR 17	On the east side of I-69, connects a large agricultural property to Daviess Co. Rd. 150W. Direct access to Daviess Co. Rd. 550S will be eliminated by the construction of I-69.
LSR 18	On the east side of I-69, north of Daviess Co. Rd. 550S, this road provides access to two private properties. The current direct access will be eliminated by the construction of I-69.
LSR 19	On the west side of I-69, north of Daviess Co. Rd. 550S, this road provides access to multiple private properties where current access will be eliminated by the construction of I-69.
LSR 18B	On the west side of I-69, this road provides access from Daviess Co. Rd. 50W to multiple farm properties. Current access to Daviess Co. Rds. 450S and 50W will be eliminated by the construction of I-69.
LSR 19B	On the east side of I-69, this road provides access from Daviess Co. Rd. 50W to a farm property. Current access to Daviess Co. Rd. 50W will be eliminated by the construction of I-69.
LSR 24	On the west side of I-69, this road reconnects multiple properties to relocated Daviess Co. Rd. 300S. Direct access will be eliminated by the construction of I-69 and relocation of Co. Rd. 300S.
LSR 26	On the west side of I-69, this road connects a private property to Daviess Co. Rd. 250S. Current access will be eliminated by the construction if I-69.
LSR 27	On the west side of I-69, this road reconnects a private property to Daviess Co. Rd. 125E. Current access will be eliminated by the construction of I-69.
LSR 28	On the east side of I-69, this road reconnects a private property to Daviess Co. Rd. 125E. Current access will be eliminated by the construction of I-69.
LSR 32	On the east side of I-69, south of relocated US 50, this road provides access to a farm property with two barns. Direct access to existing US 50 will be eliminated by the acquisition of Limited Access right-of-way for relocated US 50.

Relocated/Realigned Roads & Connector Roads

The following roadways will be relocated/realigned or a connector road will be installed to maintain existing access following the construction of I-69:

- Gibson CR 000 & CR 1050E
- Pike CR 300W (south of CR 200S)
- Pike CR 200W
- Pike CR 400 N & CR 175E
- Pike CR 475N
- Pike CR 750N & CR 350E(north of I-69)
- Daviess CR 125W
- Daviess CR 300S
- Daviess CR 150S (east of I-69)

Closed Roads

With the construction of I-69, the following roadways will be closed at the point where they meet I-69:

- Gibson CR 125S
- Gibson CR 50S
- Gibson CR 1150E
- Pike CR 300W (north of CR 200S)
- Pike CR 250W
- Pike CR 50S
- Pike CR 125W
- Pike CR 150N
- Pike Meridian
- Pike CR 350N
- Pike CR 175E (south of CR 400N)
- Pike Jasper Street
- Pike CR 250E
- Pike CR 350E (South of I-69)
- Daviess CR 375S (existing)
- Daviess CR 50E(Old Troy Road)
- Daviess CR 250S
- Daviess CR 150S (west of I-69)

At each of these road closures, cul-de-sacs or other means will be provided to allow school buses, snow plows, and other large vehicles sufficient turn around space. Appropriate signage advising of the road closures will be placed at the nearest intersections.[4]

[4] Section 2 Tier 2 Revised DEIS, Section 7.3.2 "Section 2 Mitigation Measures and Commitments: Social and Neighborhood" p 7-14

Maps of proposed local access provisions are presented in Figures 9–12.

Utilities

A preliminary review of the plan and profile sheets, as well as the GIS layer of transmission towers, showed that approximately 15 transmission towers may need to be relocated that are located within the right-of-way for the Preferred Alternative. No more than two transmission towers should need to be removed in any particular area. The locations of these potential relocations occur near Pike County Road 200 S, SR 61, Pike County Road 400 N, Pike County Road 600 N, Pike County Road 350 E, Daviess County Road 550 S, Daviess County Road 450 S, Daviess County Road 50 E, Horrall Road, and Daviess County Road 250 S. Only the tower relocations at Daviess County Roads 550 S, 50 E, 450 S, and 250 S as well as Pike County Road 600 N are anticipated to have any additional forest impact. While some additional local utilities will be crossed by I-69, these facilities are nearly all associated with existing roadways, and any required relocations are anticipated to be within the local access facility right-of-ways being evaluated. Based on the location of these anticipated relocations, and the adjacent land uses, forest impacts from utility relocations are expected to be less than ten (10) acres for all of Section 2. Locations of these potential relocations can be found in the Appendix B the Preferred Alternative Atlas.

Railroads

The Preferred Alternative will cross the Norfolk Southern Railroad just north of SR 64, due west of Oakland City, and will cross the north-south Indiana Southern line at the point where the corridor crosses SR 57, about midway between Oakland City and Petersburg. At both crossings, I-69 is proposed to be elevated on structure over the railroad; there will be no new railroad grade crossings and no effect on rail operations.[5] (The previously-mentioned crossing of the CSX Railroad east of Washington is located within Section 3, just north of the northern terminus of Section 2.)

[5] Section 2 Tier 2 Revised DEIS, Section 5.3.5.9 “Utilities/Infrastructure” p 5-58

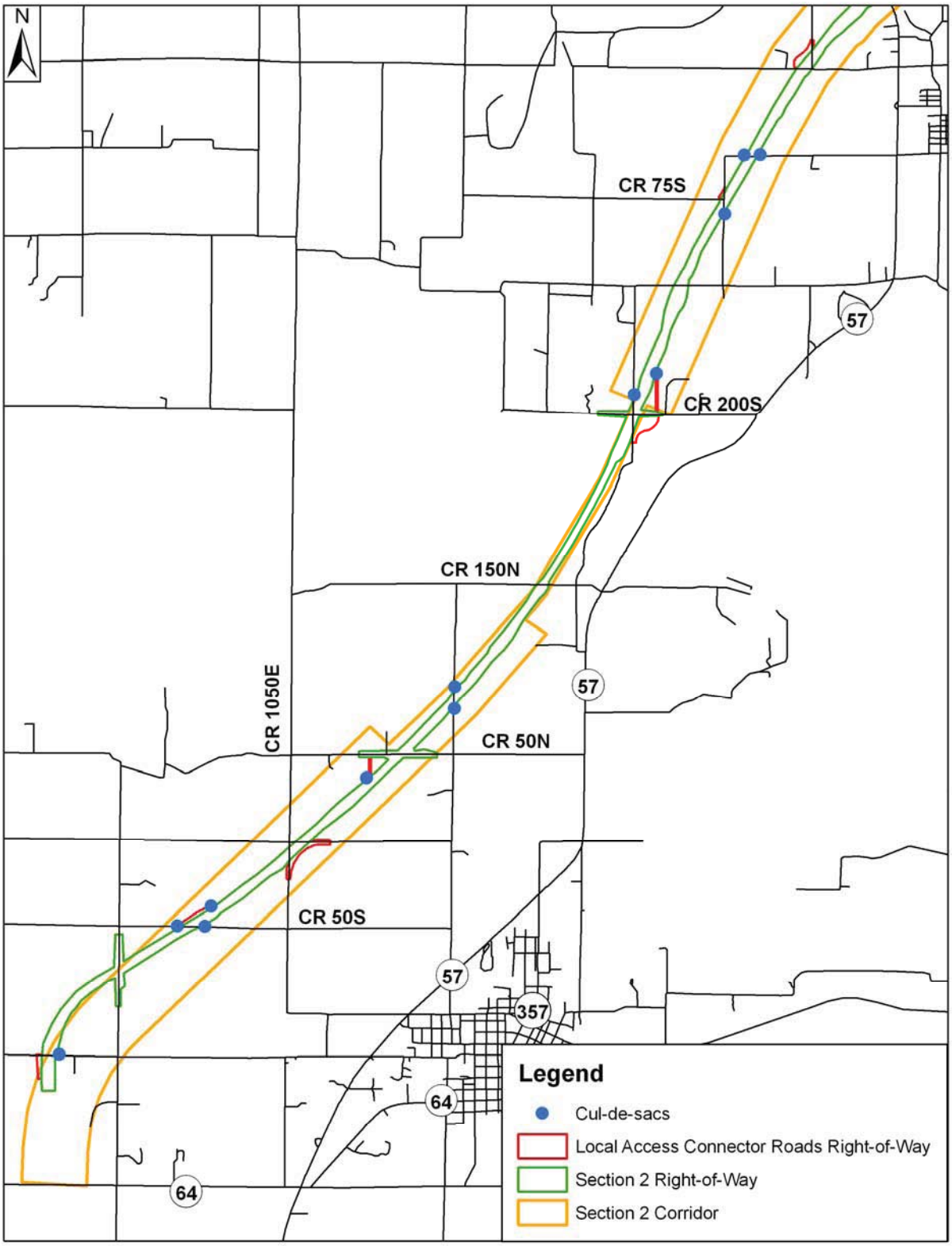


Figure 9: Proposed Interstate and Local Access

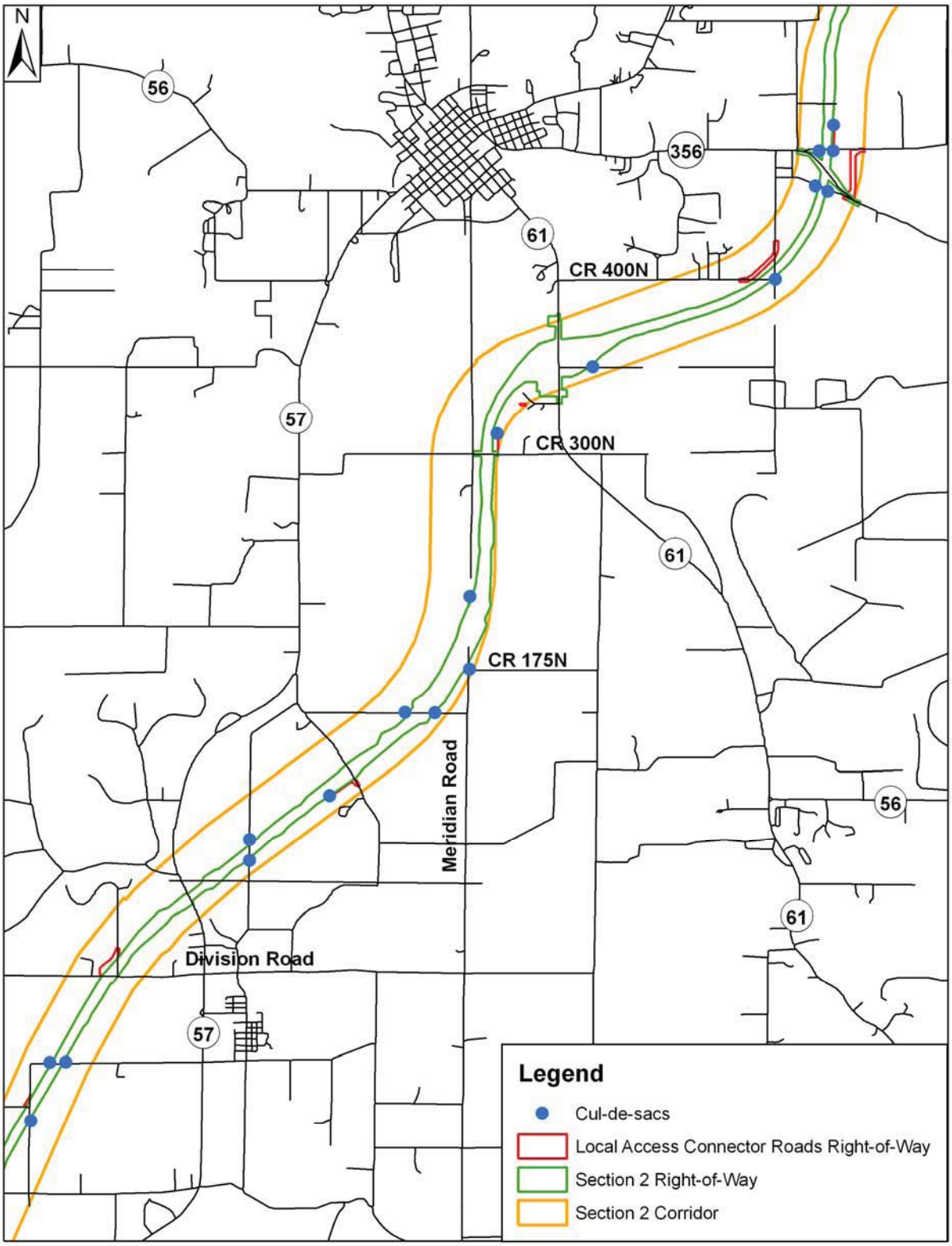


Figure 10: Proposed Interstate and Local Access

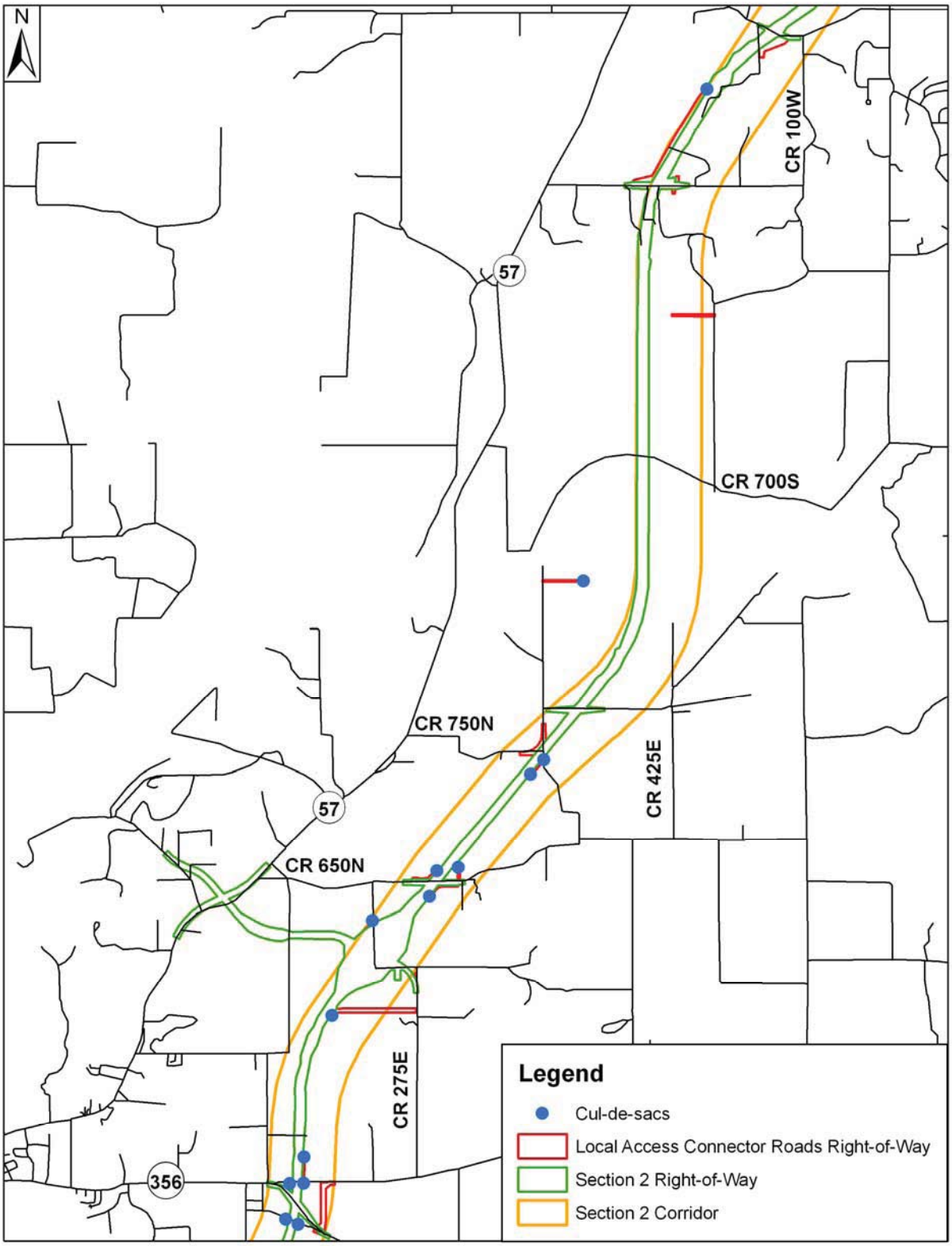


Figure 11: Proposed Interstate and Local Access

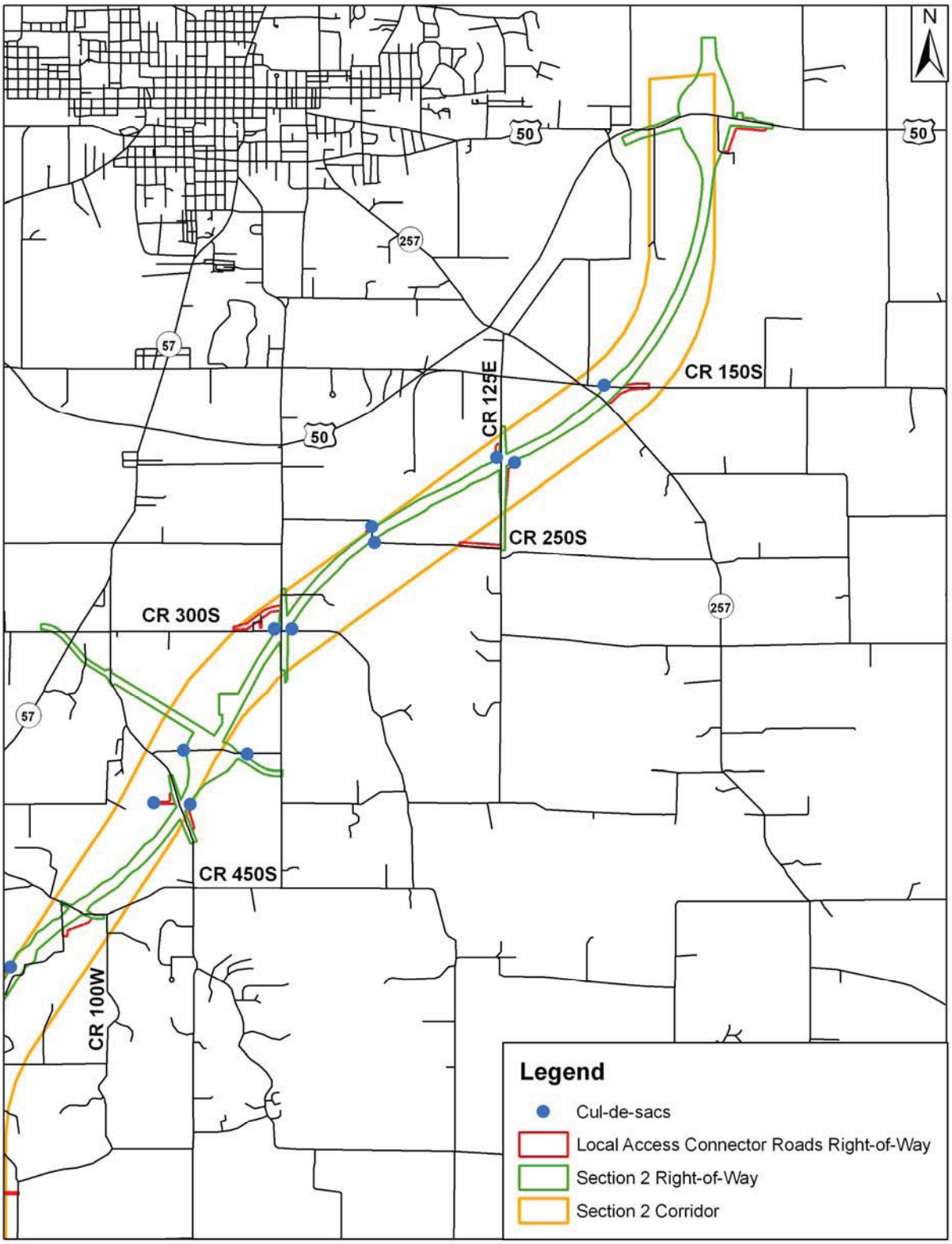


Figure 12: Proposed Interstate and Local Access

Billboards

A review of the areas where main highways intersect the I-69 alignment identified no billboards that will need to be relocated.

Streams

Stream crossings are generally provided using bridges, culverts and/or pipes. Potential bridge locations in Section 2 include the crossings of East Fork Keg Creek, Creek, Hurricane Creek, Patoka River (entire floodplain bridged including the South Fork crossing), Flat Creek, Mud Creek, East Fork of White River, Veale Creek, and Hurricane Branch of Veale Creek. This list is not all inclusive and may change with design refinements. All other crossings would provide culverts or pipes in existing channels. In some cases, these activities would require an alteration to the natural shape of the stream. These could include channel widening, enclosure, straightening and realignment, bank shaping and stabilization, and placing bridge piers in the water body.

Floodplains

The Section 2 Revised Tier 2 DEIS discussed floodplains on page 1-12, “The approximate location where I-69 crosses the Patoka River was established by the Final EIS that established the Patoka National Wildlife Refuge. In the Tier 1 FEIS (Section 7.2, pg. 7-7) and ROD (Section 5.10), the commitment was made to bridge the entire Patoka River floodplain due to its environmentally sensitive nature. At the Patoka River, the corridor crosses from Gibson County into Pike County.” I-69 also crosses Flat Creek just north of the Patoka River National Wildlife Refuge. In the Tier 1 FEIS (Section 7.2, pg. 7-7) and in the ROD (Section 5.10) a commitment was made to bridge the entire Flat Creek floodplain as well.

INDIANA BAT (*Myotis sodalis*)

ACTION AREA

The study area for Section 2 begins approximately one-half mile north of SR 64 near Oakland City. It continues to US 50 east of Washington. It is approximately 28.6 miles in length. It is a part of the larger Tier 1 project, I-69 Evansville to Indianapolis which was considered in the Tier 1 Revised BO.

The proposed project involves the construction, operation and maintenance of an Interstate highway, I-69, from Evansville to Indianapolis through southwestern Indiana in Section 2. USFWS regulations define the "action area" as all areas to be affected directly and indirectly by the Federal Action and not merely the immediate area involved in the action (CFR § 402.02). The regulations further state that the action area is not limited to the "footprint" of the proposed project, nor is it limited by the sponsoring Federal agency's authority. Rather, it is a biological determination of the reach of the proposed action on listed species. In the Tier 1 Section 7 consultation process, the FHWA, INDOT and the USFWS Bloomington Field Office (BFO) jointly developed two seasonally based action areas for the Indiana bat. As discussed below, this Tier 2 BA proposes to expand the summer action area for the Indiana bat based on reasonably foreseeable indirect/induced growth predicted in the Section 2 Revised Tier 2 DEIS.[6]

Tier 1 Summer Action Area

Because the full "reach" of the direct and indirect effects of this project was not fully defined in Tier 1, the USFWS assumed quantifiable effects to Indiana bats would be confined to the project footprint and a 2.5-mile buffer in all directions, based on the biological range of the species and anticipated impacts of the Project. Therefore, the "Summer Action Area" (SAA) for the Indiana bat has been generally defined as a 5-mile band, 2.5 miles either side of the centerline of Alternative 3C, and runs the entire length of the proposed project.

[6] We note that the predicted induced growth (approximately139 acres near interchanges) is based on the NEPA concept of "reasonable foreseeability." This NEPA standard for predicting indirect/induced growth is significantly broader than the ESA's "reasonably certain" standard for consideration of indirect/induced growth as defined in 50 C.F.R § 402.02 "Effects of the action". It would appear that under the ESA "reasonably certain" standard, none of the predicted induced/indirect growth predicted in the Section 2 Revised Tier 2 DEIS would be recognized in an analysis conducted solely for proceedings under Section 7 of the ESA. However, in order to continue to use the very conservative approach used in the Revised Tier 1 BO, this Tier 2 BA analyzes impacts from the "reasonably foreseeable" induced growth predicted in the Section2 Revised Tier 2 DEIS.

The 2.5-mile distance has biological significance, based on a study in Illinois which found that the maximum distance an Indiana bat traveled from its daytime roost tree to its original capture site was 2.5 miles (4.1 km)[7]. This 2.5-mile distance also is consistent with unpublished data from Indiana bat studies conducted at the Jefferson Proving Grounds[8] and the Indianapolis Airport in Indiana.[9] The entire length of the proposed project contains suitable summer roosting and foraging habitat, thus a SAA width of 2.5 miles on either side of the proposed centerline (5 miles wide) will encompass summer habitat being used by Indiana bats that might be affected by the proposed I-69 project. The Tier 1 corridor is approximately 2,000 feet wide in most places, but is narrowed in some instances to avoid sensitive environmental resources, and widens in some instances to allow further avoidance of direct impacts by giving greater flexibility for the location of the right-of-way.

A 2.5-mile radius circle has also been centered on each Indiana bat maternity colony activity area discovered during the Tier 2 mist net surveys and incorporated into the Tier 1 BA Addendum and Tier 1 Revised BO. At these locations, the 2.5 mile radius circles typically extended beyond the limits of the standard SAA.

Tier 1 Winter Action Area

The USFWS expanded the Action Area in Tier 1 by defining the "Winter Action Area" (WAA) for Indiana bats as collectively being the total area that falls within a 5-mile radius centered on each of the known Indiana bat hibernacula that have entrances located within 5 miles of the proposed 3C corridor. Section 2 has no caves, bat hibernacula, or WAA.

[7] Gardner, J.E., J.D. Garner, and J.E. Hoffmann. 1991. Summer Roost Selection and roosting behavior of *Myotis sodalis* (Indiana Bat) in Illinois. Final Report. Illinois Natural History Survey and Illinois Department of Conservation, Campaign, IL. 56 pp.

[8] Pruitt, L., S. Pruitt, and M. Litwin. 1995. Summary of Jefferson Proving Ground bat survey: 1993-1995. Report submitted to the United States Fish and Wildlife Service, Bloomington, Indiana.

[9] 3D/International Inc. 1995. Environmental technical report: 1995 field studies for interim Indiana bat habitat mitigation at the Indianapolis International Airport in Marion County, Indiana. 23 pp. plus appendices.

Tier 2 Expanded Summer Action Area

The Section 2 Revised Tier 2 DEIS (April 2009) indicated that the Project may induce additional impacts as a result of the completion of the Project. As documented in the Section 2 Revised Tier 2 DEIS, the predicted growth is anticipated to be in specific Traffic Analysis Zones (TAZs) that are outside the Tier 1 Indiana bat summer action area, based on coordination with an expert land use panel. As noted in the Tier 1 Revised BO: "The [summer] Action Area may need to be expanded or otherwise refined in subsequent Tier 2 BAs as the anticipated reach of direct and indirect effects of each section of I-69 are more clearly recognized and understood." (Tier 1 Revised BO, pg. 32). While there is no foundation to assume that the predicted induced growth meets USFWS "reasonably certain" criteria by the year 2030, the Summer Action Area for the Section 2 portion of the I-69 Project has been expanded to include all TAZs for which the NEPA analysis indicates that growth induced by the construction and operation of the Project is reasonably foreseeable. Also, the potential induced growth noted in the Section 2 Revised Tier 2 DEIS has been analyzed for possible indirect impacts to the Indiana bat, as required by the Tier 1 Revised BO.

The Tier 2 Section 2 Expanded Summer Action Area will begin at the north end of Tier 2 Section 1 Expanded Summer Action Area and will end at the south end of the Tier 2 Section 3 Expanded Summer Action Area. In the Section 1 Tier 2 BA the Section 1 Expanded Summer Action Area was extended to include the SR 64 interchange area, therefore, the Section 2 Expanded Summer Action area was modified so that there would be no overlap or gaps between the sections. In addition, there is a very slight overlap in the newest right-of-way design for Section 3 in the Veale Creek Maternity Colony Area. To preserve clarity and avoid duplicating impact results, the impacts of this small area of the Section 3 right-of-way are accounted for and addressed in this Section 2 Tier 2 BA. Because these impacts will be counted in this BA, there may be very small differences in the summation of numbers and comparison of some numbers with the Tier 1 BA Addendum or the Section 2 Revised Tier 2 DEIS. This method allows all impacts to a particular maternity colony to be addressed in a single Tier 2 BA.

TIER 2 INDIANA BAT SURVEYS

Maternity Colonies

As required by the December 3, 2003 Tier 1 BO, INDOT and FHWA conducted an extensive research program designed to obtain information on the presence of Indiana bats within the action area. In 2004, mist netting surveys were conducted at 30 sites in Section 2. A total of 280 bats were captured, representing seven species, during the 2004 mist netting. A total of 10 Indiana bats were captured within Section 2 in 2004. This includes two (2) post-lactating females, seven (7) non-reproductive adult females, and one (1) adult male. Nine (9) Indiana bats were radiotagged as a result, and eight (8) roost trees were identified. Other bats captured included: big brown bats (*Eptesicus fuscus*), eastern red bats (*Lasiurus borealis*), little brown bats (*Myotis lucifugus*), evening bats (*Nycticeius humeralis*), northern bats (*Myotis septentrionalis*), and eastern pipistrelles (*Pipistrellus subflavus*). None of these bats is listed as federally threatened or endangered; however, one is listed as State Endangered (evening bat) and the remaining five are listed as State Special Concern. Sixty-eight bridges in the Section 2 action area were also inspected for bats, but no bats were located at the bridges surveyed.

Additional mist netting surveys were completed during the summer of 2005. The 2005 surveys focused around the location of Indiana bat captures where no roost trees were identified in 2004. Nine (9) mist net sites were surveyed. One (1) Indiana bat was captured in 2005, a non-reproductive female. The non-reproductive female was radiotagged, but could not be successfully tracked to a roost tree. Based on the evidence obtained through the mist netting surveys, there are four maternity colonies in Section 2: the Patoka River, Flat Creek, East Fork, and Veale Creek.

Patoka River Maternity Colony

In the Patoka River Maternity Colony, one non-reproductive female Indiana bat was tracked to two roost trees in 2004. One was a live red maple and had an emergence count of zero (0). This tree was located 0.7 miles from the proposed corridor. It was classified as a secondary roost since the emergence count was below 30. This roost tree was approximately 279 feet from the Patoka River. The second roost was a dead tree of an unknown species. This tree had an

emergence count of 100 and was classified as a primary roost. This roost tree was approximately 90 feet from the Patoka River and 1.5 miles from the corridor. This colony is assumed to consist of 80 reproductively active adult females and their offspring, with a total of 160 individuals once the young become volant. Based on concurrent emergence counts conducted on August 1, 2004, the Patoka River Maternity Colony is comprised of a minimum of 100 individuals.

Flat Creek Maternity Colony

In the Flat Creek Maternity Colony, there were three (3) Indiana bats radiotagged in 2004. The signals could not be found, therefore no roost trees were found and no emergence counts were conducted. A similar situation occurred in 2005 when a non-reproductive female was radiotagged, but could not be tracked to a roost tree. This colony is assumed to consist of 80 reproductively active adult females and their offspring, with a total of 160 individuals once the young become volant.

East Fork Maternity Colony

In the East Fork Maternity Colony, a post-lactating female Indiana bat was radiotagged in 2004. The bat was tracked for two (2) minutes after release heading southwest from the capture site. The bat returned briefly before disappearing. The signal could not be located after that, therefore, no roost trees were identified. In 2005, no Indiana bats were captured, thus none were radiotagged. This colony is assumed to consist of 80 reproductively active adult females and their offspring, with a total of 160 individuals once the young become volant.

Veale Creek Maternity Colony

In the Veale Creek Maternity Colony, an adult male and three (3) of the four (4) non-reproductive females captured in 2004 were radiotagged. A total of six (6) roost trees were identified, two (2) primary and four (4) secondary. The adult male was tracked to three (3) secondary roost trees, two (2) of the non-reproductive females were tracked to two (2) separate primary roost trees, and the third non-reproductive female was tracked to a secondary roost. The three (3) secondary roosts identified from the male were: a dead American elm approximately 0.2 miles from the corridor and 133 feet from Veale Creek, a dead elm near the first approximately 0.2 miles from the corridor and 84 feet from Veale Creek, and a dead tree of unknown species approximately 0.3 miles from the corridor and 58 feet from Veale Creek. The maximum emergence counts for these secondary roosts were 17, five (5), and three (3)

respectively. A non-reproductive female was tracked to a dead elm approximately 1.0 mile from the corridor. The maximum emergence count for this primary roost was 36. A second non-reproductive female was tracked to a live shagbark hickory approximately 0.1 miles from the corridor and 116 feet from Veale Creek. The maximum emergence count for this primary roost was 32. The third radiotagged non-reproductive female was tracked to a live shagbark hickory approximately 0.2 miles from the corridor and 167 feet from Veale Creek. This secondary roost had a maximum emergence count of two (2). This colony is assumed to consist of 80 reproductively active adult females and their offspring, with a total of 160 individuals once the young become volant. Based on concurrent emergence counts conducted on August 9, 2004, the Veale Creek Maternity Colony is comprised of a minimum of 41 individuals.

A full discussion of the methods and results of these surveys with maps of the maternity colony and other summer habitat in Section 2 is more fully discussed in the Tier 1 BA Addendum and incorporated in the analysis in the Tier 1 Revised BO.

No additional maternity colonies have been identified since publication of the Tier 1 BA Addendum.

Overlapping Maternity Colonies

The Patoka and Flat Creek colony areas overlap 2005 acres, which is approximately 16% of the colony circles. In this Section 2 Tier 2 BA, we provide the total amount of impacts for both the Patoka and Flat Creek colonies individually; however, the impacts and available acreage will also be provided for the 16 % of overlap and will solely be referred to as the “Colony Overlap”. To calculate overall impacts these colonies will need to be added together and the numbers presented in the Colony Overlap section will need to be subtracted to prevent impacts from being double counted.

Forest Characteristics

Methods

The quality of Indiana bat habitat was examined by completing forest transects assessments. USFWS approved this methodology as providing an effective forest habitat sample of the Section 2 Preferred Alternative and adjacent area with a minimum 10% sample dataset. As described in a letter provided to the USFWS on December 10, 2007, a total of 46 line transects

(23 within the proposed right-of-way and 23 outside the proposed right-of-way) were completed along the I-69 Section 2 Preferred Alternative. These 46 line transects were approximately 60 feet wide and varied from 190 feet to 2,700 feet in length. The forest transects were distributed throughout Section 2 to develop a 10% sample of the impacted forests. The transects were all completed within right-of-way impact areas, with the "outside" transects used to identify remaining habitat in the event that an unknown roost were to be removed by the highway clearing. The total area sampled within the Section 2 Preferred Alternative was 27.9 acres and the total area sampled outside the Preferred Alternative was 27.9 acres. The number of snags, upper-canopy tree species and class size, sub-canopy density, invasive species, and live primary habitat tree species >9" were sampled in these transects. A total of 10% of the estimated 275 acres impacted within the Preferred Alternative was sampled and for comparison a total of 10% of the 275 acres was sampled outside the Preferred Alternative. Attached in Appendix A is an overall map showing all 46 line transect locations and site forms for these transects that include the data listed above. Figure 13 shows the location of these transects. Each location contained one forest transect inside the Preferred Alternative right-of-way and one outside the right-of-way.

Forest Transect Results

There were a total of 163 snags ranging in size from 9 to 34" diameter at breast height (dbh)[10] identified from the 23 line transects sampled within the alignment and 99 snags ranging in size from 9 to 36" dbh from the 23 line transects sampled outside the alignment. Table 3 shows the occurrence of snags per acre sampled and also shows an estimate of the average number of snags per acre for the forests in this area.

Table 3. Section 2 Forest Transect Snag Data

Transects Within Alignment			Transects Outside Alignment		
Sample Results		Snag Estimates	Sample Results		Snag Estimates
Number of Snags	Acres Sampled	Snags / Acre	Number of Snags	Acres Sampled	Snags / Acre
163	27.9	6.4±4.4	99	27.9	4.6±4.6

Dominant trees in the upper canopy from line transect samples both within the Preferred Alternative and outside consisted of green ash, pignut hickory, sycamore, pin oak, river birch,

[10] The average is equivalent to the average plus or minus the standard deviation of the sample.

shagbark hickory, hackberry, tulip poplar, American elm, American beech, sugar maple, black willow, bitternut hickory, sweet gum, northern red oak, sassafras, silver maple, red maple, white oak, eastern cottonwood, osage orange, persimmon, swamp white oak, chinkapin oak, pawpaw, black oak, bur oak, white pine, box elder, shellbark hickory, slippery elm, black walnut, mockernut hickory, red cedar. Dominant Trees in the upper canopy within the Preferred Alternative that were not listed above are black locust, honey locust, overcup oak, shumard oak, scarlet oak, basswood, sumac, swamp chestnut oak, and flowering dogwood. Dominant trees outside the Preferred Alternative that were not listed above are black cherry, southern red oak, red bud, black gum, and catalpa. The majority of trees constituting the upper canopy sampled in all 46 line transects were 9 to 18" dbh. The overall sub-canopy density of the 46 line transects was generally moderate with a few open areas and a few dense areas. Sample plots within Transect ID# 2, 6, 7, 10, 11, 12, 13, 18, 20, and 23 did identify bush honeysuckle and/or Japanese honeysuckle growing in the sub-canopy. None of the other transects sampled showed any invasive sub-canopy species.

Discussion

Twenty-three (23) forest transects were completed inside and 23 forest transects were completed outside the proposed Preferred Alternative right-of-way for I-69 in Section 2. The total linear distance sampled for each was approximately 3.84 miles which includes approximately 13% of the total length of highway. The mean number of snags/acre within the right-of-way was 6.4±4.4 (n=163 snags), while the mean number of snags outside the right-of-way was 4.6±4.6 (n=99 snags). The forest transects were 60 feet wide and varied in lengths. Variability was high. No significant difference was shown between the number of snags inside and outside. A combined total of all forest transects showed 5.5±4.6 snags/acre (n=46). It appears that although the construction of the I-69 Section 2 Preferred Alternative will impact some of the Indiana bat habitat in the summer action area, there will still be ample habitat remaining after construction.

Forest impacts in the action area were evaluated into two parts in the Tier 1 BA Addendum–maternity colony circles and the remaining summer action area. Snag projections were also calculated in these two parts. Tier 2 forest transects found an average of 6.4 snags/acre inside the Preferred Alternative, and 4.6 snags/acre outside the Preferred Alternative. An average of 5.5 snags/acre was used for these calculations.

In the Patoka River maternity colony circle, 4,017 acres of forest (USGS/EEAC[11]) are available. This equates to 22,094 available snags at 5.5 snags/acre density. Based on EEAC forest data, 13.1 acres of these forests will be impacted within the maternity circle by the Preferred Alternative (PA). This would equate to 72 snags impacted within the alignment. This is approximately 0.3% of the available snags in the maternity colony circle.

In the Flat Creek maternity colony circle, 6,223 acres of forest (USGS/EEAC) are available. This equates to 34,227 available snags at 5.5 snags/acre density. Based on EEAC forest data, 72.2 acres of these forests will be impacted within the maternity circle by the Preferred Alternative. This would equate to 397 snags impacted within the Preferred Alternative. This is approximately 1.2% of the available snags in the maternity colony.

There is an overlap of 676 acres of forest between the Patoka River and Flat Creek colonies, which would mean that 3,718 snags are included in this overlap area and were considered in both summaries above. It would also mean that approximately 10.9 acres of the Preferred Alternative forest impacts, with an estimated 60 snags are included in the overlap area and considered in both summaries above.

In the East Fork maternity colony circle, 2,861 acres of forest (USGS/EEAC) are available. This equates to 15,736 available snags at 5.5 snags/acre density. Based on EEAC forest data, 27.9 acres of these forests will be impacted within the maternity circle by the Preferred Alternative. This would equate to 153 snags impacted within the Preferred Alternative. This is approximately 1.0% of the available snags in the maternity colony circle.

In the Veale Creek maternity colony circle, 2,213 acres of forest (USGS/EEAC) are available. This equates to 12,172 available snags at 5.5 snags/acre density. Based on EEAC forest data, 8.8 acres of these forests will be impacted within the maternity circle by the Preferred Alternative. This would equate to 48 snags impacted within the Preferred Alternative. This is approximately 0.4% of the available snags in the maternity colony circle.

[11] USGS/EEAC is data that has been field verified by the Engineering and Environmental Assessment Consultants in the right-of-way and the corridor, merged with National Landcover Data 2001 created by the USGS that was published on the Indiana Map website on 9/1/2003.

In the Expanded Remaining Summer Action Area, 10,292 acres of forest (USGS/EEAC) are available. This equates to 56,606 available snags. The forest impact in the Expanded Remaining Summer Action Area is 115.6 acres, resulting in an estimated 636 snags. This is approximately 1.1% of the available snags in the Expanded Remaining Summer Action Area. Consequently, in the maternity colonies, the percent of snags being impacted range from 0.3% to 1.2% and in the expanded remaining summer action area impacts include approximately 1.1% of available snags. Based on this, the construction of I-69 is anticipated to have an insignificant and discountable effect on snags within the Expanded Summer Action Area (SAA).

Averages of the recorded percentages of size classes in each transect show that the forest is predominantly young. On average, approximately 45% of the forest is <9” dbh, 45% is 9-18” dbh, and only 10% is larger than 18” dbh.

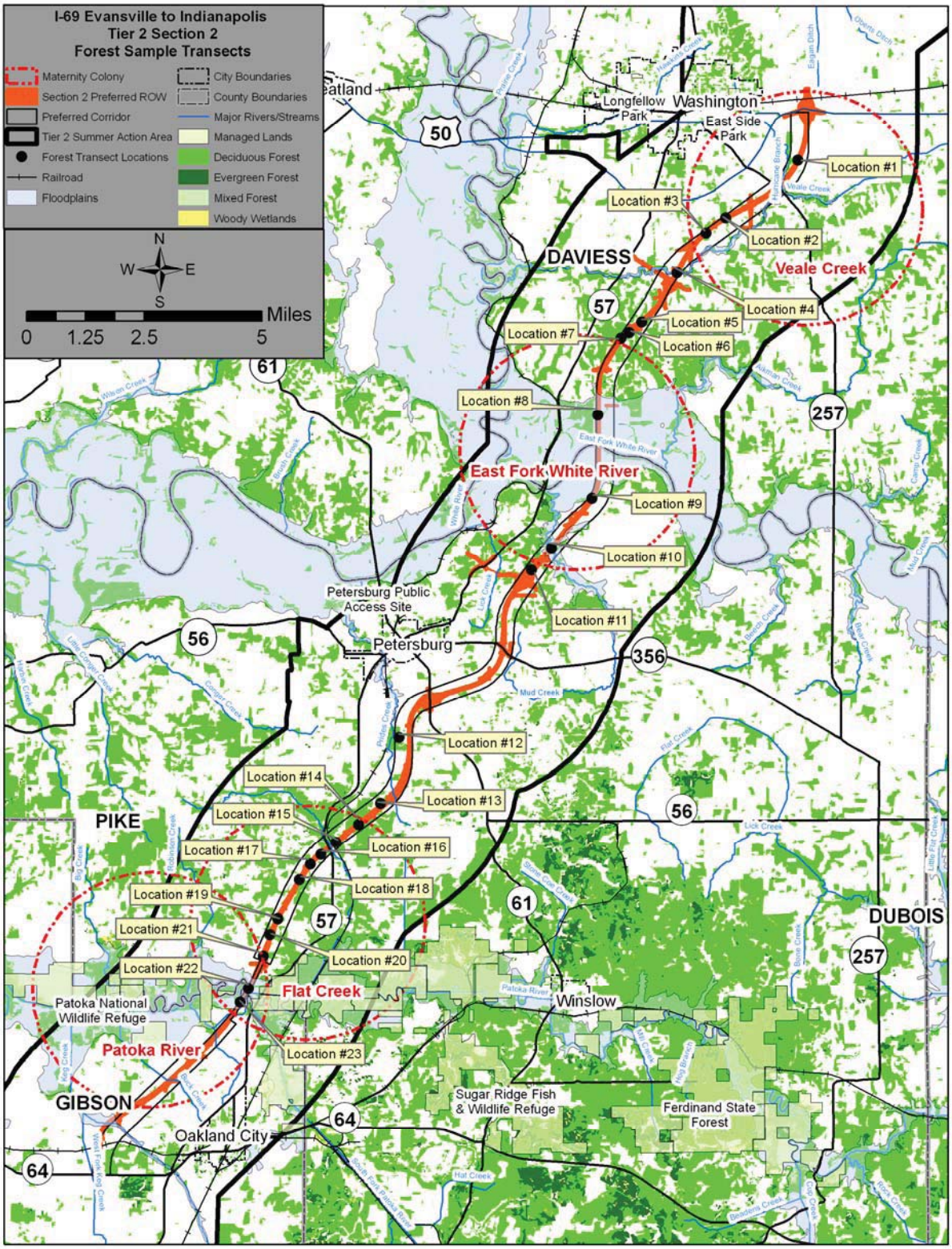


Figure 13. Forest Sampling Transect Locations

IMPACTS

As defined in the Tier 1 Revised BO, loss of Indiana bat habitat is being used as a surrogate to monitor levels of Indiana bat impact and incidental take within the entire Summer and Winter Action Areas. In accordance with this methodology, impacts presented focus on Indiana bat habitat (i.e. forest and wetlands).

Forests are important to the Indiana bat. As the Indiana Bat Draft Recovery Plan, First Revision, April 2007, states on page 7: "In summer, most reproductive female Indiana bats occupy roost sites under the exfoliating bark of dead trees that retain large, thick slabs of peeling bark. Primary roosts usually receive direct sunlight for more than half the day. Roost trees are typically within canopy gaps in a forest, in a fence line, or along a wooded edge. Habitats in which maternity roosts occur include riparian zones, bottomland and floodplain habitats, wooded wetlands, and upland communities. Indiana bats typically forage in semi-open to closed (open understory) forested habitats, forest edges, and riparian areas."

The I-69 roadway is not expected to act as a barrier for bats to cross, since today, they cross SR 37 and I-70. Both of these roadways have right-of-way widths of 250 to 500 feet and mimic a similar footprint to the proposed I-69.

Direct Impacts

Direct impacts to the Indiana bat may occur during project construction, project operation, and project maintenance. For example, during project construction a direct impact could result from roost disturbance such as a tree removal or bridge removal/construction. A direct impact from Project operations could include vehicle/bat collisions. Project maintenance direct impacts could include bridge repair/replacement of an active roost. Conservation measures and mitigation commitments have been developed to avoid or minimize the chance of such direct impacts.

Recent modifications to the US 50 interchange has caused the US 50 interchange ramps to extend past the original break point between Section 2 and Section 3. Impacts associated with these ramps outside of the Section 3 right-of-way are included in this Section 2 Tier 2 BA. This ensures that all impacts are accounted for and will only be counted once.

Forests and Tree Cover

A direct impact to forests as a result of the Project would arise from the removal of trees for construction of the interstate within the selected Preferred Alternative right-of-way. The term "forest" as used in analysis of impacts differs from the term "tree cover" used in the analysis of maternity colony impacts. "Tree cover" is a dataset of all tree crown coverage, no minimum size, in a colony area that could be identified from 2003 aerial photography. "Forest" follows the USDA definition of forest. This definition states that the "minimum area for classification of forest land is 1 acre. [12] "Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. All Tier 2 forests were identified in the field and through aerial photography and digitized with current aerial photographs as a backdrop."[13]

Corridor Forests Impacts

The Section 2 Revised Tier 2 DEIS discusses corridor forest impacts on page 5-350:

> The selected corridor for I-69 in Section 2 (generally 2,000 feet in width) has approximately 1,076 acres of forest on 85 separate tracts. The entire Section 2 corridor includes approximately 6,575 acres of land, most of which is farmland. Forest land thus comprises approximately 16 percent of the Section 2 corridor. The forest land within the corridor comprises less than 0.7 percent of the total forest land within the four counties…The forest areas range in size from approximately 1 to 236 acres, with 33 of the tracts having less than five acres within the corridor. In several limited areas, the alternatives also impact 11 additional forest tracts that lie entirely outside the corridor.

Calculations show 226.8 acres of forested land (including both upland forest and wetland forest) are estimated to be directly impacted within the Preferred Alternative right-of-way for Section 2. Of the 226.8 acres of forest impact, 210.7 acres are upland forests. These impacts may differ slightly from the Revised DEIS due to recent adjustments to the right-of-way. Because the northern limits of the Section 2 summer action area were expanded to include the interchange footprint and associated induced growth TAZ areas and the most southern portion of the Section 2 summer action area was reduced to begin where the Section 1 Tier 2 Expanded Summer Action Area ended, these numbers should not be directly compared to the numbers in the Tier 1 BA Addendum.

Analysis of USGS (2001) forest data found 73 forest tracts totaling 991 acres of core forest was available in the Expanded Remaining Summer Action Area (area not including maternity use

[12] Section 2 Tier 2 Revised DEIS, Section 5.20.2 "Forests: Methodology" p (5-348)-(5-349)

[13]Section 2 Tier 2 Revised DEIS, Section 5.20.2 "Forests: Methodology" p 5-349

areas) in Section 2. This is a substantial increase from the 566 acres of core forest reported available in the Tier 1 BA Addendum using the Tier 1 Remaining Summer Action Area and 1990 USGS data. There will be approximately 65.7 acres of core forests impacted by the Preferred Alternative right-of-way. Of these 65.7 acres, 29.7 acres are located within the Remaining Summer Action Area, 35.8 acres are located within the Flat Creek Maternity Colony, 0.2 acres are located within the Patoka River Maternity Colony, 0.1 acre is located within the East Fork of the White River Maternity Colony, and 0.1 acre located in the Veale Creek Maternity Colony. The colony overlap contains 0.2 acre of core forest impacts. This impact is an increase over the finding in the analysis of the representative alignment (RA) in the Tier 1 BA Addendum that found 11 acres of impact to core forests. This difference is due to using a more current and accurate forest layer.

Colony Tree Cover Impacts

The Patoka River maternity colony contains 3,982 acres of tree cover. Within the Preferred Alternative right-of-way, 19.7 acres of tree cover are impacted. This impact is slightly increased from the 19 acres reported in the analysis of the representative alignment in the Tier 1 BA Addendum due to a current and more accurate forest layer being available. Figure 14 shows the tree cover impacts in the Patoka River Maternity Colony.

The Flat Creek maternity colony contains 5,426 acres of tree cover. Within the Preferred Alternative right-of-way, 76.4 acres of tree cover are impacted. This impact is reduced from the 92 acres reported in the analysis of the representative alignment in the Tier 1 BA Addendum due to further alignment shifts. Figure 15 shows the tree cover impacts in the Flat Creek Maternity Colony.

The Patoka River and Flat Creek maternity colonies overlap 2,005 acres. The overlap contains 685 acres of tree cover. Within the Preferred Alternative right-of-way in this overlap, 13.6 acres of tree cover are impacted. It is important to note this overlap to avoid double counting these impacts in any summary calculations.

The East Fork maternity colony contains 3,116 acres of tree cover. Within the Preferred Alternative right-of-way, 41.9 acres of tree cover are impacted. This impact is reduced from the 50 acres reported in the analysis of the representative alignment in the Tier 1 BA Addendum

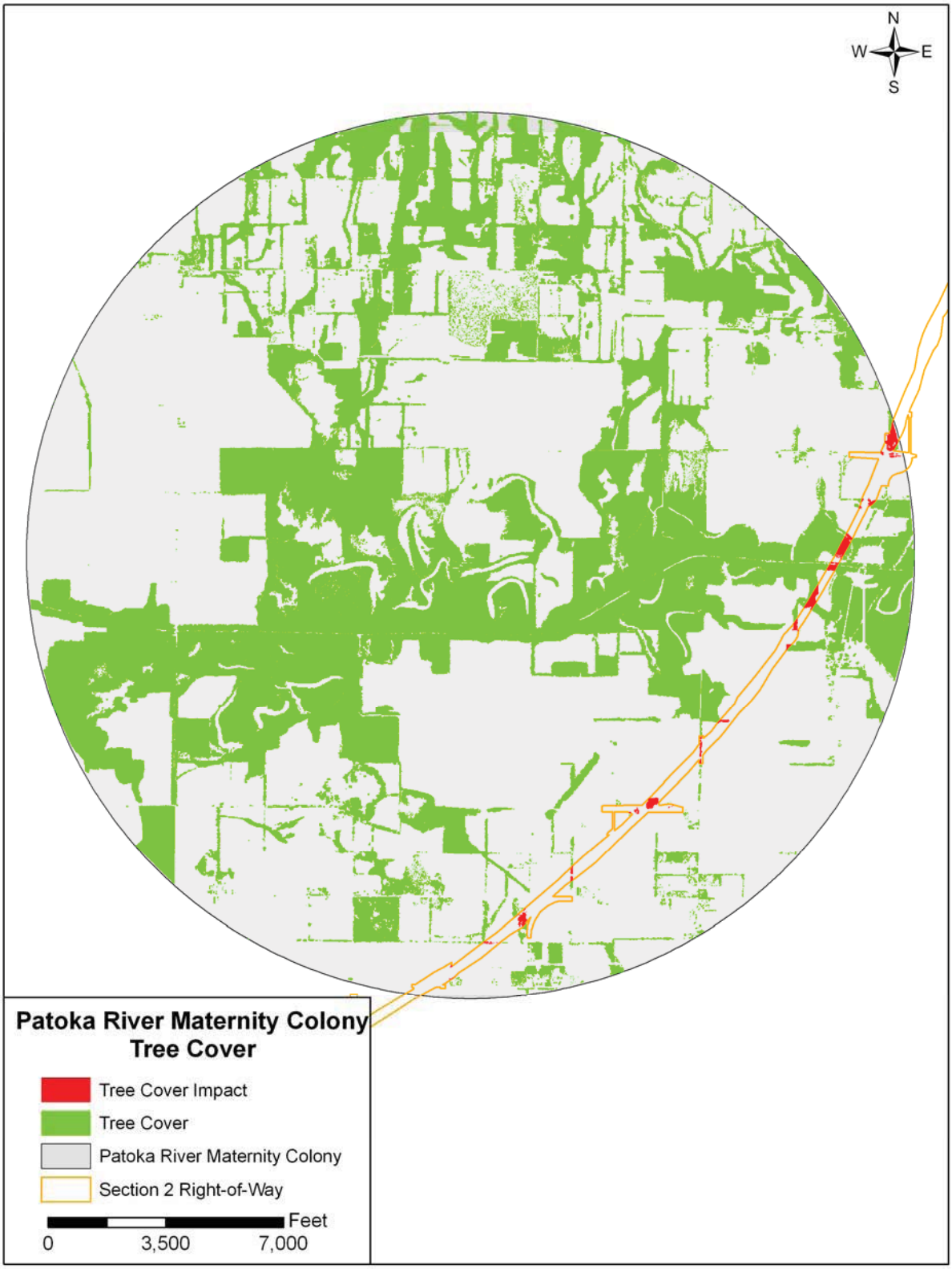


Figure 14. Patoka River Maternity Colony Tree Cover Impacts

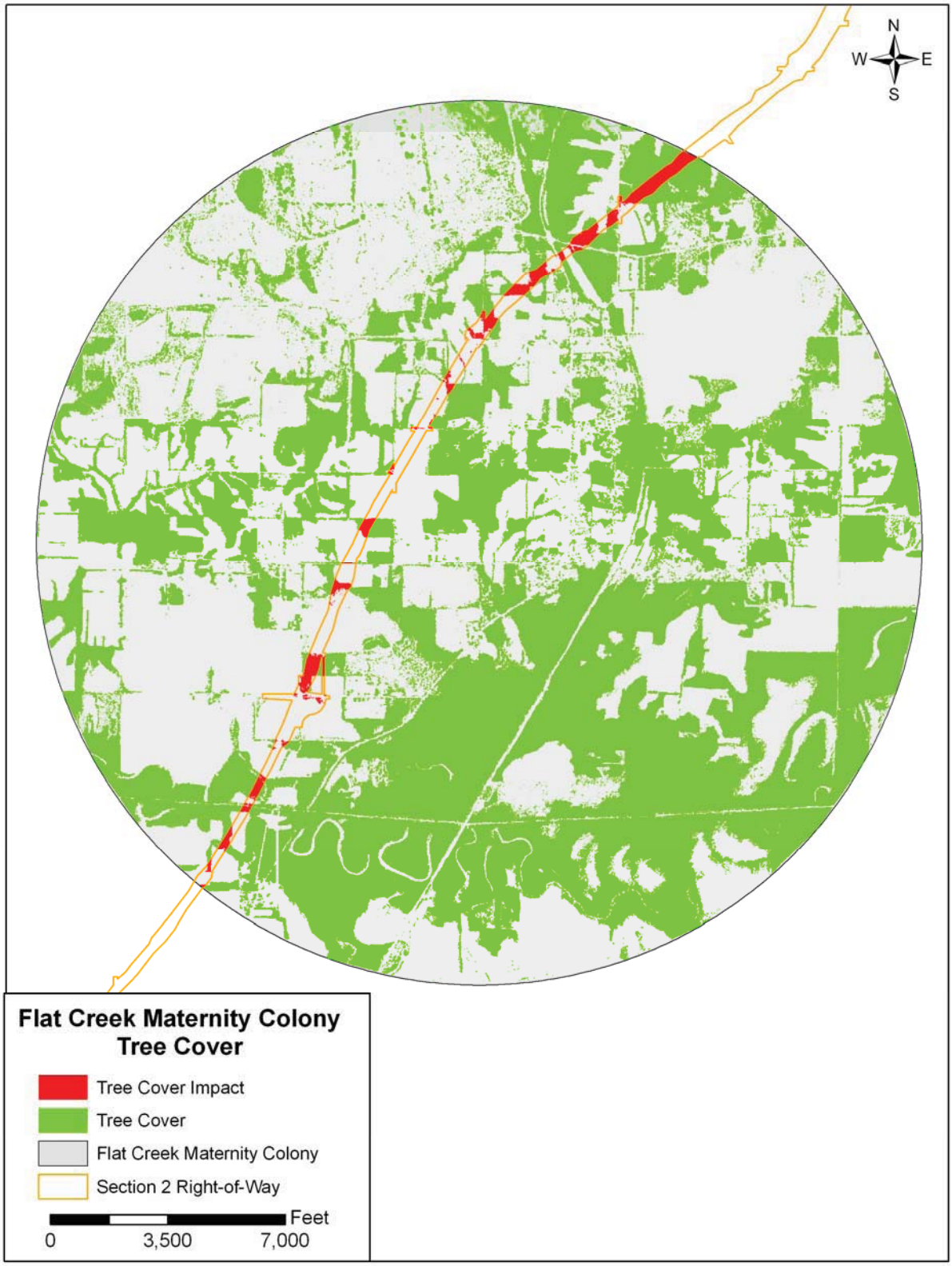


Figure 15. Flat Creek Maternity Colony Tree Cover Impacts

due to further alignment shifts. Figure 16 shows the tree cover impacts in the East Fork Maternity Colony.

The Veale Creek maternity colony contains 2,437 acres of tree cover. Within the Preferred Alternative right-of-way, 19.6 acres of tree cover are impacted. This impact is reduced from the 20 acres reported in the analysis of the representative alignment in the Tier 1 BA Addendum due to a current and more accurate forest layer being available. Figure 17 shows the tree cover impacts in the Veale Creek Maternity Colony. Table 4 shows the forests and tree cover direct impacts for the maternity colonies.

Expanded Remaining Summer Action Area Impacts (Tier 2 Forests)

The Expanded Remaining Summer Action Area is defined as the area of the original 5-mile wide summer action area, expanded by the boundaries of induced growth TAZs, with any area overlapping maternity colony circles removed. The Section 2 Expanded Remaining Summer Action Area contains 48,299 acres of land, a reduction of approximately 937 acres from the area analyzed in the Tier 1 BA Addendum. Of this total, 10,292 acres (21%) are forested (calculations used USGS 2001 landcover dataset except within the project corridor and right-of-way where EEAC delineated forests were used). The total of forest in the remaining summer action area (excluding the TAZs) would be 10,166 acres. Upland forests comprise 9,000 acres of the forest, which is 87% of all the forest, and 19% of the total Expanded Remaining Summer Action Area. Within the Preferred Alternative right-of-way, 115.6 acres of forests will be impacted; 107.5 acres of those are upland forests. Table 5 shows the direct impacts to forest in the Expanded Remaining Summer Action Area.

Summary

A concerted effort was made in both the placement of the corridor during Tier 1, and the alignment in Tier 2, to avoid and minimize impacts to forests in Section 2. The impact of the Preferred Alternative right-of-way on forests, 0.9% of the available forest total within the Section 2 Expanded Summer Action Area is considered insignificant and discountable in relationship to the habitat needs for the Indiana bat. The commitment has been made to not remove any trees with a diameter of 3 inches or greater between April 1 and September 30. Based on Table 4 and Table 5, we believe that there is ample amount of forest habitat available for the Indiana bat.

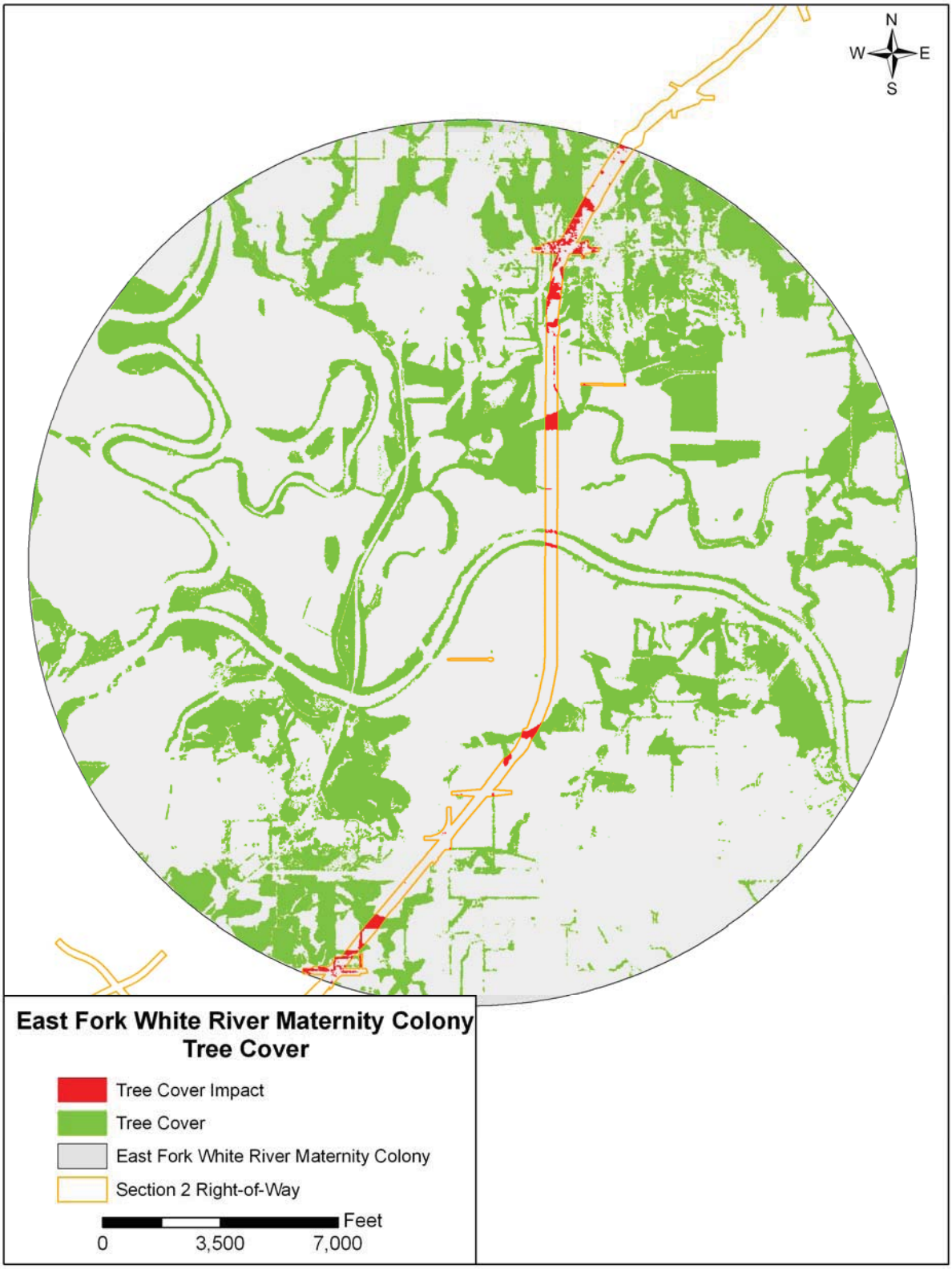


Figure 16. East Fork Maternity Colony Tree Cover Impacts

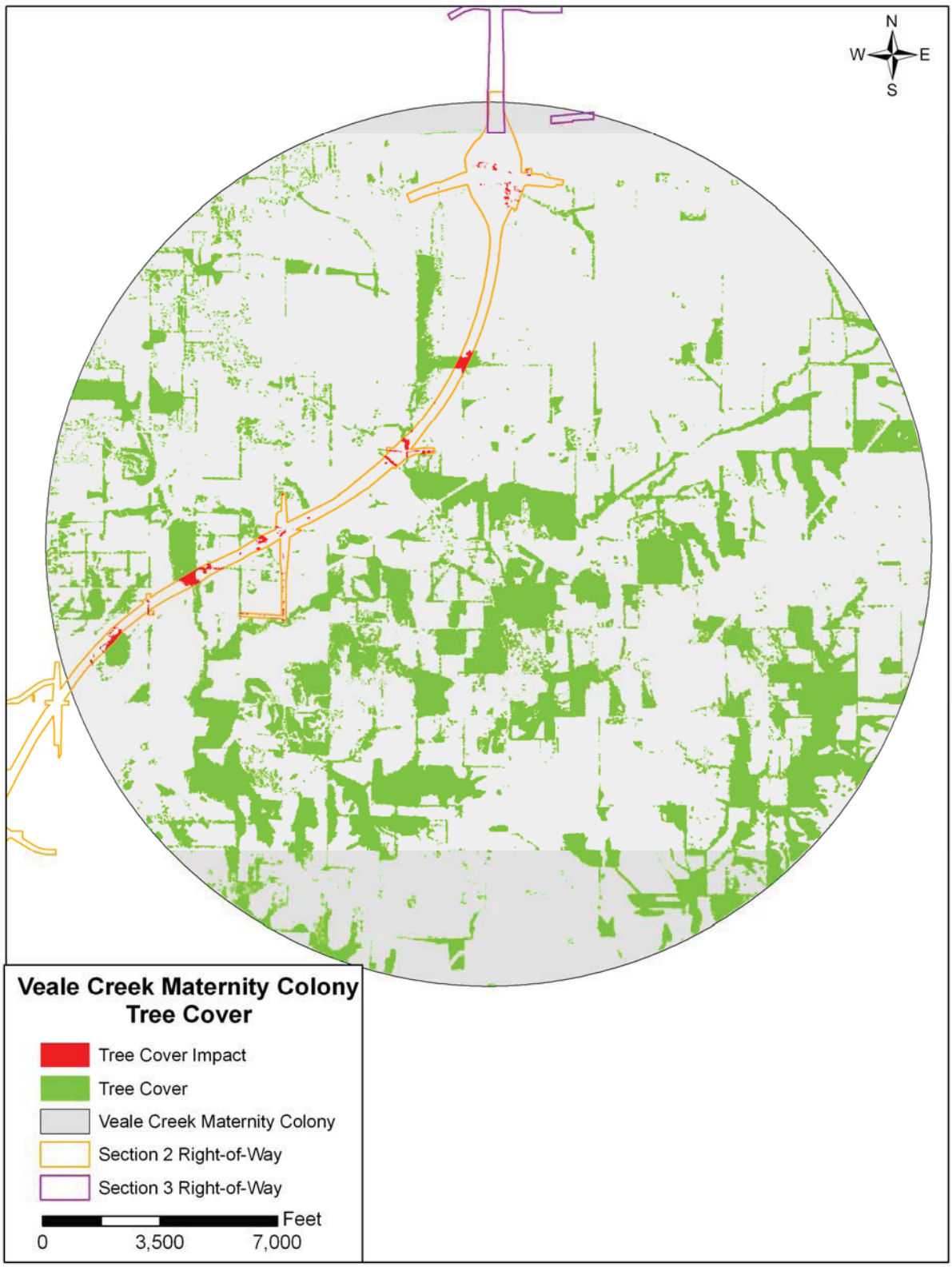


Figure 17. Veale Creek Maternity Colony Tree Cover Impacts

Table 4: Forests and Tree Cover Direct Impacts for Maternity Colonies			
Patoka River			
Patoka River Maternity Colony Use Area (acres)	12,566		
	No Build	**RA Impacts†**	**Remaining**
*Tree Cover (acres) in the maternity colony	3,982	19	3,963
Core Forest	344	0	344
		PA Impacts††	**Remaining**
*Tree Cover (acres) in the maternity colony	3,982	19.7	3,962
Forest in the maternity colony	3,982*	9.2**	3,973
***Core Forest (USGS/EEAC) (acres)	667	0.2	667
Flat Creek			
Flat Creek Maternity Colony Use Area (acres)	12,566		
	No Build	**RA Impacts†**	**Remaining**
*Tree Cover (acres) in the maternity colony	5,426	92	5,334
Core Forest	661	19	642
		PA Impacts††	**Remaining**
*Tree Cover (acres) in the maternity colony	5,426	76.4	5,350
Forest in the maternity colony	5,426*	67.0**	5,359
***Core Forest (USGS/EEAC) (acres)	1,861	35.8	1,825
East Fork			
East Fork Maternity Colony Use Area (acres)	12, 566		
	No Build	**RA Impacts †**	**Remaining**
*Tree Cover (acres) in the maternity colony	3,116	50	3,066
Core Forest	69	0	69
		PA Impacts††	**Remaining**
*Tree Cover (acres) in the maternity colony	3,116	41.9	3,074
Forest in the maternity colony	3,116*	25.8**	3,092
***Core Forest (USGS/EEAC) (acres)	208	0.1	208
Veale Creek			
Veale Creek Maternity Colony Use Area (acres)	12, 566		
	No Build	**RA Impacts†**	**Remaining**
*Tree Cover (acres) in the maternity colony	2,437	**20**	**2,417**
Core Forest	75	**0**	**75**
	No Build	**PA Impacts††**	**Remaining**
*Tree Cover (acres) in the maternity colony	2,437	19.6	2,417
Forest in the maternity colony	2,437*	8.2**	2,429
***Core Forest (USGS/EEAC) (acres)	153	0.1	153
Colony Overlap			
Patoka River and Flat Creek Maternity Colony Overlap (acres)	2,005		
	No Build	**Loss PA††**	**Remaining**
*Tree Cover (acres) in the maternity colony	685	13.6	671
Forest in the maternity colony	685*	7.0**	678
***Core Forest (USGS/EEAC) (acres)	91	0.2	91
Maternity Colonies Total			
Maternity Colonies Use Area	48,259		
	No Build	**PA Impacts††**	**Remaining**
*Tree Cover (acres) in the maternity colony	14,276	144.0	14,132
Forest in the maternity colony	14,276*	103.2	14,173
***Core Forest(USGS/EEAC) (acres)	2,798	36.0	2,762

† RA = Representative Alignment (Tier 1 BA Addendum)

††PA = Preferred Alternative (New Information) Losses were calculated from EEAC forest delineations.

* Tree Cover – defined as all trees, including individual, fragmented groups of trees. Delineated from 2003 aerial photography.

**Forest included groups of trees >1 acre and wider than 120 feet as verified by the EEAC within the corridor and USGS classified forest outside the corridor. These are only forests that are considered upland forest.

***Core area loss resulted from a loss of edge, redefining the core as a smaller area, as described in the Section 2 Revised Tier 2 DEIS, Section 5.20 “Forests”.

Table 5: Forests and Tree Cover Direct Impacts for the Remaining Summer Action Area			
Section 2 Expanded Remaining Action Area			
	No Build	**RA Impacts †**	**Remaining**
Tier 1 Remaining Section 2 Action Area (acres)	49, 236		
**Total Forest (non-wetland) (acres)	6,441	127	6,314
***Forest Core Area (USGS/EEAC) (acres)	566	11	555
	No Build	**PA Impacts† †**	**Remaining**
Tier 2 Expanded Remaining Section 2 Action Area (acres)	48,299		
**Total Forest (non-wetland) (acres)	9,000	107.5	8,893
***Forest Core Area (USGS/EEAC) (acres)	991	29.7	961
† RA = Representative Alignment (Tier 1 BA Addendum)			
† †PA = Preferred Alternative (New Information) Losses were calculated from EEAC forest delineations.			
* Tree Cover – defined as all trees, including individual, fragmented groups of trees. Delineated from 2003 aerial photography.			
**Forest included groups of trees >1 acre and wider than 120 feet as verified by the EEAC within the corridor and USGS classified forest outside the corridor.			
***Core area loss resulted from a loss of edge, redefining the core as a smaller area, as described in the Section 2 Revised Tier 2 DEIS, Section 5.20 “Forests”.			

Impacts in the maternity colony to tree cover connectivity, floodplain proximity, and core area effects, calculated in the Tier 1 BA Addendum, are most strongly affected by how the corridor crosses the area. These metrics were re-evaluated, but not recalculated for the Preferred Alternative. No recalculation was considered necessary because of the differences in how the Tier 2 Preferred Alternative and the Tier 1 Representative Alignment traverse the corridor. These small differences do not result in any material or significant differences in these impacts.

Connectivity

In this BA document, connectivity is defined by the potential flight corridors which Indiana bats may utilize when traveling between various habitats. The assessment of habitat connectivity is utilized to determine how Indiana bat capture sites and roost trees may be linked to the I-69 corridor. This information is important to determine the likelihood of Indiana bats traveling from previously identified locations to I-69, and the potential associated use of the existing habitat that will be impacted. In addition, this will identify the most reasonable locations for an Indiana bat to cross I-69. In the Tier 1 Biological Opinion it was declared, “Brack and Tyrell (1990) found that in early summer, foraging was restricted to riparian habitats. Foraging also occurs over clearings with successional vegetation, along cropland borders, fencerows, and over farm

ponds. Maternity colony foraging ranges from a linear strip of creek vegetation 0.5 mi long to a 0.75 mi foraging area along a wooded river." This information was used when analyzing possible connectivity routes to I-69.

In addition, the straight line distance from each Indiana bat capture point and roost tree location to the nearest tree cover impact was determined for comparison to the connectivity distances. The shortest straight-line distance is provided because while improbable, it is possible that Indiana bats may fly in a straight path to get to their destination. In most places connectivity to I-69 would be the same as connectivity to tree cover impacts, this is due to the bats using riparian corridors as flyways. The connectivity to the nearest mitigation site from each known Indiana bat capture point and roost tree was also analyzed to establish the relative value of the mitigation sites to the species.

These factors were analyzed below for each Indiana bat maternity colony. Figures 18-21 below show each Indiana bat roost tree and capture site in relation to I-69 connectivity, nearest mitigation site, and nearest forest impacts. Table 6 summarizes the results.

There were two bat capture points (Sites 11 and 12-B) that fall within the overlapping portions of the Flat Creek and Patoka River Maternity Colonies. These two sites will be included in both the Patoka River and Flat Creek connectivity analysis. Also, since portions of the and and mitigation properties overlap between the two colonies, the closest mitigation site to the roost trees and Indiana bat capture points was chosen. Detailed mitigation site information can be found in the Mitigation section of this document as well as in Appendices F-S.

Patoka River Maternity Colony

There are two roost trees and three bat capture points in the Patoka River maternity colony. Within the Patoka River maternity colony, connectivity to I-69 from the roost trees and capture points occurs primarily along the Patoka River. Hurricane Creek also provides limited connectivity to I-69. The shortest connectivity route to I-69 from any Indiana bat capture site was 0.1 mile (Site 12-B) and the longest was 1.6 miles (Site 8). The shortest connectivity route distance to I-69 from the 2 roost trees were approximately 1.3 miles (356R1) and 2.5 miles (356R2). The shortest straight-line distance from an Indiana bat capture point to the nearest tree cover impact was 0.1 miles (Site 12-B), where the longest was approximately 1.4 miles

(Site 8). The shortest straight-line distance from any roost tree to the nearest tree cover impact was approximately 0.7 miles (356R1), while the longest straight-line distance was approximately 1.6 miles (356R2). There is a roost tree (356R2) located within the mitigation site and the other roost tree (356R1) is located 0.1 mile away from the mitigation site. Capture Site 12-B is located <0.1 mile away from the mitigation site. Capture Site 11 is located the farthest from any mitigation site at approximately 2.0 miles away from the site.

Based on the abundance of foraging area along the Patoka River, including tributaries, adjacent oxbow lakes and sloughs, we anticipate no significant use by Indiana bats of the portion of the Patoka River crossed by I-69 from Site 12-B or any other location. The Patoka River floodplain will also be bridged in its entirety; therefore, the bats will have ample room to fly under the bridge to maintain any existing flyways along the Patoka River and the South Fork of the Patoka River. Figure 18 shows the Indiana bat connectivity pertaining to the Patoka River Maternity Colony.

Flat Creek Maternity Colony

Three Indiana bat capture points are located within the Flat Creek maternity colony. There are no roost trees located within the colony. Connectivity to I-69 from the Indiana bat capture points occurs primarily along Flat Creek, Flat Creek tributaries, and the South Fork of the Patoka River. The shortest connectivity route to I-69 from the Indiana bat capture points is approximately 0.1 miles (Site 12-B), while the longest is approximately 1.4 miles (Site 11). The shortest straight-line distance from an Indiana bat capture point to the nearest tree cover impact was 0.1 miles (Site 12-B), where the longest was approximately 1.3 miles (Site 11). Site 12-B is a<0.1 mile away from the mitigation site. The farthest Indiana bat capture site (Site 11) is approximately 2.0 miles away from the nearest mitigation site (property mitigation site).

Substantial alternative roosting and foraging habitats are located on both sides of the Section 2 Preferred Alternative in this area. Also, implementation of the commitment to bridge the entire floodplain of the Patoka River will allow the bats to cross under the interstate to the other habitat areas. Figure 19 shows the Indiana bat connectivity pertaining to the Flat Creek Maternity Colony.

Figure 18: *Patoka Creek Maternity Colony Connectivity* has been removed for confidentiality reasons related to the federally endangered Indiana bat (*Myotis sodalis*)

Figure 19: *Flat Creek Maternity Colony Connectivity* has been removed for confidentiality reasons related to the federally endangered Indiana bat (*Myotis sodalis*)

East Fork of the White River Maternity Colony

Only one Indiana bat capture point (Site 22) is located within the East Fork of the White River maternity colony boundary. There are no roost trees located within the colony. Connectivity to I-69 from the Indiana bat capture point occurs primarily along the East Fork of the White River. The connectivity route for Site 22 is approximately 0.4 miles long. The shortest straight-line distance from this site to the nearest tree cover impact is 0.4 mile. Site 22 is approximately 1.0 mile away from the nearest mitigation site (mitigation site). This is the only location where the straight-line path from an Indiana Bat capture point or roost tree to a mitigation site crosses the alignment.

Connectivity is along the East Fork of the White River; the bridge at this river should be adequate to allow for bat crossing under the structure to maintain connectivity of existing flyways along the East Fork of the White River. Based on the abundant foraging habitat along the East Fork of the White River, as well as along Jackson Pond and its tributaries and along Mud Creek, we anticipate no significant use by Indiana bats of the portion of the East Fork of the White River crossed by I-69. Figure 20 shows the Indiana bat connectivity pertaining to the East Fork Maternity Colony.

Veale Creek Maternity Colony

Six roost trees and two Indiana bat capture points are located within the Veale Creek Maternity Colony. Connectivity to I-69 from the Indiana bat capture points and roost trees occurs primarily along Veale Creek and its tributaries as well as a limited amount along Hurricane Branch. The shortest connectivity route between any roost trees and the I-69 alignment is approximately 0.3 mile (036R1). The longest connectivity route between a roost tree and I-69 is 1.3 miles (117R1). The shortest connectivity route between an Indiana bat capture point and I-69 is 0.2 mile (Site 30), while the other Indiana bat capture point is 0.8 mile away (Site 29). The shortest straight-line distance to any tree cover impact from a roost tree is 0.2 mile away (036R1 and 082R1) and the longest distance is 1.0 miles away (117R1). Both Indiana bat capture points (Site 29 and Site 30) are located 0.2 mile away from the nearest tree cover impact. There are two roost trees (082R1 and 523R1) that are located within the property mitigation site. There are also three other roost tree locations approximately <0.1 mile away from the mitigation site. The farthest roost tree from a mitigation site is 117R1 at 0.7 mile away. There is one Indiana bat capture site (Site 29) located within the property mitigation

Figure 20: *East Fork Maternity Colony Connectivity* has been removed for confidentiality reasons related to the federally endangered Indiana bat (*Myotis sodalis*)

site. The other Indiana bat capture site (Site 30) is 0.1 mile away from the nearest mitigation site.

Based on the amount of habitat located to the east of the alignment and the small amount of habitat to the west of the alignment, we do not anticipate significant use of the portion of Veale Creek crossed by I-69. Figure 21 shows the Indiana bat connectivity pertaining to the Veale Creek Maternity Colony.

Summary

The locations with the greatest potential of Indiana bats crossing I-69 appear to be the Patoka River and the East Fork of the White River. Flat Creek and its tributaries as well as Hurricane Creek and Hurricane Branch all show a more limited potential for Indiana bats crossing I-69. The bridges at the Patoka River and the East Fork of the White River should both allow substantial vertical clearance for the bats to fly under the bridge. In the areas where the tree cover impacts appear to be the closest to the roost trees and Indiana bat capture points, it appears that there will still be ample amount of habitat left for the bats. Based on this, the incidental take will be within the anticipated amounts in the Tier 1 Revised Biological Opinion. Three roost trees are located within mitigation sites, two within the property mitigation site, and one within the property mitigation site. Four other roost trees are located within 0.1 mile or less from the nearest mitigation sites. There was also one Indiana bat capture site within the property mitigation site, as well as two Indiana capture points within 0.1 mile from a mitigation site.

Figure 21: *Veale Creek Maternity Colony Connectivity* has been removed for confidentiality reasons related to the federally endangered Indiana bat (*Myotis sodalis*)

Table 6. Connectivity and Distance to Impacts from known Indiana bat Roost Trees and Indiana bat Capture Points			
Patoka River Maternity Colony			
Site	*Connectivity Routes to I-69 (miles)*	*Straight-line Distance to Impacts (miles)*	*Connectivity to Mitigation Sites*
Roost Tree			
356R1	1.3	0.7	0.1
356R2	2.5	1.6	0.0
Capture Site			
*11**	1.4	1.3	2.0
8	1.6	1.4	0.9
*12-B**	0.1	0.1	0.0
Flat Creek Maternity Colony			
Site	*Connectivity Routes to I-69 (miles)*	*Straight-line Distance to Impacts (miles)*	*Connectivity to Mitigation Sites*
Capture Site			
*11**	1.4	1.3	2.0
12	0.7	0.6	0.6
*12-B**	0.1	0.1	0.0
East Fork Maternity Colony			
Site	*Connectivity Routes to I-69 (miles)*	*Straight-line Distance to Impacts (miles)*	*Connectivity to Mitigation Sites*
Capture Site			
22	0.4	0.4	1.0
Veale Creek Maternity Colony			
Site	*Connectivity Routes to I-69 (miles)*	*Straight-line Distance to Impacts (miles)*	*Connectivity to Mitigation Sites*
Roost Tree			
117R1	1.3	1.0	0.7
036R1	0.3	0.2	<0.1
082R1	0.4	0.2	0.0
523R1	0.4	0.3	0.0
523R2	0.4	0.3	<0.1
523R3	0.5	0.3	<0.1
Capture Site			
29	0.8	0.2	0.0
30	0.2	0.2	0.1
*Indiana bat capture points 11 and 12-B fall within the 2,005-acre overlap of the Patoka River and Flat Creek maternity colonies. They have been included in the table in both the Patoka River and Flat Creek maternity colonies to remain consistent with the Tier 1 BA document.			

Water Resources

Wetlands and Ponds

The Section 2 Revised Tier 2 DEIS discusses wetlands and ponds on page 11-8:

> Resource agencies expressed concerns about wetland impacts. Most wetlands in the project corridor are along rivers and streams and within their associated floodplains. The major wetland areas that the alternatives cross within the Section 2 corridor are near the Patoka River, Flat Creek, Pride's Creek, Veale Creek, and the East Fork of the White River. Several other smaller wetland complexes are in the project corridor, as well as along unnamed streams and in isolated depressions.
>
> It is not possible to totally avoid wetland impacts in Section 2. There are multiple east-to-west-running streams and rivers which cross the entire corridor. However, numerous wetland impacts were avoided during the Tier 1 study and in the selection of the location of the preferred corridor. The Tier 1 study committed to bridging the floodplains of the Patoka River and Flat Creek, thereby greatly reducing potential impacts on these areas. A corridor shift during Tier 1 also reduced impacts on wetlands associated with Pride's Creek. The Tier 2 alignment designs included additional efforts to further avoid and minimize wetlands impacts.
>
> The alternatives were evaluated for their potential wetland impacts to select a preferred alternative which would avoid wetlands to the maximum extent practicable. In design, the preferred alternative will be further refined to minimize such impacts.

Corridor Wetland

Section 2 has approximately 248.4 acres of forested wetlands (PFO), 42.9 acres of scrub-shrub wetlands (PSS), 22.1 acres of emergent wetlands (PEM), 3.7 acres of aquatic bed wetlands (PAB), and 46.1 acres of unconsolidated bottom wetlands (PUB) of USFWS NWI mapped wetlands within the project corridor[14]. The Preferred Alternative would impact 30.5 acres of wetlands.

Maternity Colony Wetland Impacts

Wetlands in all four maternity colony circles will be impacted by the Project. Table 7 shows impacts to wetlands in the maternity colonies. The Patoka River maternity colony has 220 acres of emergent wetlands, 1,923 acres of forested wetlands, 430 acres of scrub-shrub wetlands, 164 acres of unconsolidated bottom wetlands, and 52 acres of aquatic bed wetlands available.

[14] Section 2 Tier 2 Revised DEIS, Section 5.19.2.3 "Analysis" Table 5.19-1 p 5-314

The Preferred Alternative will have no impacts to emergent, scrub-shrub and unconsolidated bottom wetlands in this colony. Impacts include four separate forested wetlands, ranging from 0.06-2.65 acres impacted and totaling 3.92 acres; and one aquatic bed wetland is impacted 0.34 acres. Approximately 0.2% of the available forested wetlands will be impacted, and 0.7% of the available aquatic bed wetlands will be impacted.

The Flat Creek maternity colony has 172 acres of emergent wetlands, 2,284 acres of forested wetlands, 466 acres of scrub-shrub wetland acres, 135 acres of unconsolidated bottom wetlands, and 46 acres of aquatic bed wetlands available. The Preferred Alternative will have no impacts to scrub-shrub and unconsolidated bottom wetlands in this colony. Impacts include two emergent wetlands, of 0.15 and 2.84 acres, totaling 2.99 acres; eight forested wetlands, impacts ranging from 0.07 – 2.65 acres and totaling 5.15 acres. In addition, one aquatic bed wetland is impacted 0.34 acre. Approximately 1.7% of the available emergent wetlands, 0.2% of the available forested wetland, and 0.7% of the available aquatic bed wetlands will be impacted.

In the 2,005-acre colony overlap between Flat Creek and the Patoka River colonies, there are no impacts to emergent wetlands, scrub-shrub wetlands, or unconsolidated bottom wetlands. However, there are impacts to both forested wetlands and aquatic bed wetlands in this overlap. There are 3.86 acres of forested wetland impact, and 0.34 acre of impact to aquatic bed wetlands. It is important to note this overlap to avoid double counting of impacts within it.

The East Fork maternity colony has 86 acres of emergent wetlands, 1,265 acres of forested wetlands, 22 acres of scrub-shrub wetlands, 94 acres of unconsolidated bottom wetlands, and 9 acres of aquatic bed wetland available. The Preferred Alternative will have no impact to the emergent wetlands, scrub-shrub wetlands, or aquatic bed wetlands in this colony. Impacts include two forested wetlands, of 0.20 and 1.93 acres, totaling 2.13 acres. In addition, seven unconsolidated bottom wetlands are affected with impacts ranging from 0.06-0.68 acres and total 1.85 acres. Approximately 0.2% of the available forested wetland, and 2.0% of the available unconsolidated bottom wetlands will be impacted.

The Veale Creek maternity colony has 35 acres of emergent wetlands, 401 acres of forested wetlands, 8 acres of scrub-shrub wetlands, 65 acres of unconsolidated bottom wetlands, and 1 acre of aquatic bed wetlands available. The Preferred Alternative will have no impact on scrub shrub wetlands and aquatic bed wetlands. Impacts include five emergent wetlands, impacts

ranging from 0.03-0.64 acres and totaling 1.33 acres; one forested wetland impacted totaling 0.64 acre; and one unconsolidated bottom wetland impacted totaling 0.61 acre. Approximately 3.8% of the available emergent wetlands, 0.2% of the available forested wetlands, and 0.9% of the available unconsolidated bottom wetlands will be impacted.

Table 7: Wetlands and Ponds Direct Impacts in the Maternity Colonies

Patoka River				
Patoka River Maternity Colony Use Area (acres)	12,566			
	No Build*	**Impacts**		**PA Remaining**
		RA	**PA****	
Emergent Wetlands (PEM)	220	1	0	220
Forested Wetlands (PFO)	1,923	5	3.92	1,919
Scrub-Shrub Wetlands (PSS)	430	0	0	430
Open Water Ponds (PUB/PAB)	216	0	0.34	216
Flat Creek				
Flat Creek Maternity Colony Use Area (acres)	12,566			
	No Build*	**Impacts**		**PA Remaining**
		RA	**PA****	
Emergent Wetlands (PEM)	172	1	2.99	169
Forested Wetlands (PFO)	2,284	8	5.15	2,279
Scrub-Shrub Wetlands (PSS)	466	1	0	466
Open Water Ponds (PUB/PAB)	181	1	0.34	181
East Fork				
East Fork Maternity Colony Area (acres)	12,566			
	No Build*	**Impacts**		**PA Remaining**
		RA	**PA****	
Emergent Wetlands (PEM)	86	0	0	86
Forested Wetlands (PFO)	1,265	8	2.13	1,263
Scrub-Shrub Wetlands (PSS)	22	0	0	22
Open Water Ponds (PUB/PAB)	103	0	1.85	101
Veale Creek				
Veale Creek Maternity Colony Area (acres)	12,566			
	No Build*	**Impacts**		**PA Remaining**
		RA	**PA****	
Emergent Wetlands (PEM)	35	0	1.33	34
Forested Wetlands (PFO)	401	3	0.64	400
Scrub-Shrub Wetlands (PSS)	8	0	0	8
Open Water Ponds (PUB/PAB)	66	0	0.61	65
Colony Overlap				
Patoka River and Flat Creek Maternity Colony Overlap (acres)	2,005			
	No Build*	**Impacts**		**PA Remaining**
			PA**	
Emergent Wetlands (PEM)	24		0	24
Forested Wetlands (PFO)	329		3.86	325
Scrub-Shrub Wetlands (PSS)	31		0	31
Open Water Ponds (PUB/PAB)	36		0.34	36

Table 7: Wetlands and Ponds Direct Impacts in the Maternity Colonies			
Maternity Colonies Total			
Maternity Colonies Area (acres)	48,259		
	No Build*	**Impacts**	**††PA Remaining**
		††PA**	
Emergent Wetlands (PEM)	489	4.32	485
Forested Wetlands (PFO)	5544	7.98	5,536
Scrub-Shrub Wetlands (PSS)	895	0	895
Open Water Ponds (PUB/PAB)	530	2.80	527
† RA = Representative Alignment (Tier 1 BA Addendum)			
††PA = Preferred Alternative (New Information) Losses were calculated from EEAC forest delineations.			
*Acres calculated using Tier 2 wetlands. These are made from NWI wetlands outside the corridor and right-of-way. Linear wetlands were converted to area by multiplying length by 100 feet and points were assigned the area 0.1 acres. Inside the right of way, acres were calculated using field verified wetlands.			
**Impacts calculated from field verified wetlands.			

Expanded Remaining Summer Action Area Wetland Impacts

There are 15.40 acres of wetland impacts in the Expanded Remaining Summer Action Area. The Expanded Remaining Summer Action Area has 388 emergent wetlands, 1,758 forested wetlands, 199 scrub-shrub wetlands, 449 acres of unconsolidated bottom wetlands, and 10 acres of aquatic bed wetlands available. Impacts include five emergent wetlands, impacts ranging from 0.10 - 1.88 acres and totaling 2.36 acres; five forested wetlands, impacts ranging from 0.05 – 3.60 acres and totaling 8.13 acres; three scrub-shrub wetlands, impacts ranging from 0.02-0.29 acre and totaling 0.38 acres. In addition, nine unconsolidated bottom wetlands are impacted ranging from 0.10-1.33 acres and totaling 4.25 acres; and one aquatic bed wetland is impacted totaling 0.28 acres. Approximately 0.6% of the available emergent wetlands, 0.5% of the available forested wetlands, 0.2% of the available scrub-shrub wetlands, 0.9% of the available unconsolidated bottom wetlands, and 2.8% of the available aquatic bed wetlands will be impacted. Table 8 summarizes wetland impacts in the Expanded Remaining Summer Action Area.

Table 8: Wetlands and Ponds Direct Impacts in the Remaining Action Area				
Section 2 Remaining Action Area				
Tier 1 Remaining Summer Action Area (acres)	49,236			
Tier 2 Expanded Remaining Summer Action Area (acres)	48,299			
	No Build*	**Impacts**		**††PA Remaining**
		†RA	**††PA****	
Emergent Wetlands (PEM)	388	<1	2.36	386
Forested Wetlands (PFO)	1,758	20	8.13	1,750
Scrub-Shrub Wetlands (PSS)	199	2	0.38	199
Open Water Ponds (PUB/PAB)	459	2	4.53	454
† RA = Representative Alignment (Tier 1 BA Addendum)				
††PA = Preferred Alternative (New Information) Losses were calculated from EEAC forest delineations.				
*Acres calculated using Tier 2 wetlands. These are made from NWI wetlands outside the corridor and right-of-way. Linear wetlands were converted to area by multiplying length by 100 feet and points were assigned the area 0.1 acres. Inside the right of way, acres were calculated using field verified wetlands.				
**Impacts calculated from field verified wetlands.				

Open Water, Streams, and Riparian Zone

There are approximately 49.8 acres of open water wetlands (PUB/PAB) within the project corridor. Nineteen open water wetlands will be affected by the project totaling 7.33 acres of impact.

According to the Section 2 Revised Tier 2 DEIS on page 4-75:

> Two major rivers, several perennial streams, and many intermittent and ephemeral streams cross the Section 2 corridor. The two major rivers are the East Fork of the White River and the Patoka River. The East Fork of the White River [establishes] the county lines of Daviess and Pike counties in the vicinity of the Section 2 corridor, and joins the West Fork of the White River west of the corridor, just west of Petersburg. The East Fork of the White River is a slow flowing river that drains approximately 5,700 square miles.
>
> The Patoka River is about 100 miles long with an 860-square-mile drainage basin. In the vicinity of the Section 2 corridor, the Patoka River [establishes] the county lines of Pike and Gibson counties. Much of the Patoka River has been dredged and straightened; however, the final portion is natural and meandering from about US 41 to the Wabash River (McPherson, 2000). Part of this river and its associated wetlands are within the Patoka River National Wildlife Refuge. The Section 2 corridor crosses the Patoka River and the Wildlife Refuge north of Oakland City.

The Preferred Alternative crosses 64,863 linear feet of stream. They are as follows:

- Perennial Streams – 7,391 linear feet in the right-of-way
- Intermittent Streams – 22,005 linear feet in the right-of-way
- Ephemeral Streams – 35,467 linear feet in the right-of-way
- Riparian Habitat-111 acres[15]

As the QHEI/HHEI scores found in the DEIS on page 5-326 indicate, the majority of streams crossed are of only fair quality, with the streams in Gibson County being generally lower in quality than those in Pike and Daviess Counties. Many of the streams have been heavily impacted by agricultural activities, including channelization, and by coal mining activities.

[15] Section 2 Tier 2 Revised DEIS, Section 5.19.2.3 "Analysis" Table 5.19-8 p 5-328

In some cases, maintaining water flow would require an alteration to the natural shape of the stream. Such alterations—which could include channel widening, enclosure, straightening and realignment, and bank shaping and stabilization—can produce the following impacts:

- Channel widening—Reduction in stream velocity allowing accumulation of sediments, or altering riffle-pool complexes.
- Channel enclosure (pipes/culverts)—Restriction of flow during peak flood events; accumulation of backwater; and/or disruption of the natural ecology of a water body by blocking sunlight, removing natural aquatic and wildlife habitat, and destroying bottom substrate important to macroinvertebrate communities.
- Channel realignment—By removing meanders, an increase in stream velocity and energy resulting in stream bank erosion, loss of stream bank vegetation, and destruction of riffle/pool complexes.
- Bank shaping and stabilization—Loss of habitat or bank-side vegetation.
- Placing bridge piers in a water body—Loss of habitat in the area of the piers.

Floodplains

The preferred right-of-way crosses floodplains for East Fork Keg Creek, Patoka/South Fork Patoka River, Flat Creek, Mud Creek, East Fork White River, Veale Creek, and Hurricane Branch. The Section 2 Revised Tier 2 DEIS stated that for the Preferred Alternative, construction in the right-of-way will impact 196.1 acres of floodplain area. "Note that estimates of the area of floodplain affected include the full width of the projected construction footprint, as a conservative estimate. In actual practice, all those floodplain areas under the proposed bridge structures will be directly impacted only by the piers of the new bridges. In the case of the Patoka River and Flat Creek crossings, INDOT has committed to bridge the entire width of the floodplain, so actual extent of permanent facilities on the ground within the floodplain will be substantially less than shown, as only the bridge piers will be constructed in the floodplain, and they are expected to be spaced approximately 125 to 150 feet apart."[16] There are approximately 166 acres of floodplain within the right-of-way; however, it is anticipated that less than 148 acres of floodplains will be filled.

[16] Section 2 Tier 2 Revised DEIS, Section 5.19.2.3 "Analysis", p (5-328)-(5-329)

Roadway Runoff

The Section 2 Revised Tier 2 DEIS discusses roadway runoff on pages 5-332 through 5-334:

> Roadway runoff can have substantial impacts to water quality by directly impacting streams as well as impacting water quality downstream (Driscoll, Shelley, Strecker, 1990). Numerous constituents may be found in roadway runoff. These constituents include: particulates, nitrogen, phosphorus, metals, salts, petroleum, pesticides, PCBs, rubber, pathogenic bacteria, and asbestos. These constituents originate from many different sources. Some of the primary sources include: deicing chemicals, tire wear, wear of engine parts and other moving parts, exhaust, motor lubricant leaks and blow-by, roadside fertilizing and spraying, and atmospheric deposition.
>
> Of the identified runoff constituents, a point of primary concern is the deposition of deicing chemicals in the areas adjacent to the highway, due to the seasonally large volumes of this contaminant. Salting of a highway in winter with the drainage from the road could cause changes in the water quality of a number of streams, especially those with little volume or flow. Salting of any road may lead to adverse effects for aquatic and terrestrial organisms. A variety of environmental consequences have been associated with the use of deicing chemicals and their associated additives. Road salting affects water quality, soil properties, plants and animals. Salt inhibits plant growth by changing soil structure, changing the osmotic gradient and through chloride ion toxicity (NCHRP, 1976). Excess salinity causes moisture stress in plants, suppresses proper nutrient uptake, and leads to deficiencies in plant nutrition (NCHRP, 1978). In addition, additives can contribute to eutrophication in wetlands and toxicity to their inhabitants. INDOT has defined Standard Operating Procedures (June 2007) for applying deicing chemicals to roadways and bridges, including the mixture composition of these deicing materials….
>
> The pollutant loadings in surface water runoff have been analyzed by the FHWA in “Pollutant Loadings and Impacts from Highway Stormwater Runoff” (Driscoll, et al., 1990). This procedure is based on extensive study, research and development to analyze water quality impacts caused by highway stormwater runoff…
>
> Best Management Practices will be used to prevent non-point source pollution, to control stormwater runoff, and to minimize sediment damage to water quality and aquatic habitats, INDOT *Standard Specifications and Special Provisions* will govern construction activities to control erosion and subsequent water pollution.
>
> Stormwater runoff from the bridge crossing the Patoka River floodplain will be collected and channeled towards the ends of the bridge, where it would then be adequately treated to remove sediment and any other pollutants before being allowed to enter the Patoka River NWR. Further analysis of the collection system will be developed in detail during final design.

Hazardous Material Spill Response

The Section 2 Revised Tier 2 DEIS discusses hazardous material spill responses on page 5-334 to 5-335:

> The release of hazardous and potentially harmful materials into adjacent surface and subsurface waters from spills along highways is a concern both during and subsequent to construction. This is especially true when the highway is anticipated to be used by large volumes of heavy trucks transporting a wide variety of such substances.…Section 2 would cross more than a dozen major streams and numerous smaller ones, the potential for such impacts exists…
>
> During the construction of I-69, any spill incidents on site will be handled in accordance with INDOT spill response protocol, as outlined in their *Construction Activity Environmental Manual* and *Field Operations Manual Procedure 20*…
>
> Following construction of I-69, emergency spill response for hazardous materials transported on the highway will be handled by local fire departments and regional hazardous materials units coordinated through deputy state fire marshal's in Bloomington and Terre Haute. Currently, law enforcement and nearly all fire departments within the Study Area possess either awareness level or operations level capabilities for responding to hazardous material spills or releases. Awareness level includes the recognition of hazardous material placards and the means to cordon off an incident site. Operations level includes booms for diking spills, personal protection equipment to work within contaminated sites, and other basic containment equipment. If called upon, INDOT state highway equipment and resources can also be deployed to assist in containment anywhere along the proposed Interstate facility.
>
> Indiana's State Emergency Commission has established eleven Regional Response Teams throughout the state, each of which will have full Level A hazardous materials response capabilities. Currently, the hazardous materials unit of the Evansville Fire Department is the regional unit with Level A capabilities for the general area containing the Section 2 corridor. Vincennes, Terre Haute, Bloomington Township, and Marion County/Indianapolis area are the other regional units with Level A capabilities within the overall I-69 project vicinity. The Crane NWSC has Level A hazardous materials capabilities for spill response at the base. The I-69 project will allow faster emergency response to incidents in many parts of the counties to be served by the new highway.

Karst

Field reconnaissance conducted during the summer and fall of 2004 and the spring and summer of 2005 confirmed that the Section 2 corridor does not contain any karst features and that none are located outside the corridor and potentially interconnected with the corridor. Given that

Section 2 does not contain any karst features, Section 2 is not expected to have any karst impacts.[17]

Noise

Highways act as linear noise sources in which the tire/pavement contact, engine and exhaust generate sound at various pressures and frequencies. As a general rule, the reduction rate of 3 decibels (dB) per distance doubling applies at a range of 50 to 350 feet from a highway. Under conditions where ground cover consists of tall grass or crops, the drop-off rate may be as much as 4.5 dB per distance doubling. Due to the logarithmic nature of sound propagation, a 3 dB reduction in sound pressure resulting from a doubling of distance (i.e., 350 feet doubled to 700 feet) from the source represents a 50% loss of acoustic energy, whereas a 10 dB reduction represents a 90% reduction of acoustic energy. In situations where point noise sources occur, such as construction equipment, the drop-off rate is generally 6 dB per distance doubling.

For interstates such as I-69, steady state A-weighted sound pressure levels of 66 dB or greater are anticipated at distances of 250 feet from the roadway and possibly as much as 350 to 400 feet from the roadway depending on the volume of traffic predicted for the design year, and then decrease with distance from the roadway to lower levels. The construction of I-69 in Section 2 will produce new noise levels in this rural section of roadway.

The noise levels of many common appliances and events are listed below for reference:

- Refrigerator 40-43 dBA
- Typical Living Room 40 dBA
- Forced Hot Air Heating System 40-52 dBA
- Normal Conversation 55-65 dBA
- Dishwasher 63-66 dBA
- Clothes Washer 65-70 dBA
- Telephone Ringing 66-75 dBA
- Inside Car-windows closed 30 mph 68-73 dBA
- Lawn Mower 88-94 dBA[18]

[17] Section 2 Tier 2 Revised DEIS, Section 5.12.2.3 “Groundwater and Karst” p 5-184

[18] Section 2 Tier 2 Revised DEIS, Section 4.7 “Highway Noise” p 4-116

As required by NEPA, noise studies were conducted for Section 2. The Section 2 Revised Tier 2 DEIS discusses noise studies on page 5-173:

> Since some of the receivers are at different distances from the future highway, the projected noise levels vary also... The results of the noise analysis conducted for [Preferred Alternative] indicate that year 2030 L_{eq} noise levels would range from 47 dBA at Site M1 to 75 dBA at one residence at Site M6. These levels represent a difference from No-Build noise levels of between –8 dBA (Site M4) and +10 dBA (Site M6). This alternative is predicted to result in a perceptible decrease (≥3 dBA) in noise levels at two modeled sites (M4 and M8) and a perceptible increase at four modeled sites (M3, M5, M6 and M7) compared to No-Build conditions. Reductions in noise levels from the No Build scenario result from I-69 drawing traffic off of existing routes that are the dominant noise sources at those monitoring sites and diverting that traffic to I-69 which is at a greater distance from those specific sites.

Noise Meter Locations are shown in Figure 22.

It is unknown exactly how bats (including Indiana bats) react to noise levels. We do know from studies in southwestern Indiana, that:

- Hundreds of bats (including Indiana bats) roost throughout the day and night under a bridge with an L_{eq} of 84.1 dBA;
- Twenty-three (23) to 67 Indiana bats roosted in a tree approximately 340 feet to edge of pavement of the 4-lane SR 37 (with median) in 2004. The L_{eq} at that site has been measured at 59.8 dBA.
- A male Indiana bat left the above roost tree and crossed over or under SR 37 near Clear Creek. The L_{eq} under the bridge has been measured at 65.7 dBA.
- A juvenile male Indiana bat flew under the 4-lane SR 37 along Crooked Creek in 2004. The L_{eq} at that site has been measured at 67.4 dBA.
- Bats (including Indiana bats) fly over and under the 4-lane I-70 (with median) near the Indianapolis Airport.

Patoka River Colony

Receptor Site #2 fell within the Patoka River colony and Receptor Sites #3 and #10 fell within the colony overlap. Site #2 consisted of seven receivers, and was located about 71 feet west of CR 1050E bridge and 10 feet south of the CR 1050E centerline. The existing source of noise is farm machinery, grain trucks, and a train. The existing measured L_{eq} at this receiver was 69 dBA with a future modeled 2030 noise level of an average of 71 dBA. Site #3 consisted of two

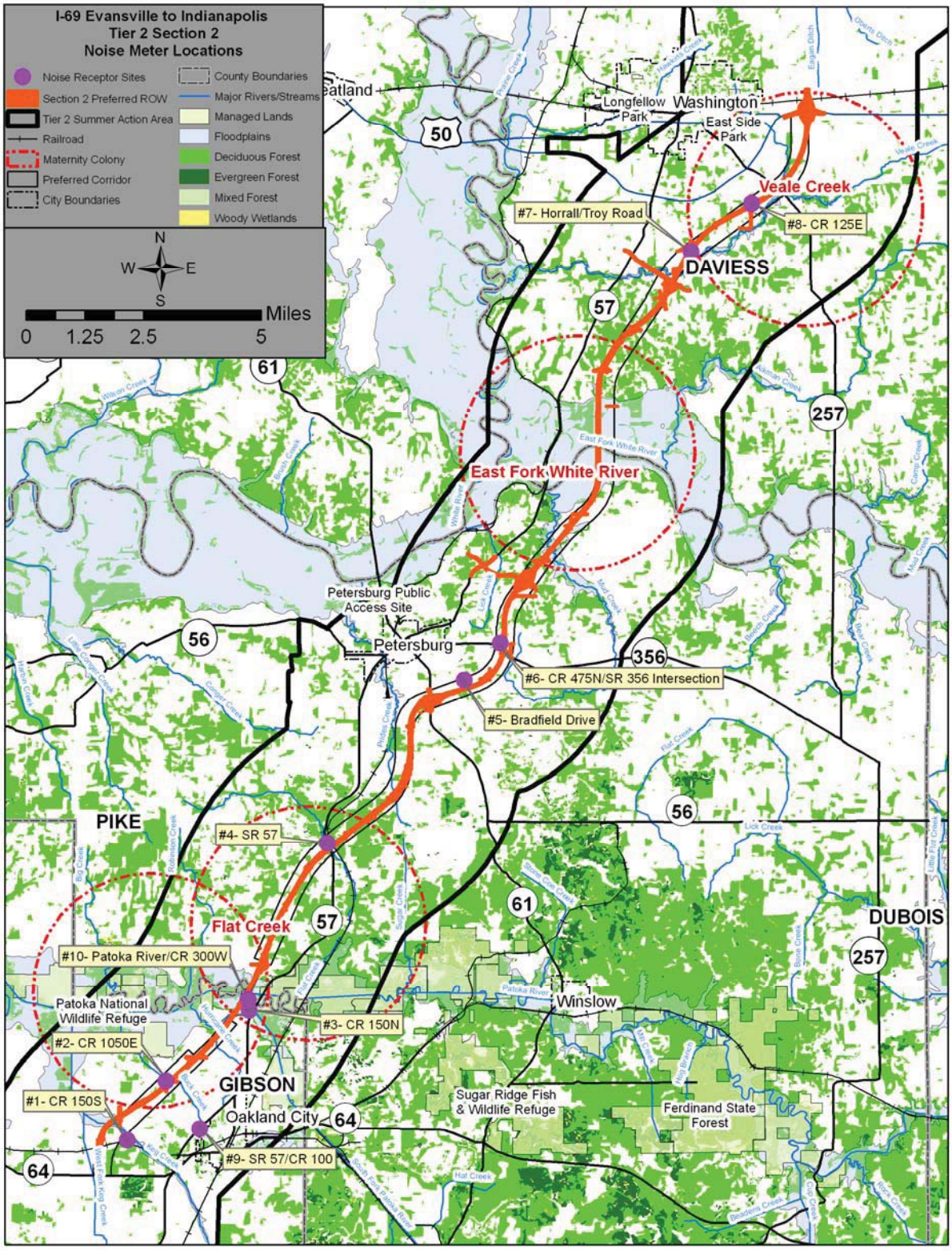


Figure 22. Noise Meter Locations

residential receivers, and was located about 372 feet east of CR 1200E/ CR 150N intersection and 10 feet north of CR 150N centerline. The existing source of noise is traffic at this site. The existing measured L_{eq} at this receiver was 52 dBA with a future modeled 2030 noise level of an average of 61 dBA. Site #10 consisted of one receiver, and was located on CR 300W at the old crossing of Patoka River, just west of the SR 57 bridge over the Patoka. The existing source of noise is traffic from SR 57 at this site. The existing measured L_{eq} at this receiver was 48 dBA with a future modeled 2030 noise level of an average of 62 dBA. [19]

Flat Creek Colony

Receptor Site #4 fell within the Flat Creek colony and Receptor Sites #3 and #10 fell within the colony overlap. Site #4 consisted of four receivers, and was located about 30 feet west of SR 57/Private Coal Road intersection and 53 feet south of SR 57. The existing source of noise is traffic at this site. The existing measured L_{eq} at this receiver was 68 dBA with a future modeled 2030 noise level 57 dBA. See the Patoka River Colony section for information on Receptor Sites #3 and #10 which fell within the colony overlap.

East Fork of the White River Colony

There were no receivers located within the East Fork of the White River maternity colony. There were also no receivers located close enough to the colony circle to represent what noise level may be present here. The nearest receiver was receiver number 6 approximately 1.9 miles away from the outer boundary of the maternity colony circle. The existing measured L_{eq} at this receiver was 52 dBA with a future modeled 2030 noise level of an average of 65 dBA. This site currently has mostly ambient noise and there is also residential and farmland around the area. Ambient noise readings in the east fork are expected to be equal to 52 dBA or less.

Veale Creek Colony

There was one receiver (#8) located within the Veale Creek Colony and one receiver (#7) located directly outside the colony. Site #8 consisted of three receivers, and was located about 21 feet north of CR 125E. The existing source of noise is traffic at this site. The existing measured L_{eq} at this receiver was 54 dBA with a future modeled 2030 noise level of an average of <55 dBA. Site #7 consisted of one receiver, and was located at the southeast quadrant of Horrall/Troy intersection. The existing source of noise is traffic at this site. The existing

[19] Section 2 Tier 2 Revised DEIS, Section 5.10 "Highway Noise" p (5-168)-(5-173)

measured L_{eq} at this receiver was 58 dBA with a future modeled 2030 noise level of an average of 66 dBA.[20]

Analysis

Of these noise receptors sites near the colonies, only site #2 and site #7 approach or exceed the applicable noise abatement criteria, or exceed the existing noise level substantially.[21] The construction of I-69 will occur during daylight hours, and cause temporal noise impacts from chainsaws, bulldozers, skidders, trucks, etc.

See the Tier 2 Indiana Bat Surveys section of this document for information on these maternity colonies. It is possible that bats may roost adjacent to cleared right-of-way and be affected during the day by unusual and/or loud sounds. Indiana bats that were roosting under a bridge with noise levels at 84.1 dBA were not disturbed by the noise. The construction noise should not affect their foraging, because they forage in the evening when construction activities usually stop for the day. Possible loud noise effects could include an increase in their heart rate/ respiratory rate and potential disturbance from the roost.

Lighting Impacts

At present, roadway lighting is not anticipated on the bridges or any mainline portions of Section 2. Lighting at interchanges will be evaluated, and will be included if warranted for safety reasons. Based on projected traffic volumes, the US 50 interchange would be the most likely to warrant lighting. Consideration will be given during the design phase to using only non-diffuse lighting, as appropriate.[22] Also, any lights installed will be approximately 40 feet above the highway. The tallest vehicles expected would be between 15 - 18 feet tall. This would leave 22 – 25 feet of open space for bats that are drawn to the lights to forage on insects. Based on this, the incidental take will be within the anticipated amounts in the Tier 1 Revised Biological Opinion.

[20] Section 2 Tier 2 Revised DEIS, Section 5.10 “Highway Noise” p-(5-168)-(5-173)

[21] Section 2 Tier 2 Revised DEIS, Section 5.10.3.2 “Highway Noise: Design Year Noise Results” p 5-173

[22] Section 2 Tier 2 Revised DEIS, Section 7.3.6 “Mitigation Measures and Commitments: Visual Impacts” p 7-23

Vibration Impacts

Vibration impacts from I-69 are not anticipated since they would be applicable only on bridges with roosting bats and in trees with high noise levels. A survey of 259 bridges for the Indiana bat in 2004, showed only one bridge with roosting bats (including Indiana bats). That bridge, located within Section 3, was the only bridge that showed the large size, height, concrete beams with cracks near the ceiling, and reduced light illumination characteristic of suitable roosting bridge habitat. Hundreds of bats use this bridge during the early spring to late fall each year, and when trucks and cars travel overhead, vibration from the traffic occurs on these beams. Placing one's hand next to these bats when these short vibrations occur showed these bats seemingly unaffected by these short vibrations and number of occurrences. Every day loud noise events under the bridge did not seem to affect these bats; however, on rare incidents when abnormally different vibration events happened, bats did fly but immediately settled back to roost. Based on behavior observed at bridges with roosting bats, it is likely that bats roosting in I-69 bridges will not be adversely affected by vibrations caused by vehicles using the bridges.

Borrow Sites/ Waste Disposal

The location of borrow and waste disposal sites may not be known until the project is let for construction. In general practice, the contractor selects the sites based on free market economics (i.e., negotiations with property owners). Contractors must comply with all permitting requirements for borrow locations, and follow other applicable INDOT *Standard Specifications.* Prior to their use, these sites would be assessed for impacts to resources such as archaeological, wetlands, etc., and appropriate measures would be employed to avoid or minimize impacts, if any. Where impacts would warrant, the contractor, with INDOT oversight, would obtain required permits. Due to the cost of required mitigation when permits are needed, contractors often select other sites that do not require permitting. In most cases, the construction contractors use existing agricultural fields near the construction sites for borrow/waste sites. They are much easier to use and have lower potential to impact protected environmental resources.[23] Tree clearing for borrow areas will be restricted to the approved USFWS clearing dates (no trees with a diameter of three (3) or more inches will be removed April 1 through September 30) to avoid any impacts to Indiana bats.

[23] Section 2 Tier 2 Revised DEIS, Section 5.12.2.7 "Construction Impacts: Borrow Sites/ Waste Disposal" p 5-185

Maintenance Practices

It is not anticipated that maintenance practices will negatively affect the Indiana bat. In regards to herbicide use, a commitment has been made to minimize the use of herbicides in environmentally sensitive areas. A herbicide use plan will be developed for environmentally sensitive areas. Environmentally sensitive areas will be determined in coordination with INDOT, and as appropriate, INDOT consultants. The Tier 1 FEIS shows the Patoka River National Wildlife Refuge, Flat Creek, Prides Creek and the East Fork of the White River as Natural Environmentally Sensitive Areas. Appropriate signage will be posted along the interstate in such areas to alert maintenance staff.

Indirect Impacts

With induced housing and employment combined, 139 acres are anticipated to be developed because of induced growth from the proposed interstate within the Traffic Analysis Zones (TAZs) associated with Section 2. The combined anticipated induced number of households for Gibson County is 36 for the design year of 2030, when divided by 4.10 housing units per acre, the result is 9 acres impacted. The combined anticipated induced number of households for Pike and Daviess Counties is 355 for the design year of 2030, when divided by 3.96 housing units per acre, the result is 90 acres impacted. The combined anticipated induced number of jobs for Gibson County is 32 for the design year of 2030, when divided by 15.7 employees per acre, the result is 2 acres impacted. The combined anticipated induced number of jobs for Pike and Daviess Counties is 575 for the design year of 2030, when divided by 15.4 employees per acre, the result is 38 acres impacted.[24]

Because agricultural land is abundant in the more desirable locations, it is reasonable to assume that, in the foreseeable future, any land required for development will be converted from agricultural land. By comparison, land requiring extraordinary site preparation or permitting through a time-consuming and often expensive process presents an economic disadvantage and is undesirable to a developer. Therefore, indirect impacts to forests or wetlands from new housing and businesses are expected to be insignificant and discountable. To further evaluate the potential impact of induced development within Section 2, the TAZs with projected induced growth due to I-69 were analyzed for existing landcover and available open land based on the 2001 USGS landcover data and compared to the projected 2030 residential and employment

[24] Section 2 Tier 2 Revised DEIS, Section 5.24.3 “Indirect and Cumulative Effects Analysis”. Table 5.24-2: Number of Jobs, Households, and Acres Induced with I-69 in Section 2 p 5-395

growth. This comparison presented in Appendix E shows that in all TAZs within Section 2 which have projected induced growth from I-69, there is available agricultural or other open land located outside of floodplains to accommodate the projected amount of development. In most cases, there is substantially more available agricultural or other open land than the amount of land needed to accommodate the projected development.

Analysis Methods and Results

Past history and future development potential were used to determine impacts to wetlands, forests, and streams. A more in-depth process was used in Tier 2 to address the impacts to farmlands. To estimate indirect impacts to land use, the following nine-step process was used; this is stated in the Section 2 Revised Tier 2 DEIS on pages 5-393 through 5-397:

> *Step 1: Obtain the economic forecasts for 2030 from Tier 1 that assume the construction of the selected alternative, Alternative 3C. This provides the induced or indirect growth resulting from I-69 for the forecast year for Tier 2.*
>
> Prior to determining the magnitude and significance of the cumulative effects in Section 2, an analysis was completed for anticipated land use changes in the Section 2 study area. Several scenarios were identified by reviewing the TAZ data estimates for the no-build and build options. For instance, maps of TAZs within Gibson, Pike, and Daviess Counties were used to identify where project-induced land use changes would be expected to occur. The number of new houses and new jobs by the year 2030 were forecasted by TAZ for both the no-build and the build scenarios. Induced growth is anticipated to occur where the numbers for the build are higher than for the no-build. Also, as expected, the build scenario shows more employment and housing than the no-build for the three-county area. The Tier 1 economic forecasts indicated that building I-69 would induce 561 new housing units and 818 new jobs in Gibson, Pike, and Daviess Counties, the geographic scope for the Section 2 project.
>
> *Step 2: Allocate the induced growth to individual counties.*
>
> These forecasts were allocated in Tier 1 to the three individual counties, as follows:
>
> - 137 jobs and 99 housing units within Gibson County
> - 134 jobs and 127 housing units within Pike County
> - 547 jobs and 335 housing units within Daviess County
>
> These forecasts of induced jobs and housing units at the county level include the induced growth effects of all of the other Sections of I-69. This would include induced growth effects associated with the Section 1 interchanges in southern

Gibson County, and with the proposed Section 3 interchanges in northern Daviess County. The distribution of these county-level induced growth effects specifically to the TAZs influenced by Section 2 is discussed in the following sections.

Step 3: Meet with the expert land use panel to determine the location and comparative order of magnitude of growth by TAZ.

Estimating indirect impacts relied upon input from an expert land use panel assembled in Section 2. According to a USDOT report[25], "Expert panels can be a very effective way to organize input and gain general consensus on the range of impacts that might be expected. The use of expert panels seems to be an effective way to determine what is 'reasonably foreseeable' since it utilizes the judgments of reasonable people." The expert panel for Section 2 consisted of representatives of the following organizations or offices:

- Mayor, City of Washington
- Daviess County Commissioner
- Daviess County Economic Development Corporation
- Daviess County Highway Department
- Daviess County Chamber of Commerce
- Mayor, City of Petersburg
- Pike County Growth Council
- Pike County Commissioner

The expert panel was convened in May 2005 to inform the study team's assessment of the potential for Section 2 of I-69 to influence the location and intensity of future growth in the Study Area. The panel indicated those TAZs that they felt would be most likely to experience induced growth with the new interchanges to be provided by I-69, as included in the Tier 1 Alternative 3C .

Step 4: Using these growth guidelines from the expert panel, allocate the induced growth for the county to individual TAZs in proportion to the relative order of magnitude established by the land-use expert panels.

At their second meeting, the Section 2 expert land use panel reviewed the initial allocation of induced growth to specific TAZs in light of changes to the proposed interchange concepts made subsequent to the August 2005 public meeting. The panel then made minor revisions to their initial allocations of anticipated induced growth in housing units and employment among the TAZs.

Steps 5 and 6: Determine any shifts in employment resulting from accessibility changes as a result of interchanges. Allocate any shifts in employment to the TAZs; and, determine a value for I-69-induced growth and growth from employment shifts resulting from changes in accessibility for each TAZ.

[25] "Environmental Stewardship and Transportation Infrastructure Project Review: Executive Order 13274 Indirect and Cumulative Impacts Work Group Draft Baseline Report." ICF Consulting for U.S. Department of Transportation. March 15, 2005. Website:www.fhwa.dot.gov/stewardshipeo/icireporticf031405.pdf

Shifts in employment resulting from accessibility changes are anticipated in the induced growth TAZs surrounding the new interchanges. For example, shifting may occur as a result of new gas, hotel, and restaurants at the new interchanges creating new jobs in the area. Additionally, shifts in employment may occur near the city of Washington because of several proposed industrial parks near US 50 and SR 57. A shifting of households may also occur east of the Oakland City interchange near SR 64.

Step 7: Convert the growth into acres of developed land uses based on values from "Trip Generation – 6th Edition" from the Institute of Transportation Engineers, 1997.

The number of induced housing units and new jobs was converted to acres of induced new development based on the following assumptions:

The Tier 1 economic analysis determined that the average number of dwelling units was 4.10 per acre within the *Evansville* region (including Gibson County); and the average number of dwelling units was 3.96 per acre within the *Rural SW Indiana* region (including Pike and Daviess Counties). These estimates were based on a combination of three single-family dwelling units per acre and seven multi-family units per acre, weighted by the percent of single-family verses multi-family units. They were also used for Tier 2.

The Tier 2 economic analysis for jobs was based on a weighted average of the standard employees per acre by employment type. The percentage of each type (i.e., the weight given) was based on the number of anticipated job types within the *Evansville* and *Rural SW Indiana* regions. The employees-per-acre per-employment-type data were developed from the Institute of Transportation Engineer's (ITE) Code per Trip Generation 6th Edition, and are as follows: 18.5 employees per acre for Durable Manufacturing and Non-Durable Manufacturing jobs; 8.2 employees per acre for Mining, Construction, Transportation Public & Utilities, and Agricultural Service jobs; 55.8 employees per acre for Finance, Insurance, Real Estate, and Services jobs; 8.7 employees per acre Retail Trade jobs; and 14.7 employees per acre Wholesale Trade jobs. The average is 15.7 employees per acre with weighting for the overall anticipated number of each type of job for each county.

The forecasted 391 new housing units in Section 2 will require conversion of 99 acres, and the forecasted 607 employees will require conversion of 40 acres, using the averages developed for the three counties. Combined, a total of 139 acres of indirect land use changes are anticipated to occur as a result of building the project. The proximity of Alternatives A and B within the narrow 2,000-foot-wide study corridor and the essentially identical locations for interchanges with the two alternatives results in no meaningful difference in the induced land use changes that the two alternatives will cause.

Step 8: Determine which resources will be impacted by these changes in land use in each TAZ.

Farmlands, forests, wetlands, and streams are the principal resources that the project's indirect land use changes would potentially affect. A review of the existing undeveloped land in the TAZs that are expected to experience induced growth indicates that almost all of that land is in agricultural use. As shown previously in Table 5.24-1, 72% of the total area of the TAZs where induced growth is anticipated is agricultural land. This is particularly true in the TAZs where the greatest induced growth is expected. Of the three TAZs with anticipated induced growth in excess of 10 acres - one in the vicinity of the proposed interchange at Petersburg in Pike County (TAZ no. 6300709) and two in the vicinity of the proposed US 50 interchange in Daviess County (TAZs 1400222 and 1400224) – the percentages of the total TAZ areas that are available forest land are 20%, 16% and 4%, respectively. The areas of available agricultural land in these three TAZs are 957 acres, 263 acres, and 290 acres, respectively. The specific locations of the forested lands in these TAZs were also examined using aerial photography, which showed that the forested areas were generally remote from the existing roadway network, in areas that would be less suitable for development than the larger agricultural areas nearer to existing roads and the proposed interchange locations.

Even in those TAZs that have somewhat larger amounts of forested land and streams and wetlands (generally together in wooded riparian corridors), there are much larger tracts of agricultural land available that would be more desirable and cost-effective for development. These areas of available, relatively flatter, agricultural land are much greater than the areas required for the relatively small amount of induced development projected (less than 5 acres per TAZ in 16 of the TAZs projected for induced development). Typically in the project area, land that is left wooded is land that was not considered suitable for agricultural use. This generally results from poorly drained soils, rough or steep terrain, or in some instances, unstable soils due to past strip mining activity. These same constraints would face potential developers, presenting them with additional time and cost factors for site preparation or permitting through a time-consuming and often expensive process. This situation presents an economic disadvantage and would be undesirable to a developer. For these reasons, it is reasonable to assume that, in the foreseeable future, any land required for development likely will be converted from agricultural land rather than forested land or wetlands.

Step 9: Use these indirect impacts to the resources in the cumulative impact analysis.

The cumulative impact analysis includes the consideration of direct and other impacts to each of the resources, as well as the indirect impacts quantified above.

It is important to mention that the threshold for consideration of indirect impacts (reasonably certain) for Section 7 consultation is higher than the NEPA threshold for consideration of cumulative impacts (reasonably foreseeable), so we consider our use of the NEPA standard to be a conservative approach. Figure 23 shows the induced growth TAZs and the acres of growth expected.

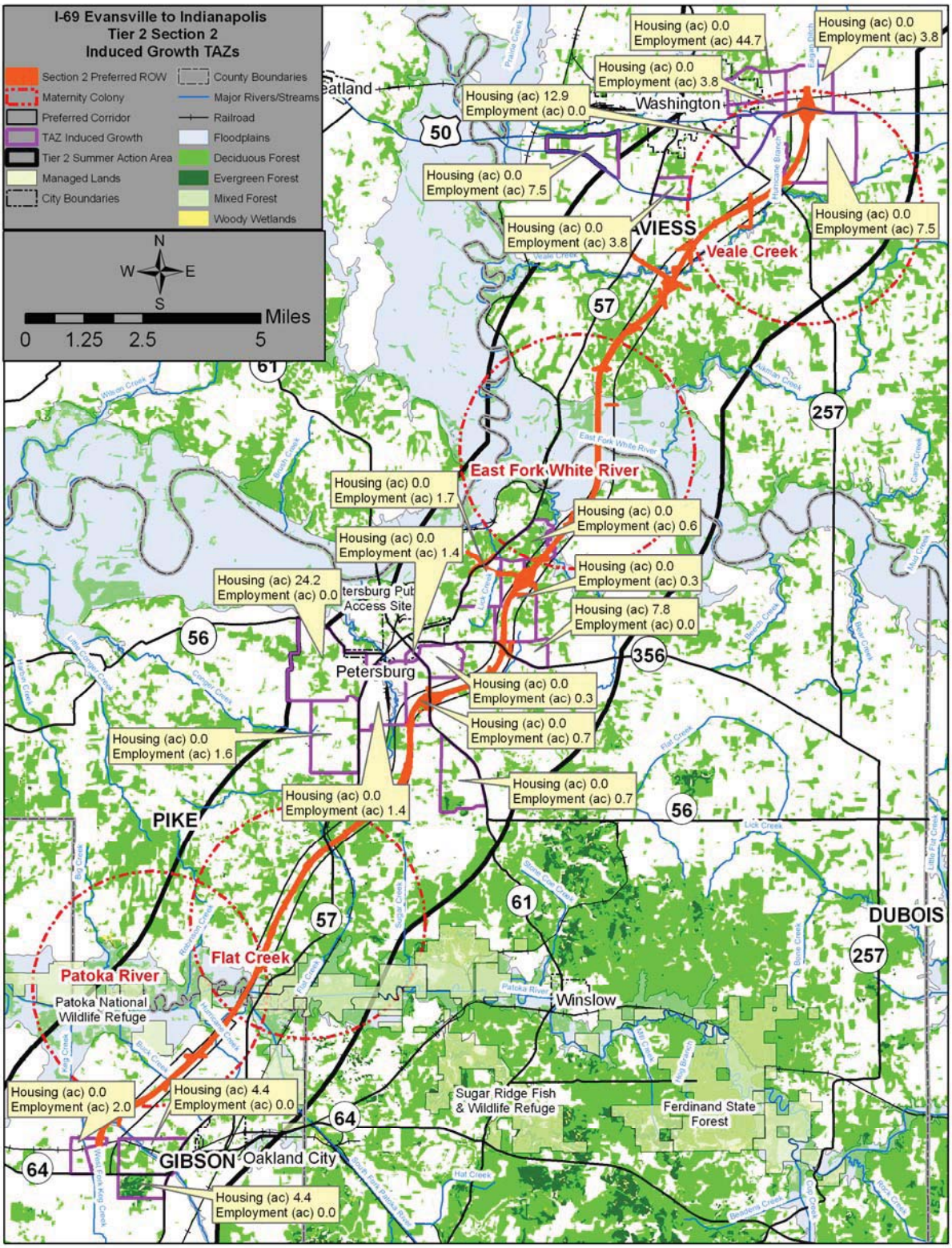


Figure 23. Induced Growth TAZs

Water Resources

The Section 2 Revised Tier 2 DEIS discusses water resources on page 5-420 and 5-422 through 5-423:

> Anticipated indirect impacts to wetlands would occur when wetlands are cleared by a developer to provide land for new development induced by the highway, such as a service station at an interchange or new residential property. Within Section 2, there are few wetland areas along the crossroads at the four proposed interchange locations. At both the SR 61/56 and the North Pike County interchanges, there are no wetlands at all along the crossroads where induced development would be most likely to occur, while at the US 50 interchange, there is one wetland area, but it is located approximately one-quarter mile back from the crossroad where development would be located. At the South Daviess interchange, three of the interchange quadrants have no wetlands, and no induced development is projected to occur at the interchange due to a lack of municipal utilities.
>
> Further, as previously mentioned IDEM and the U.S. Army Corps of Engineers have stated a goal of "no net loss of wetlands", and would require the developer to provide replacement wetlands as a condition of a permit, which nearly eliminates the possibility of future indirect impacts. The no-net-loss policy coupled with mitigation requirements have, based on coordination with local officials, actually increased the amount of wetlands in the area. Therefore, no indirect impacts to wetlands are anticipated due to the implementation of I-69. Streams would be subject to the same type of indirect impacts as wetlands, i.e., land surrounding the streams could be bought by a developer for commercial or residential development. Pride's Creek flows through one of the TAZs expected to experience induced changes and development near the City of Petersburg. Further south, near the city of Oakland City, the West and East Forks of Keg Creek flow through one of the TAZs where induced residential development is anticipated. Near the proposed US 50 interchange at the northern terminus of Section 2, Hurricane Branch flows through a TAZ projected to receive induced development. However, development near streams tends to be adjacent to the stream rather than directly impacting the stream. Depending on the location, type of development, and potential stream/water quality impact, various permitting requirements would have to be met (such as a Section 404 Permit, Section 401 WQC and NPDES permits authorized under the Federal Clean Water Act (CWA); IDNR permit approvals for floodway impacts under the state of Indiana's Flood Control Act IC 14-28-1 and Navigable Waterways Act IC 14-29-1; Rule 5 (327 IAC 15-5) required under NPDES guidelines; etc.). As noted in "Wetlands," above, the results of FHWA's analysis of surface water runoff shows that pollutant concentrations due to runoff are below the applicable EPA criteria. Best Management Practices will be used to prevent non-point source pollution, to control surface water runoff, and to minimize sediment damage to water quality and aquatic habitats. INDOT *Standard Specifications* will govern construction activities to control erosion and subsequent water pollution. While there will inevitably be some indirect impact to streams, any such indirect impact will be insignificant..

Forests

The Section 2 Revised Tier 2 DEIS discusses forest on pages 5-417 to 5-418 and 5-359:

> An indirect impact to forests could occur if adjacent land is used for commercial or residential development as a result of new access provided by I-69. It is projected that a total of only 139 acres of new development will be induced by the construction of I-69 within the three-county geographic scope. The expert land use panel identified a total of 22 TAZs around the proposed interchanges near Oakland City, Petersburg and Washington as the probable locations of that induced development. A review of the USGS National Land Cover Database for these areas indicates that the undeveloped land is predominantly agricultural (72% of the total area, see Table 5.24-1), and that there is adequate agricultural land – over 9,200 acres within these 22 TAZs - to readily accommodate all of the projected land use changes, both that induced by the construction of I-69 interchanges and by other activities due to growth in population and economic activity. It is reasonable to assume that the induced development will occur only on the undeveloped agricultural land because the properties that have led that land to be used for agricultural purposes are the same properties developers look for in land to develop. Land that has not been found suitable for farming generally features some combination of poorly drained soils, rough or steep terrain, or in some instances unsuitable soils due to past strip mining. All of these factors would also make the land undesirable from a developer's viewpoint. For these reasons, indirect and other changes to forest lands are expected to be negligible, if any. Based on the much greater availability of cleared, generally level agricultural land (over 9,000 acres within the TAZs projected to contain the induced development), and the lower developer costs associated with building on that land, as opposed to on wooded land that is typically rougher, steeper terrain, it is reasonable to assume that, in the foreseeable future, the limited amount of land required for development induced by the I-69 project (estimated at 139 acres) likely will occur on agricultural land, with no reasonably foreseeable indirect impacts to forested land.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological assessment. Future Federal actions that are unrelated to the proposed action are not considered because they require separate consultation pursuant to Section 7 of the Endangered Species Act. Cumulative effects include future direct impacts, indirect (induced) impacts and "other" impacts on a natural resource. The former two are related to the proposed action, while the later is not.

Many sources were researched for information on cumulative effects. This included extensive coordination with local county offices and staff (e.g., surveyor's office, recorder's office, auditor's

office, highway superintendents, county zoning and planning officials) within the counties crossed in Section 2, as well as private industry development experts within these areas. In addition, the cumulative effects analysis used the Regional Economic Models, Inc. (REMI) to calculate projected population and employment changes in each of five economic zones within the I-69 study area (Tier 1 26 county area) for the year 2030. Growth within the Section 2 Action Area was delegated into Traffic Analysis Zones (TAZs) based on input from the expert land use panels.

Changes were projected for both the No Build and the Build conditions. Population changes were converted to acreages by multiplying by a factor of 0.24 (in Gibson County) to 0.25 acres (in Pike and Daviess counties) per household. Employment changes were converted to acreages by multiplying each by a factor of 0.064 to 0.065 acres per employee. These factors were developed for each region based on current housing and commercial/industrial development factors within the region.

The No Build condition represents what is expected to occur without the proposed I-69 construction, and represents ”other” impacts in this analysis. These population and employment forecasts form the baseline condition for land use changes by 2030. The “No-Build” population forecasts[26] have been determined based on birth rate, death rate, immigration, and emigration, and are independent of the I-69 project. The Build scenario growth less the No Build scenario growth is equal to the induced (indirect) impacts attributed to I-69. Expert land use panels reviewed the REMI model results and either concurred with model results, or suggested adjustments based on their expectations of development. These panels consisted of developers, local city and county planning staff, and economic development personnel.

Once indirect impacts were identified, the expert panel again reviewed the TAZ maps to provide insight on where land use changes would likely occur regardless of whether I-69 were constructed. In addition, information on development projected to occur whether or not the project is constructed was obtained through a review of local land use plans where such exist and discussions with representatives of local governments, local and regional economic development groups/agencies, and major employers. The results indicated the following

[26] The “No-Build” term refers only to the construction of the new I-69 highway. The normal growth and minor incremental changes expected during the time period, referred to here as “Other Projected Growth”, are understood to be included in the “No-Build” scenario, but not any growth induced by the construction of I-69 or the major “Other” projects discussed in this chapter.

regarding cumulative impacts that "other" reasonably foreseeable future (by year 2030) actions could have when added to the project's potential direct and indirect impacts.

Patoka River National Wildlife Refuge

The Section 2 Revised Tier 2 DEIS discussed the Patoka River National Wildlife Refuge on pages 5-400 to 5-401:

> The U.S. Fish and Wildlife Service have established the Patoka River National Wildlife Refuge (PRNWR) in Gibson and Pike Counties in Southwest Indiana. A FEIS was prepared in July of 1994 for this project. The U.S. Fish and Wildlife Service propose to acquire 22,083 acres of land along a 30-mile section of the Patoka River from willing sellers. Full acquisition may take 20 years or more. The Patoka River National Wildlife Refuge (PRNWR) would eventually have 6,800 acres and Wildlife Management Areas (WMAs) would be acquired from within an adjacent 15,283-acre "selection area." As of May 20, 2008, the total refuge project has acquired approximately 6,702 acres. The projected land use changes are to convert upland farmland and bottomland farmland into upland forests and bottomland-forested wetlands. The FEIS for the PRNWR, issued in July 1994, reported the total tillable acreage within three of the four alternatives (the exception was the "no action" alternative) would be 7,847 acres – 4,297 acres in Gibson County and 3,550 acres in Pike County. As noted in the FEIS:
>
> *The transition from predominantly cropland to primarily forest, depending on funding, willing sellers and restoration efforts could take 20 to 50 years. Whenever all tillable acres are acquired, the proposed management of that 7,847 acres would involve restoration of 5,597 acres to forestland [including 4,100 acres of bottomland forested wetland],1,000 acres of moist soil management units in a staggered crop rotation, 1,000 acres of scrub and grassland, and 250 acres of upland cropland" (p,218).*
>
> Of the 7,847 acres of tillable land proposed for acquisition, 250 acres would continue in agricultural use as upland cropland, as noted above. Therefore, approximately 7,600 acres would be removed from agricultural use.
>
> As of May 20, 2008, 952 acres of agricultural land have already been restored to natural habitats, as follows: 663 acres to bottomland forested wetlands, 91 acres to bottomland wetlands, 180 acres to upland forest, and 18 acres to upland grass. This results in 6,648 acres of farmland remaining to be converted from agricultural use. These planned future conversions will result in an estimated addition of 3,346 acres of new wetlands and 1,317 acres of new upland forests, along with other habitat types. Additional forest land to be added by the Refuge is estimated to be a gain of 1,991 acres (1,317 acres converted from agricultural land and 674 acres from other land uses).

Coal Mining

The Section 2 Revised Tier 2 DEIS discussed the coal mining on pages 5-401 to 5-402:

> According to information from the Indiana Department of Natural Resources Reclamation Division (http://www.in.gov/dnr/reclamation/files/re-coalproduction2008.pdf), accessed June 4, 2008), there were a total of 14 active coal mines within Gibson, Pike and Daviess Counties in 2006, producing a total of over 23 million tons of coal. Six of these mines were located in Gibson County, six in Pike County, and two in Daviess County. Ten of the mines were surface mines, producing approximately two-thirds of the coal, and four were underground mines. As of March 2008, information provided by IDNR Division of Reclamation reports a total of 22 current coal mining permits for activities within five miles of the approved Section 2 corridor within Gibson, Pike and Daviess Counties. Of these, 14 were reportedly in active operation, with a total permitted acreage of 66,180 acres (approximately 103 square miles). Approximately 60% of this area is for surface mining, while the remaining acreage is for underground mines, where the area of surface disturbance would actually be much less. Six of the active permits, including four surface mines, one underground mine, and one tipple area, are located at least partially within the Section 2 corridor.
>
> Substantial areas in Gibson County and over 20,000 acres of Pike County were surface mined prior to the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The lack of sufficient reclamation efforts for many of these areas resulted in severe environmental damage to streams, forests and farmland. Today, however, the SMCRA requires stringent reclamation work, secured by bonds from the mining companies that ultimately allow the mined lands to be returned to their pre-mining land uses. IDNR permit requirements now include returning the land to the approximate original contour, subsoil and topsoil replacement, and revegetation with several years of cultivation of specified crops. On prime farmlands, mine operators must establish row crop production with 100% of the original unmined land productivity for three years before the release of their reclamation responsibility. Previously-forested land must be reforested and show growth of a minimum of 450 trees per acre for a three-year period. Additional details of these requirements can be found at the IDNR Division of Reclamation's website, http://www.in.gov/dnr/reclamation/4529.htm#Anchor-Min-41842, accessed June 4, 2008.
>
> While the land use effects of any particular mining operation may continue in a specific location for a number of years, the requirements of the IDNR Reclamation program are designed to ultimately return the mined lands to their original pre-mining land uses. For projections of land use impacts through the year 2030, therefore, it is considered that the ongoing impacts of currently permitted coal mining operations within the Section 2 geographic scope will in the long term be completely mitigated, with no direct permanent conversion of land use.

Legal Drain Maintenance and Water Quality

In addition to ”other” impacts projected under the No Build scenario, impacts to tree cover from legal drains and their maintenance were estimated and included in addition to the model based other impacts. These impacts could potentially occur regardless of the I-69 construction. Legal drains were identified through consultation with county officials as those streams legally maintained by the county or maintained through conservancy districts. For the Tier 1 BA Addendum analysis, impacts were assumed to be 75 feet from either side of a legal drain. The legal drain impacts represent a highest impact scenario for tree cover impacts as not all legal drains are likely to be maintained, and maintenance may not result in impacts on both sides of the stream, or the entire 75 feet. Figure 24 shows the locations of legal drains. The Pike County surveyor was contacted by phone; they responded that Pike County has no regulated drains that the county maintains. The Daviess County surveyor provided us a list of conservancy and ditch levee boards in Daviess County. None of the Daviess County conservancy and ditch levee boards were within the Section 2 Summer Action Area.

Legal drains affected by the Section 2 alternatives in Gibson County include the East Fork of Keg Creek, the Kirk Lateral, the Wallace Lateral, and the West Fork of Keg Creek. The Gibson County Surveyor was contacted on October 20, 2009, and stated that there are no planned maintenance activities involving tree removal along the legal drains in the Section 2 Project area. At this time, no tree removal is anticipated. A response letter from the Gibson County Surveyor (see Appendix C) states that if maintenance activity on these regulated drains required tree removal, it is estimated that 30-40 feet would be sufficient to accommodate this activity. Analysis for the Tier 2 BA shows 15.2 acres of tree cover within 40 feet on both sides of the legal drains within the Patoka Maternity Colony. There are also 11.3 acres of forest within 40 feet on both sides of legal drains within the Expanded Remaining Summer Action Area. This comes to a total of approximately 26.5 acres of forest within 40 feet on both sides of the legal drains in the Expanded Summer Action Area. The letter also states that the Surveyor’s office “does not have plans to remove trees along the regulated drains.” Thus, it is not “reasonably certain” these acres would be impacted.

The Patoka River (Houchin’s Ditch) is maintained by a conservancy district. A member of their board was also contacted by phone regarding potential maintenance and clearing activities along the drain. At this time, they do not anticipate any tree clearing along the Patoka River.

There is not expected to be any significant change to these conditions from other reasonably certain actions within the Action Area.

As stated in the Section 2 Revised Tier 2 DEIS on page 5-410:

> Several stresses have impacted the streams in the Study Area. The clearing of land for agriculture between 1900 and 1940 increased sediment loadings and turbidity in the drainage of Indiana waterways, as indicated in a study completed in 1995 for the Indiana Academy of Science (*Historical and Present Distribution of Fishes in the Patoka River Basin: Pike, Gibson, and Dubois Counties, Indiana,* Simon, et al., 1995). Another stress has been watershed changes resulting from drastic land use modifications (i.e. channelization, oil exploration, and coal mining had increased turbidity, siltation of sediments, lateral erosion of the banks, and acidity). Furthermore, acid mine drainage from underground and surface mining has altered water quality throughout past years in the Patoka River Basin. In addition to coal mining, oil-well-waste pollution is a problem in the area. According to the study referenced above, acid mine drainage has caused impaired water quality in the South Fork Patoka River as far back as its first documentation in the early 1960s. Additional stresses on the waterways in the Study Area include sewage (particularly in locations where septic systems operate poorly or are not maintained appropriately), agricultural practices, contaminants/road salt in surface water runoff from roadways/parking areas, mine acid, and landfill run-off. A review of the 2006 303(d) List of Impaired Waterbodies (IDEM) includes the Patoka River listed in Dubois County, Pike County and Gibson County or downstream of the Patoka Reservoir. The parameters of concern are Fish Consumption Advisory (FCA) for PCB and mercury (Hg). The severity ranking is low. The South Fork of the Patoka in this listing is impaired too. The parameters of concern in the South Fork are impaired biotic communities, and the severity is high.

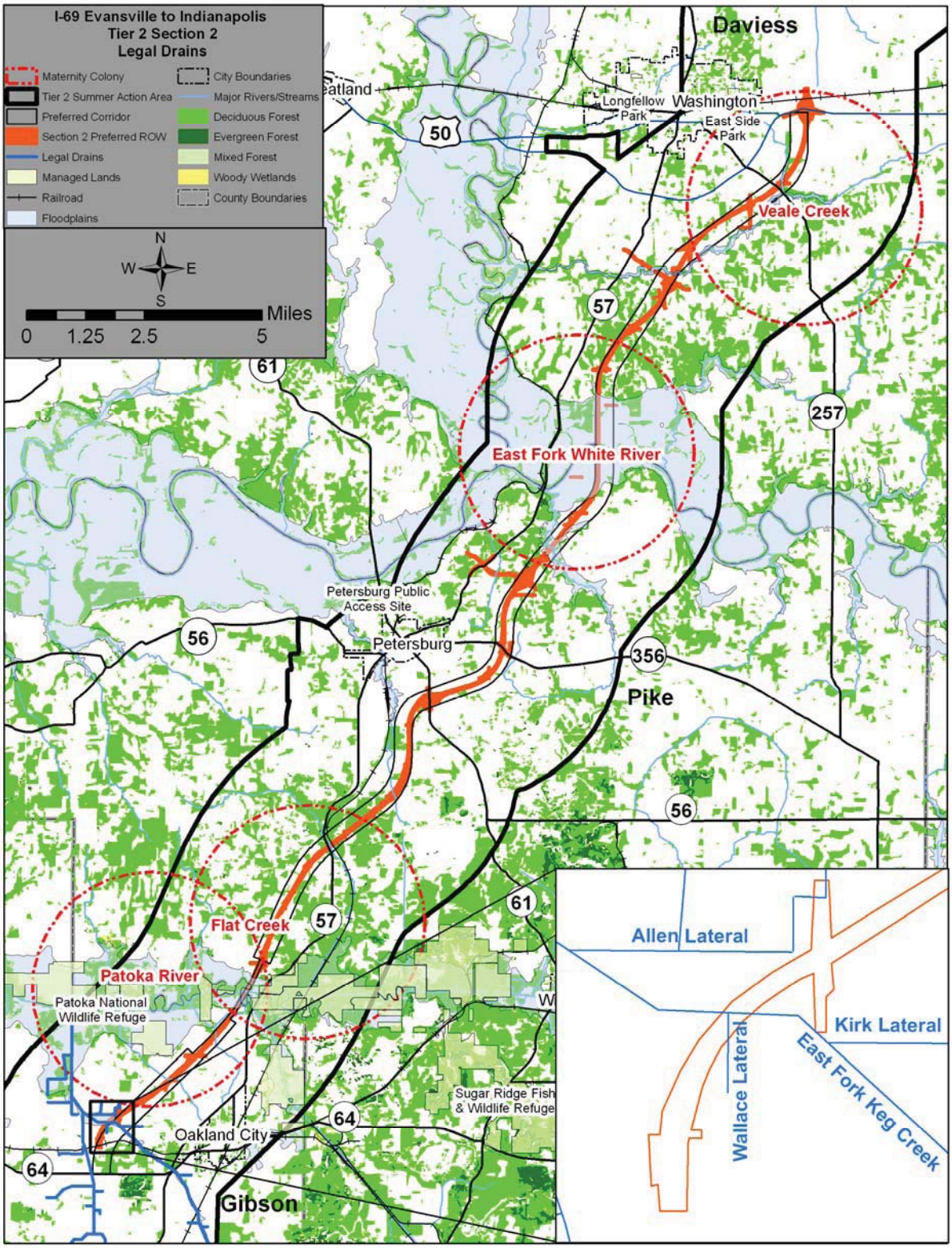


Figure 24. Legal Drains

Land Conversion Trends

Typically, one can not accurately quantify how much forest land on private lands will be converted to other habitat types, the extent of future timber harvests on private lands, nor the amount of privately owned habitat that will be developed for other purposes. However, one can look at the trends state-wide and extrapolate assumptions as to how the private lands within the Action Areas will likely be managed in the foreseeable future.

In the Revised Tier 1 BO, the following Indiana forest trends were highlighted within the USDA National Forest Service North Central Research Station's 2005 report, "Indiana Forests: 1999-2003, Part A." Such trends are listed below.

Trends that appear beneficial to the Indiana bat are:

- There are no major tree die-offs anywhere in the state; natural tree mortality appears evenly across the state.
- The ratio of harvested tree volume to tree volume growth indicates sustainable management.
- Diverse and abundant forest habitat (snags, coarse woody debris, forest cover and edges) support healthy wildlife populations across the state.
- Indiana possesses a diversity of standing dead tree wildlife habitat with an abundance of recently acquired snags to replenish fully decayed snags as Indiana's forests mature.
- Indiana's forests continue to mature in terms of the number and size of trees within forest stands.

Other trends reported by the USFWS are:

- The amount of forest edge doubled from 1992 to 2001, indicating smaller forest plots.
- Due to land use history and natural factors, the forest soils of southern Indiana are generally below-average in quality.
- Ownerships of Indiana forests have changed in the past decade, resulting in more parcelization and fragmentation.

- The average private forest landholding dropped from 22-acres in 1993 to 16-acres in 2003, indicating a continued “parcelization” of Indiana forests.
- While the data shows there has been loss of continuous forest, resulting in smaller, fragmented stands, there is also an overall increase in forested land across the state.
- Indiana’s oak species continue to grow more slowly than other hardwood species.
- Introduced or invasive plant species inhabit a majority of inventories plots.
- Although Indiana’s overall forested land mass is increasing, the rate of increase has slowed over the past decade.
- Increases in total volumes of oak species are less than those for most other hardwood species.
- The advanced ages and inadequate regeneration of Indiana’s oak forests may signal a successional shift from an oak/hickory-dominated landscape to one where other hardwood species, such as maples, occupy more forested areas.
- Indiana’s hardwood saw-timber resource continues to be at risk due to maturing of hardwood stands, loss of timberland to development and new pests (gypsy moth, emerald ash-borer, sudden oak death, beech-bark disease, and more).

Coordination with the Division of Forestry of the Indiana Department of Natural Resources identified that there is no comprehensive consistent method of tracking timbering on a more specific detailed level.

Based on direct observation and corroborated by Division of Forestry staff, timber harvesting is limited and sporadic in the Summer Action Area. In Section 2, the forests range from small isolated woodlots to more extensive forest tracts. The Patoka River National Wildlife Refuge, which is located in the southern part of the section, consists of larger forest tracts. Observations within the action area throughout many years indicate that cutting is for the most part selective and that much of the timber in the area is second growth indicating past timbering activities. From such observations and discussions with county officials, timber harvesting is not expected to be a major contributor to the loss of forests within the Action Area. Most of the classified forests around Section 2 fall near the Patoka River National Wildlife Refuge, Ferdinand/Pike State Forest, and Sugar Ridge Fish and Wildlife Area. There are also very few locations of

small classified forests scattered about. Currently, no classified forest is anticipated to be impacted by the Preferred Alternative.

No managed lands are anticipated to be impacted by Section 2. The Patoka River National Wildlife Refuge, Ferdinand/Pike State Forest, Sugar Ridge Fish and Wildlife Area, and East Side Park all fall within a couple miles from the Preferred Alternative, but will not be impacted.

A majority of the expected development is anticipated to be around the Oakland City, Petersburg, and Washington areas. Based on potential development areas in the Gibson, Pike, and Daviess Counties Comprehensive Plans, these areas which are within the Section 2 Summer Action Area contain a total of 448 acres of forest. These 448 acres account for less than 2% of the 26,067 forest acres available within the Section 2 Expanded Summer Action Area. It is not reasonably certain that these forest areas would be harvested to allow development in these areas. Based on this, forest impacts from other development are expected to be insignificant. Refer to the Indirect Impacts section of this document under forest for more information on land-use and development factors in the Section 2 Summer Action Area.

The USFWS anticipates a decline in bat habitat in some areas of the Summer and Winter Action Areas in the future, although they are not aware of specific development plans in known Indiana bat habitat at this time. If INDOT, FHWA or USFWS become aware of specific projects, impacts to Indiana bats will be addressed through the incidental take permit process, if appropriate.

Areas set aside for mitigation plantings will protect those areas from development, and in the long term will provide quality roosting and foraging habitat. These areas will also help to decrease habitat fragmentation, and to improve the potential for colonies of Indiana bats currently using the action area to expand into other areas of suitable habitat.

With successful implementation of the revised Tier 1 Forest and Wetland Mitigation and Enhancement Plan, particularly as detailed herein for Section 2, and all of the other proposed mitigation efforts and conservation measures, we anticipate that long-term habitat conditions for the Indiana bat maternity colonies, individuals and hibernating populations within the action areas will be sustainable and in some situations may be better than existing conditions.

MITIGATION

Mitigating Direct Loss of Indiana bat Habitat

Forest Mitigation

Upland forests impacted by the I-69 Evansville-to-Indianapolis project will be mitigated at a 3:1 ratio. This commitment, made in the Tier 1 FEIS and reaffirmed in the Tier 1 ROD, considers upland forests as all those not classified as wetlands. Mitigation may be in the form of planting unforested areas with a minimum goal of 1 to 1 replacement and/or protecting existing forests by fee simple purchase, permanent protective easement, or a combination of actions with a maximum goal of 2 to 1 protective measures or preservation. The 3 to 1 ratio will be achieved for the overall I-69 Evansville-to-Indianapolis project; the ratio for an individual Tier 2 section could be higher or lower than 3 to 1. Currently the mitigation sites included within this BA have additional acreage beyond the 3 to 1 ratio which is required for Section 2 of the I-69 project. This additional mitigation acreage will be applied to Section 4 of I-69 or other Sections in the future.

Wetlands Mitigation

The Section 2 Revised Tier 2 DEIS discussed wetland mitigation on page 5-331:

> Mitigation plans to offset unavoidable wetland impacts will comply with INDOT's MOU (1991) as noted during Tier 1. The overall I-69 project proposes wetland replacement at a ratio of 3:1 or 4:1 depending on quality for Forested wetland impacts, a ratio of 2-3:1 for Scrub/Shrub wetland impacts and emergent wetland impacts, depending upon quality. (Within Section 2, none of the forested wetlands impacted are rated as "Good" quality in the three InWRAP categories of animal habitat, hydrology, and botanical quality, and thus all will be mitigated at the 3:1 ratio). Impacts to open water are proposed to be mitigated at a ratio of 1:1 and may be mitigated using borrow pits.

Native Vegetation Planting

Proposed areas for native vegetation include the SR 61/56 interchange area at Petersburg, North Pike Interchange area, South Daviess County SR 57 interchange area, US 50 interchange area, as well as the Patoka bridge area. The interchange areas will have ample open area to plant native vegetation.

Wildlife Crossings

The Section 2 Revised Tier 2 DEIS discusses wildlife crossings on page 5-297:

> Mitigation measures specific to Section 2 include four wildlife crossings. The four Section 2 locations are at the Patoka River crossing, the Flat Creek crossing, the crossing of the East Fork of the White River, and the crossing of the tributary to Jackson Pond. In each case, the structures proposed to carry I-69 over these features will provide a wildlife crossing corridor well in excess of the minimum dimensions required to allow deer to pass (at least 8' by 24'). (At the Patoka River, where the decision was made to span the entire width of the Patoka River floodplain, the total structure length will be in excess of 4,400 feet.) During the design phase, consideration will be given to incorporating vegetation plantings that will provide adequate cover for wildlife to access these crossings from adjacent areas of cover. Fencing to funnel wildlife toward these crossings will also be evaluated during design.
>
> At Prides Creek, Mud Creek and Veale Creek, the presently-proposed structures crossing these streams are anticipated to provide sufficient opening for deer and all smaller mammals and amphibians. Other bridges and larger culverts will also provide additional crossing opportunities for smaller wildlife. Crossings of four Flat Creek tributaries, a tributary to Veale Creek, and a tributary to Hurricane Branch will all provide good crossing opportunities for smaller wildlife. Natural bottoms for the box culverts will be used for these crossings where feasible.

Summary

Total direct impacts in Section 2 are a loss of 210.7 acres of upland forest and 30.50 acres of wetlands (16.11 acres of forested wetlands, 0.38 acres of scrub-shrub wetlands, 6.68 acres of emergent wetlands, and 7.33 acres of open water wetlands). These losses are being increased by 10% overcompensation to allow for any potential alignment shifts during final design that may cause additional impacts. When impacts are increased by these allowances, the impacts become 231.8 acres of forest and 33.55 acres of wetlands.

After the 10% is added, Section 2 mitigation will require 695.4 acres of forest mitigation, 53.16 acres of forested wetland mitigation, 1.26 acres of scrub-shrub wetland mitigation, 14.70 acres of emergent wetland mitigation, and 8.06 acres of open water mitigation. See Table 9 for a direct impacts and mitigation summary.

Table 9. Direct Impacts and Mitigation

Impact Area	Tier 2 Upland Forest*	Delineated Wetlands	Forested	Scrub/Shrub	Emergent	PAB/PUB
Patoka River	9.2	4.26	3.92	0	0	0.34
Flat Creek	67.0	8.48	5.15	0	2.99	0.34
East Fork	25.8	3.98	2.13	0	0	1.85
Veale Creek	8.2	2.58	0.64	0	1.33	0.61
Colony Overlap	7.0	4.20	3.86	0	0	0.34
Total of Maternity Colonies(minus overlap)	*103.2*	*15.10*	*7.98*	*0*	*4.32*	*2.80*
Remaining Action Area	*107.5*	*15.40*	*8.13*	*0.38*	*2.36*	*4.53*
Section 2 Direct Impacts	210.7	30.50	16.11	0.38	6.68	7.33
10% Impact Increase**	21.1	3.05	1.61	0.04	0.67	0.73
Total	231.8	33.55	17.72	0.42	7.35	8.06
Mitigation Ratio	3:1		3:1	3:1	2:1	1:1
Mitigation Acreage Required	695.4	77.18	53.16	1.26	14.70	8.06

* Forest was determined by the Environmental and Engineering Assessment Consultants (EEAC) by photo interpretation of 2003 aerial photographs and verified by field review. It includes groups of trees > 1 acre and wider than 120 feet.

** Direct Impacts were increased by 10% to allow for any additional impacts which might occur due to last minute alignment shifts during final design. Increasing impact levels will insure that "no net loss" is achieved in 1:1 forest replacement (reforestation).

Additional acres may be required for access easements (ingress and egress) to mitigation sites for construction and monitoring.

Specific Mitigation Areas:

There are proposed mitigation sites for all four of the maternity colonies located in Section 2. To see the description of the proposed mitigation sites, please refer to the Tier 1 BA addendum, Appendix D. Please also see appendices F through S for details of the Section 2 mitigation sites. These include three sites that are included in the I-69 Sections 2 and 3 Umbrella Mitigation Bank, sites acquired by INDOT for preservation, sites acquired by USFWS through INDOT/FHWA funding assistance and sites that have been acquired or are in the acquisition

process which have anticipated future restoration and replanting activities. Deeds for the sites that have been secured by INDOT are included in the site specific appendices. Figure 25 shows a map of all the mitigation sites in Section 2. Table 10 shows an overall summary of the credits anticipated at each mitigation site. The following mitigation sites are subdivided based on the maternity colony which they are the closest to:

Patoka River Maternity Colony

Property-

This property is located north of CR 150N and about 0.5 to 1 mile west of SR 57 in Gibson County. This mitigation site is located in both the Patoka and Flat Creek maternity colonies. It includes 130 acres of agricultural land with bottomland woods and wetland areas including a buttonbush swamp. The agricultural field has a deep ditch that drains some of the field with an existing emergent wetland protruding into the field from the western boundary. The field is very wet in this area, and north of the property, the USFWS owns property as part of the Patoka River National Wildlife Refuge. The property floods in the spring and is an excellent site for wetland restoration. This property is within the Patoka River National Wildlife Refuge acquisition boundary. A very small corner of this parcel is crossed by the right-of-way for the Preferred Alternative for Section 2 of the I-69 project (approximately 2.1 acres). In addition, an active coal mine permit boundary extends onto the southern portion of this property. However, review of the mine plan and coordination with the mine operator have identified that there are no plans for mining north of CR 150N; therefore, no mining is planned within the Property.

A field review completed by BLA on November 9, 2007 and May 22, 2008 found tree species consisting of red maple (*Acer rubrum*), swamp white oak (*Quercus bicolor*), pin oak (*Quercus palustris*), honey locust (*Gleditsia triacanthos*), persimmon (*Diospyros virginiana*), river birch (*Betula nigra*), silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), slippery elm (*Ulmus rubra*), eastern cottonwood (*Populus deltoides*), sweetgum (*Liquidambar styraciflua*), shingle oak (*Quercus imbricaria*), red bud (*Cercis canadensis*), pawpaw (*Asimina triloba*), sassafras (*Sassafras albidum*), sugar maple (*Acer saccharum*), black cherry (*Prunus serotina*), sandbar willow (*Salix interior*), bur oak (*Quercus macrocarpa*), swamp chestnut oak (*Quercus michauxii*), buttonbush (*Cephalanthus occidentalis*), American sycamore (*Platanus occidentalis*), common hackberry (*Celtis occidentalis*) and black willow (*Salix nigra*). Approximately 60% of these trees had DBHs 9 to 18

Figure 25: *Mitigation Sites* has been removed for confidentiality reasons related to the federally endangered Indiana bat (*Myotis sodalis*)

Table 10. Section 2 Mitigation Site Anticipated Credits Summary

Mitigation Site	Forest Preservation (acres)	Reforestation (acres)	Total Forest Mitigation (acres)	Emergent Wetlands (acres)	Forested Wetlands (acres)	Scrub-Shrub Wetlands (acres)	Total Wetland Mitigation (acres)**
Patoka River Maternity Colony Mitigation Sites							
	63.2	2.4	**65.6**	9.3	53.0	0.0	**62.3**
	2.0	0.0	**2.0**	0.0	0.0	0.0	**0.0**
	2.4	55.9	**58.3**	0.0	0.0	0.0	**0.0**
	0.0	0.0	**0.0**	0.0	0.0	0.0	**450.0****
	7.5	0.0	**7.5**	0.4	11.7	0.0	**12.1**
	15.6	0.0	**15.6**	0.0	0.0	0.0	**0.0**
Flat Creek Maternity Colony Mitigation Sites							
	224.5	0.0	**224.5**	0.0	0.0	0.0	**0.0**
	4.2	0.0	**4.2**	0.0	0.0	0.0	**0.0**
East Fork Maternity Colony Mitigation Sites							
	71.6	90.4	**162.0**	1.9	1.4	3.5	**6.8**
	34.0	101.8	**135.8**	2.3	5.8	0.0	**8.1**
Veale Creek Maternity Colony Mitigation Sites							
	18.7	17.8	**36.5**	0.0	1.8	0.0	**1.8**
	6.7	85.5	**92.2**	1.5	4.0	0.0	**5.5**
	17.0	0.0	**17.0**	0.0	0.0	0.0	**0.0**
Totals	*467.4*	*353.8*	***821.2****	*15.4****	*77.7****	*3.5****	***546.6***

*These Mitigation sites are located within both the Patoka River and Flat Creek Maternity Colonies.

**Unconsolidated Bottom and Aquatic Bed Wetlands will be mitigated for using out of kind mitigation (8.05 acres).

***There will be excess mitigation of approximately 125.8 acres of forest mitigation, 0.7 acres of emergent wetland mitigation, 24.5 acres of forested wetland mitigation, and 2.2 acres of scrub-shrub mitigation. These excess acreages may be used for mitigation in Section 4.

****This is preservation only and includes forested, scrub/shrub, emergent, and open water wetlands.

inches, 20% had dbhs >18 inches and 20% had DBHs less than 9 inches. Field review indicated herbaceous species consisting of lizards tail (*Saururus cernuus*), beggar-ticks species (*Bidens sp*.), pokeweed (*Phytolacca americana*), yellow foxtail (*Setaria pumila*), trumpet weed (*Eupatorium fistulosus*), soft rush (*Juncus effusus*), barnyardgrass (*Echinochloa crus-galli*), Japanese honeysuckle (*Lonicera japonica*), Virginia creeper (*Parthenocissus quinquefolia*), asters (*Aster sp*.), multiflora rose (*Rosa multiflora*), common blue violet (*Violasororia*), poison ivy (*Toxicodendron radicans*), wild mustard (*Sinapis arvensis*), sensitive fern (*Onoclea sensibilis*) and wool grass (*Scirpus cyperinus*). In the southwest corner, this property has an excellent buttonbush swamp that continues to the west off the property. Fauna included white-tailed deer (*Odocoileus virginianus*), common grackle (*Quiscalus quiscula*), fox squirrel (*Sciurus niger*), midland painted turtle (*Chrysemys picta marginata*), red-eyed vireo (*Vireo olivaceus*), eastern towhee (*Pipilo erythrophthalmus*), Blanchard's cricket frog (*Acris blanchardi*), song sparrow (*Melospiza melodia*), American crow (*Corvus brachyrhynchos*), eastern wild turkey (*Meleagris gallopavo*), northern cardinal (*Cardinalis cardinalis*), green frog (*Rana clamitans melanota*), raccoon (*Procyon lotor*), Cope's gray treefrog (*Hyla chrysoscelis*) and American goldfinches (*Carduelis tristis*).

The conceptual plan for this mitigation site includes the development of approximately 53 acres of forested wetland habitat, 9.3 acres of emergent wetland habitat, and 2.4 acres of bottomland forest (non wetland) habitat. In addition, approximately 63.2 acres of existing bottomland, forested wetland, emergent wetland, and early successional habitats will be preserved at this mitigation site and 2.1 acres in the southeast corner of this mitigation site will be within the right-of-way for the new roadway. There is also a remnant of the old Patoka River channel that will be preserved as part of this mitigation site. This site has additional wetland mitigation acres being developed beyond that required for Section 2 of the I-69 project. This excess wetland mitigation acreage will be used for other INDOT projects within the watershed in the future.

The goal of this mitigation site is to create a mosaic of wetland, riparian, and bottomland woods habitat within an area where about half of the property is currently being farmed in row crop production, providing very little natural habitat value. The emergent wetland mitigation area will be seeded with an emergent wetland seed mix or sedge meadow seed mix, including numerous grass and forb species. The forested wetland habitat development area will be planted with wetland species including, but not limited to, pin oak, swamp white oak, shumard oak, shellbark

hickory, pecan, swamp chestnut oak, river birch, American elm and sweetgum. The bottomland woods habitat will be planted with, but not limited to, black walnut, bur oak, white oak, post oak, eastern cottonwood, and shagbark hickory. The majority of the species proposed for planting in the mitigation site will be selected from the pre-approved IDNR tree list. The success criteria for the tree species planted in this mitigation site is anticipated to include 240 stems per acre of live trees maintained throughout the monitoring period. This mitigation site will be monitored by INDOT for at least 5 years to identify that the minimum success criteria is being met. The monitoring reports will be provided to the US Fish and Wildlife Service on an annual basis for each monitoring year. Appendix F includes the Conceptual Mitigation plan map for this site showing the proposed planting zones on a 2005 aerial photograph, pertinent information, and photos.

The property owner has signed the offer to sell the property to INDOT and signed the deed transfer; although, INDOT has not made payment to the property owner and will do so once the mineral rights have been agreed to between INDOT and the mining company, then the deed will be recorded. INDOT will complete the short-term monitoring and maintenance requirement of this mitigation site and the US Fish and Wildlife Service (USFWS) as part of the Patoka River National Wildlife Refuge will be responsible for the long-term management of this site.

Property-

The Property is 19.65 acres in size and is almost completely wooded. It is located west of Miller Bridge Road and just northwest of the Miller Bridge over the Patoka River in Pike County. The value of this 19.65 acre property is exceptional with its natural habitat and snags; it also has a primary roost tree for the Indiana bat. The property is located in prime summer habitat for this species. Located approximately two miles west of this site is the I-69 roadway alignment. INDOT assisted the US Fish and Wildlife Service Patoka River National Wildlife Refuge with the purchase of this site. As a result of this purchase assistance, it was agreed with the US Fish and Wildlife Service that INDOT would receive 2 acres of upland forest mitigation credit at this site. The site was purchased on November 28, 2006 by the Refuge; as such, it has been incorporated into the Patoka River NWR boundary and is a valuable contribution to the Indiana bat. Appendix G includes a 2005 Aerial map, pertinent information, and photos of this mitigation site. Photo 6 shows a blue heron rookery.

and Property-

The and properties were purchased by INDOT on November 4, 2004 for both the future I-69 roadway right-of-way and for upland forest mitigation. This area was a former strip mine and is currently in fallow fields. These two properties are located just south of CR 200 S, with 40 acres just to the west of CR 300W (Slickum Hill Road) and 40 acres just to the east of CR 300W. These properties are within both the Patoka and Flat Creek maternity colonies. The Preferred Alternative right-of-way for Section 2 of the I-69 project will include approximately 21.7 acres of this 80 acre site. There is also a 2.4 acre preservation area located in the southwest corner of the site that includes a small pond. The additional 55.9 acres of these 2 parcels will be reforested.

Field reviews of the and properties were conducted on February 29, 2008 by BLA. The following dominant species were found on the property: goldenrod sp. *(Solidago sp.)*, yellow foxtail *(Setaria pumila),* Kentucky fescue *(Festuca arundinacea),* Aster sp. *(Aster sp.),* and broom-sedge *(Andropogon virginicas).* Tree species that were found on the properties included shingle oak *(Quercus imbricaria),* black cherry *(Prunus serotina),* red maple (*Acer rubrum), and black locust (Robinia pseudoaccacia).* Fauna included eastern cottontail *(Sylvilagus floridanus)*, eastern bluebirds *(Sialia sialis)*, and western chorus frogs *(Pseudacris triseriata).*

The conceptual plan for this mitigation site includes the development and preservation of approximately 55.9 acres of upland habitat. The upland habitat will be planted with species including, but not limited to, black walnut, American elm, red oak, bur oak, white oak, post oak, eastern cottonwood, and shagbark hickory. The majority of the species proposed for planting in the and mitigation site will be selected from the pre-approved IDNR tree list. The success criteria for the tree species planted in this mitigation site is anticipated to include 240 stems per acre of live trees maintained throughout the monitoring period. This mitigation site will be monitored by INDOT for at least 5 years to identify that the minimum success criteria is being met. This report will be provided to the US Fish and Wildlife Service on an annual basis for each monitoring year. Appendix H includes the Conceptual Mitigation plan map for this site showing the planting zones on a 2005 aerial photograph. INDOT will be responsible for the short-term monitoring and maintenance of this mitigation site and the USFWS will be responsible for the long-term management of this site as part of the Patoka River National Wildlife Refuge.

Property-

A large tract of 1,049 acres is available in the Patoka River Bottoms that includes approximately 450 acres of excellent “natural and wet” bottomland hardwood forest and other wetland resources. The parcel also includes at a minimum of 3,100 feet of the South Fork of the Patoka River, 11,500 feet of the Old Channel of the South Fork and the Old Channel of the Patoka River, 4,000 feet and more of smaller streams (intermittent and ephemeral) and many other types of water resources, e.g., marshes, lakes, and seasonal ponds. In addition, the remaining 599 acres of reclaimed coal mine land represents a very diverse mixture of habitat, including grasslands and forests. The Patoka River National Wildlife Refuge has been interested in the property for a number of years and has been in coordination with Peabody Energy who controls the property and has been interested in liquidating this asset, but funding has not been available. Now, the mining company needs a commitment this year from USFWS to buy this site or they will pursue other buyers. This property is located within both the Patoka and Flat Creek maternity colonies.

The USFWS has funding to purchase approximately 550 acres of this site, which leave an additional 500 acres that may be purchased in compensation for “I-69 Stream and Wetland Mitigation in Section 2”, if acceptable to INDOT, FHWA and the permitting agencies. The stream impacts that are proposed for mitigation at this site are mostly ephemeral and intermittent streams. Some of these include maintained agricultural ditches. Nonetheless, many streams crossed by the I-69 Section 2 project are listed on the IDEM 2008 303(d) list of streams with impairments. The primary stream contaminants are *E. coli*, PCBs and mercury. Heavy metals, chlorides, dissolved solids, and sulfates have also been detected at elevated levels in some streams. Most of the stream assessments (QHEI and HHEI) in Section 2 showed low to moderate scoring. Streams crossed within the Preferred Alternative right-of-way totaled 69,472 linear feet including 54% ephemeral (37,717 feet), 33% intermittent (22,950 feet) and 13% perennial (8,805 feet). Many stretches of these streams will remain untouched since they are outside the construction limits and existing drainage patterns will be maintained (perpetuated) throughout the project. There are a total of approximately 45,550 linear feet of stream (6 acres of impacts below the ordinary high water mark) and 6 acres of wetland impacts within Section 2 of the I-69 project proposed to be mitigated at this site.

This property includes about 450 wet acres (43%). In addition to the South Fork of the Patoka River (3,100 feet), Old River Channel of the South Fork (6,000 feet), Old River Channel of the Patoka River (5,500 feet), the property includes the eastern edge of Snakey Point Marsh known for its fishing (ca. 75 acres), another large marsh (ca. 50 acres), 11 lakes (totaling 100 - 150 acres) that could provide excellent fishing opportunities for the public, and an unknown number of small and seasonal ponded wetlands and smaller streams (4,000 feet or more). A survey of the National Refuge for Special Plant Species and Communities conducted in 1991 identifies a wet mesic floodplain forest (including sweetgum, white oak, swamp chestnut oak, shellbark hickory, hackberry and American elm) on parts of the property. Such a forest is rare or uncommon in the State of Indiana. The property also has a wet floodplain forest (including silver maple, red maple, eastern cottonwood, green ash, sycamore, box elder, river birch and pin oak). Scrub/shrub wetlands of buttonbush are also found on the property.

In addition, the property includes Core Conservation Habitat for the copperbelly water snake, summer habitat for the endangered Indiana bat, and an active bald eagle nest. State listed wildlife known on the property are the Henslow's sparrow (SE), short-eared owl (SE), northern harrier (SE), osprey (SE), sharp-shinned hawk (SC), red-shouldered hawk (SC), harlequin darter (SE), river otter (SE) and swamp rabbit (SE). State listed plants in the vicinity are *Sparganium androcladum* (staminate burreed), *Triadenum walteri* (greater marsh St. Johnswort), *Cyperus pseudovegetus* (marsh flatsedge), *Diodia virginiana* (Virginia buttonweed), *Carex lousianica* (Louisiana sedge), and *Potamogeton pusillus* (small pondweed). Between the wetlands and upland is an ecotonal border of great importance to both fauna and flora. Prairie grasses (switchgrass, big and little bluestem, Indian grass) and trees were planted in much of the reclaimed upland habitat. Reclamation efforts received the Kenes C. Bowling National Mine Reclamation Award from the Interstate Mining Compact Commission in 2000 in recognition of the excellence in reclamation for this land. The goal was to provide an environment beneficial to wildlife and woody plants, while preserving prime farmland productivity. Reclamation efforts include some farmland adjacent, but not on this 1,049 acre property. Replacement of desirable soil averaged four or five feet in depth on non-prime areas of the mine permit so that vegetation was encouraged to make a productive stand. Over 250 acres of unreclaimed previously mined land was restored to natural conditions. This tract of land has much potential and offers a tremendous diversity of fish and wildlife habitat. It is home to many species. Some notables are bobwhite quail, wild turkey, grasshopper sparrow, Cooper's hawk, blue grosbeak, blue heron, red-tailed hawk, deer, mink, beaver, coyote, and

paddlefish, who use flooded bottomland forests as nurseries. The best remaining stand of wild cane brakes in the Patoka River National Wildlife Refuge are located along a reach of the old Patoka River bed cutoff which makes up a portion of the northern boundary of this

Tract. In addition, American lotus is extremely dense in Snakey Point Marsh. Both cane and lotus are regionally uncommon.

Preservation of the property is necessary for continuity in the refuge as the tracts have a common boundary with over three miles of existing refuge land. Purchase of this tract will eliminate the threat of subdividing for residential development and construction of cabins or placement of trailers for hunting camps. In addition, the great majority of refuge visitors expect an “auto tour” route, something that is currently difficult due to the prevalence of privately held property within the refuge boundaries. Adding this property should make it possible to establish a recommended route, with a portion controlled by the refuge, provided with scenic and interpretive turnouts, and not subject to the needs of commercial and residential traffic.

This bottomland hardwood forest and reclaimed coal mining land harbor many water resources that are important to wildlife and to the public, and are water quality resources offered in compensation for stream and wetland impacts in the I-69 Section 2 construction limits. It is important to recognize that restoration for water quality in the South Fork Patoka River has been an ongoing activity since establishment of the refuge in 1994. Water quality improvements have received phenomenal assistance over the past 15 years with expenditures in excess of $17 million in the immediate Patoka River watershed outside the refuge boundaries by the IDNR’s Abandoned Mine Land Program. The South Fork was a stream that could not support year around biological life dating to the 1920’s due to acid mine water flushout events from derelict mine lands in the upper watershed. Reclamation of these sites eliminated most of the acid water runoff with future projects scheduled to complete the job. The river now supports year around fisheries with bald eagles nesting along the water course. The riparian habitat along this lower three mile stretch of the South Fork is rapidly recovering its fish and wildlife values due to the improving water quality. The public now launch boats and angle for fish in this portion of the South Fork. Since the channel is not a legal court ditch (drain), the influx of beaver and undisturbed woody debris is creating essential habitat for species once thought to be extirpated in Indiana such as the recently rediscovered harlequin darter.

Incorporating this habitat within the refuge protects and preserves a diversity of water resources and provides continued opportunities for improvements into the future. Adding this tract of land to the refuge will result in a much larger contiguous block within the Patoka River and the South Fork of the Patoka River Lower Watershed Area. It will dramatically enhance the Patoka River National Wildlife Refuge value, in terms of the refuge's objectives for benefiting wildlife and for the regional need for outdoor recreation, as well as for water quality enhancement. In addressing Objective 1.5 - Water Quality in Chapter 4 - Management Direction of the USFWS's current Comprehensive Conservation Plan for the Refuge (approved September 2, 2008), the acquisition of this property will facilitate this management goal. As stated by the USFWS, "Improving water quality will help restore the biological integrity and environmental health of the Patoka River System and is consistent with the current Service policy". IDEM's letter dated October 8, 2009 (Appendix I) states "The proposed preservation area contains wetlands and other aquatic resources of exceptional value within a highly impacted watershed and the over-all protection and inclusion into the National Wildlife Refuge System will ensure its continued protection."

The consideration of this large forested tract and reclaimed coal mining land of 500 acres with its many water resources is offered in compensation for the remaining 45,550 feet of stream impacts (6 acres) and 6 acres of wetland impacts. The combination of this large mitigation site as given to the Patoka River National Wildlife Refuge is to adequately address 45,550 linear feet (6 acres) of stream impacts and 6 acres of wetland impacts through water resource preservation opportunities. This large tract of land could also fulfill upland forest preservation and restoration; however, INDOT currently has enough mitigation sites within Section 2 of the I-69 project to adequately address the upland forest mitigation commitment of 3:1 replacement; therefore, no upland forest mitigation is proposed at the site. Appendix I includes a 2005 aerial map for this site showing the areas that will be preserved as mitigation for Section 2 of the I-69 project. There are no plantings proposed at this site; therefore, there will be no monitoring on this site. The USFWS will be responsible for the long-term management of this mitigation site as part of the Patoka River National Wildlife Refuge. This mitigation site is considered prime summer habitat (roost trees and foraging) for the Indiana bat.

Site-

This property is located south of CR 150N and is approximately two miles west of SR 57 in Gibson County near the Patoka River. It includes approximately 20 acres, a portion of which is

the old Patoka River Channel (slough). Approximately 5 acres is existing wetland/bottomland woods and 15 acres is agricultural land. This property is located across CR 150 from the property where two lactating female Indiana bats were captured in 1993. These two bats were captured within a ditch (an extension of the slough on the Property) to the Patoka River. A roost tree for the Indiana bat identified in 2004 is not far from this parcel. This land is within the Patoka River National Wildlife Refuge acquisition boundary and is included in the I-69 Sections 2 and 3 Umbrella Mitigation Bank.

Existing wetlands located on and in the vicinity of the Mitigation Site are primarily classified in the National Wetland Inventory (NWI) as palustrine forested wetlands (PFO), with inclusions of palustrine emergent (PEM) and palustrine scrub/shrub (PSS) wetland areas. The mitigation site was designed such that additional palustrine forested and palustrine emergent wetland habitat areas will be created.

The mitigation and monitoring plan for this site includes 12.05 acres of wetland development (11.65 acres forested wetland and 0.40 acre of emergent wetland) and 7.49 acres of existing wetland and bottomland forest habitat preservation. The existing roadway and roadway easement of CR 150N comprises the remaining 0.46 acre of this 20 acre property. The backwater slough of the Patoka River, which comprises approximately 1.71 acres of the mitigation site and currently functions as an emergent wetland, is included as part of the preservation acreage at this site.

Approximately 7.75 acres of the forested wetland will be developed and planted with shellbark hickory, sweet gum, swamp white oak, American elm, and shumard oak. These will be planted as both 3-gallon container grown trees as well as bare root. The shrubs will consist of pale dogwood, common spicebush, and elderberry. These will be bare root shrubs only. The additional 3.90 acres of forested wetland that will be developed will be planted with bald cypress, overcup oak, river birch, pin oak, and swamp chestnut oak. These will be planted as both 3-gallon container grown trees as well as bare root. The shrubs will consist of common buttonbush, common spicebush, and elderberry. These will be bare root shrubs only. The remaining 0.40 acres of wetland development will consists of emergent wetland development. There is also a bat habitat pole that will be erected within this mitigation site to provide additional roosting habitat for the Indiana bat (Appendix S). Appendix J includes the Mitigation and Monitoring Plan and Design plans for this mitigation site.

This property was purchased on October 20, 2008 and will be a part of the Patoka River National Wildlife Refuge and long-term management will be completed by the USFWS. INDOT will be responsible for completion of the short-term monitoring and maintenance of this mitigation site until the site is released from monitoring.

Property-

This property is approximately 17.2 acres and is located north of CR 150N and adjacent to SR 57 to the west in Gibson County. This property is in both the Patoka and Flat Creek maternity colonies. The property is entirely forested. It is surrounded on three sides by the South Fork of the Patoka River which flows into the Patoka River just downstream of the property. NWI mapped wetlands associated with the South Fork cover the majority of the property. The site is within approximately 1.1 miles of a documented Indiana Bat Roost Tree near the river (2004) and is located approximately 0.4 mile from the Patoka River via a flyway along the South Fork. The old Wabash-Erie Canal bed and former aqueduct site are located on the property. The tract includes some large hardwood timber within the palustrine forest and on the old canal. Appendix K includes a 2005 Aerial map, pertinent information, and photos of this mitigation site.

This property has been purchased in conjunction with the Patoka River National Wildlife Refuge. Approximately 15.6 acres will be applied to mitigation for the Section 2 impacts. All 15.6 acres will consist of upland/bottomland forest preservation. This site will be managed long-term by the USFWS as part of the Patoka River National Wildlife Refuge.

Flat Creek Maternity Colony

Property –

This property is located east of SR 57 in Pike County. It includes approximately 224 acres of existing forests with some core forest. All forest mitigation at this site is forest preservation. This property is within the Patoka River National Wildlife Refuge acquisition boundary and within core habitat for copperbelly water snake (*Nerodia erythrogaster neglecta*). Flat Creek flows through the property and into the Patoka River which is south of the parcel. The Patoka River is listed on IDEM's 303(d) List of Impaired Waters for poly-chlorinated biphenyls (PCBs) and Mercury (Hg) and on the Natural Resources Commission (NRC) List of Outstanding Rivers for Indiana. The property is within the Patoka River-Flat Creek Watershed (05120209). Most of the

site is within the 100-year flood plain. Almost the entire site contains mapped NWI forested wetlands. Appendix L includes a 2005 Aerial map, pertinent information, and photos of this mitigation site.

A field review completed August 1, 2007 showed the forested area contained red maple, river birch, pin oak, sweet gum, shagbark hickory, as well as many others. Approximately 20% had a DBH of greater than 18", 30% were between 9" and 18", and 50% were less than 9." Snags identified on this property ranged from 9" to 24" DBH.

All forest mitigation will be forest preservation (224 acres). This site was purchased on December 9, 2008. This site will be donated to the Patoka River National Wildlife Refuge for inclusion in the Refuge and the USFWS will be responsible for long-term management of this site.

Property –

This property consists of two parcels located west (20 acres) and east (4 acres) of Meridian Road in Pike County. It is south of the Patoka River. The western tract is primarily swamp and forested. The eastern parcel is primarily forested. Because this property was purchased by the Patoka River National Wildlife Refuge with funding assistance from INDOT, approximately 4.2 acres of upland/bottomland forest preservation is credited at this site. Appendix M includes a 2005 Aerial map, pertinent information, and photos of this mitigation site.

A field review completed August 22, 2008 showed the 20-acre site contained a few snags, sweet gums, red maples, river birch, and many other tree species, while the 4-acre site contained shagbark hickory, black cherry, and shingle oak. These sites are suitable summer roosting and foraging areas for the Indiana bat and they are located in prime summer habitat. INDOT provided partial funding for the purchase of this property on August 1, 2008. USFWS owns this property and it is a part of the Refuge and the USFWS will be responsible for long-term management of this property.

East Fork White River Maternity Colony

Property-

The Mitigation Site consists of approximately 170.9 acres of existing forests, fallow fields, and agricultural land within the Sandy Hook USGS Quadrangle. The property is within the Lower East Fork White River USGS 8-digit watershed (05120208) and a portion of the site is located within the 100-year floodplain of the East Fork of the White River.

The majority of the 170.9 acre Mitigation Site property has been disturbed through land clearing and agricultural practices. Land use adjacent to the mitigation site includes agricultural fields and woodlots to the west, east and south. The northern boundary of the site is bordered by the East Fork of the White River channel. There is a small amount of residential land adjacent to the site along the southern and eastern boundaries of the site. Existing wetlands are located on and adjacent to the site and are primarily classified in the NWI as PFO. The mitigation site is designed such that additional PFO, PSS, and PEM wetland habitat areas will be created.

The 14.5 acres of existing wetland and riparian forest habitats that occur on the property currently perform functions such as flood storage, retention of sediment particles transported by the East Fork of the White River, water purification, food and cover for wildlife, and groundwater recharge. The proposed functions for the mitigation site will essentially remain the same, but will be expanded in size (i.e., storm water detention via the water control structures) and enhanced in quality for wildlife habitat through diversified woody and herbaceous species plantings, as well as installation of habitat pole structures.

Through minor excavation and grading, an additional 6.8 acres of jurisdictional wetlands will be added to the existing 14.5 acres of wetland, bottomland, and riparian forest habitats. In addition, 1.7 acres (6,049 linear feet) of stream channel development, 13.1 acres of riparian habitat development, and 2,672 linear feet of riparian habitat enhancement along the East Fork of the White River will be developed. A total of 90.4 acres of bottomland, riparian and upland forest habitat (including the 13.1 acres of riparian habitat) will be developed at this mitigation site to mitigate for a portion of the non-wetland forest impacts caused by Section 2. This plan will also preserve 71.6 acres of existing wetland, bottomland, riparian, early succession, and upland forest habitat.

The wooded riparian areas will be planted with American elm, silver maple, cottonwood, sycamore, shellbark hickory, pin oak, swamp white oak, and pecan trees. This will be a mixture of both 3 gallon container grown seedlings and bare root seedlings. The shrubs planted in the wooded riparian areas will be pale dogwood, common spicebush, and elderberry. These will solely consist of bare root plantings. A total of 13.1 acres will be planted with the above species as part of the riparian habitat development. The scrub-shrub wetlands will be planted with buttonbush, common spicebush, elderberry, pale dogwood, ninebark, and indigobush. These will all be bare root. A total of 3.5 acres of scrub-shrub wetlands will be developed and planted. The forested wetland will be planted with pin oak, swamp white oak, pecan, and river birch. This will be a mixture of both 3-gallon container grown seedlings as well as bare root and will encompass 1.4 acres. An additional 1.9 acres of emergent wetlands will be developed and planted with an emergent wetland seed mix.

The bottomland forest will be planted with pin oak, white oak, Shumard oak, pecan, bur oak, shagbark hickory, black walnut, cottonwood, and American elm. These will be planted with solely bare root seedlings. The shrubs within the bottomland forest area will consist of roughleaf dogwood, gray dogwood, common winterberry, ninebark, and nannyberry. These will all be planted as bare root seedlings as well. The bottomland forest will consist of 45.3 acres. The upland forest will be planted with red oak, white oak, tulip tree, and black cherry. The shrubs that will be planted in the upland forest area will be service berry, American hazelnut, and blackhaw. Both the trees and the shrubs in the upland forest area of 31.2 acres will be planted as bare root seedlings. A total of 1.4 acres of forested wetland, 3.5 acres of scrub-shrub wetland, 1.9 acres of emergent wetlands, 1.7 acres of ephemeral stream channels, and 89.6 acres of non-wetland forested habitat development will be completed at this site. In addition, 72.2 acres of existing wetland/riparian/upland habitat will be preserved at this mitigation site and 0.6 acres of this site is within existing easements. A total of 170.3 acres of this mitigation site will be used to mitigate impacts for Section 2 of the I-69 project. A bat habitat pole will be erected within this mitigation site to provide additional roosting habitat for the Indiana bat (Appendix S). This site is included in the I-69 Sections 2 and 3 Umbrella Mitigation Bank. Appendix N includes the Mitigation and Monitoring Plan and Design plans for this mitigation site. INDOT will be responsible for the short-term monitoring and maintenance of this site. INDOT will also be responsible for the long-term management of this mitigation site until an additional party is identified. This site was purchased on November 24, 2008.

Site-

The Mitigation Site consists of approximately 145.9 acres of existing wetland, upland riparian forests and agricultural land. It is located adjacent to the East Fork of the White River in Daviess County and includes a cutoff oxbow of the East Fork of the White River (Horseshoe Pond) that provides a mosaic of open water, emergent wetland and scrub-shrub wetland habitat. Horseshoe pond is spring fed by three natural springs from the hill side to the north. This property is extremely attractive from a wildlife (including beavers) and plant perspective. IDNR (Div. of Nature Preserves) has found a rare orchid located not far from this mitigation site.

The majority of the 145.9 acre Mitigation Site property has been disturbed through land clearing and agricultural practices, excluding the area known as Horseshoe Pond which contains natural woods and wetlands. Land use adjacent to the mitigation site includes agricultural fields to the north, south, and west. The eastern boundary of the site is surrounded by existing bottomland and upland forests. There is a small amount of residential land adjacent to the site in the northeastern corner. In the residential area, there is some Japanese knotweed, an invasive plant. Existing wetlands located on and adjacent to the Mitigation Site are primarily classified in the NWI as PFO, with inclusions of PEM and PSS wetland areas. The mitigation site is designed such that additional PFO and PEM wetland habitat areas will be restored.

The 34.0 acres of existing wetland and bottomland forest habitats that occur on the property currently perform functions such as flood storage, retention of sediment particles transported by the East Fork of the White River, water purification, food and cover for wildlife, and groundwater recharge. The proposed functions for the site will essentially remain the same, but will be expanded in size (i.e., storm water detention via the water control structures) and enhanced in quality for wildlife habitat through diversified woody species plantings and the installation of a bat habitat pole to provide additional roosting habitat for the Indiana bat (Appendix S).

Through minor excavation and grading, an additional area of 8.1 acres of jurisdictional wetlands (5.8 acres of forested wetlands and 2.3 acres of emergent wetlands) will be added to the existing 34.0 acres of wetland and bottomland forest preservation. In addition, 2.0 acres (7,310 linear feet) of stream channel development and 101.8 acres of upland and bottomland forest development (including 17.1 acres of riparian habitat) will be completed at this site. The additional 1.4 acres of this 147.3 acre mitigation site consists of existing easements.

The wooded riparian mitigation areas will be planted with American elm, silver maple, cottonwood, sycamore, shellbark hickory, pin oak, swamp white oak, and pecan trees. This will be a mixture of both 3 gallon container grown seedlings and bare root seedlings. The shrubs planted in the wooded riparian areas will be pale dogwood, common spicebush, and elderberry. These will solely consist of bare root plantings. A total of 17.1 acres will be planted with these species as part of the riparian habitat development. The forested wetland will be planted with pin oak, swamp white oak, pecan, sweetgum, and river birch. This will be a mixture of both 3-gallon container grown seedlings as well as bare root seedlings and will encompass 5.8 acres. The 2.3 acres of emergent wetland development area will be seeded with an emergent wetland seed mix. The bottomland forest will be planted with pin oak, white oak, Shumard oak, pecan, bur oak, shagbark hickory, black walnut, cottonwood, and American elm. These will be planted with bare root seedlings. The shrubs within the bottomland forest area will consist of roughleaf dogwood, gray dogwood, common winterberry, ninebark, and nannyberry. These will all be planted as bare root seedlings as well. The bottomland forest will consist of approximately 58.4 acres. The upland forest will be planted with red oak, white oak, tuliptree, and black cherry. The shrubs that will be planted in the upland forest area will be service berry, American hazelnut, and blackhaw. Both the trees and the shrubs in the upland forest area will be planted as bare root seedlings, and will make up 31.6 acres. This site is included in the I-69 Sections 2 and 3 Umbrella Mitigation Bank. Appendix O includes the Mitigation and Monitoring Plan and Design plans for this mitigation site.

The property was purchased on February 20, 2009. INDOT will be responsible for the short-term monitoring and maintenance of this site. INDOT will also be responsible for the long-term management of this mitigation site until an additional party is identified.

Veale Creek Maternity Colony

Property-

The parcel is located north of CR 250S, approximately 0.75 mile west of SR 257 in Daviess County. The property is comprised of approximately 40 acres of forests, pasture fields and agricultural land. Veale Creek flows through the parcel and is listed on the IDEM's 303(d) List of Impaired Waters for *E. coli*. The creek is associated with a surrounding 100-year floodplain and

several mapped NWI forested wetlands. The entire property is within the Veale Creek-Lower Watershed (05120202). A roost tree is at the edge of this property (Appendix P).

A field review on May 7, 2008 found tree species consisting of American sycamore (*Platanus occidentalis*), flowering dogwood (*Cornus florida*), red maple (*Acer rubrum*), shagbark hickory (*Carya ovata*), black cherry (*Prunus serotina*), sassafras (*Sassafras albidum*) and black walnut (*Juglans nigra*). Approximately 10% of trees had DBHs greater than 18 inches, 40% had DBHs 9 to 18 inches and 50% had DBHs less than 9 inches. Snags were located within the area and ranged from 9 to 16 inches DBH. Other flora consisted of deertongue (*Dichanthelium clandestinum*), henbit (*Lamium amplexicaule*), stinging nettle (*Urtica dioica*), mayapple (*Podophyllum peltatum*), butterweed (*Packera glabella*), tall fescue (*Schedonorus phoenix*), timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), poison ivy (*Toxicodendron radicans*), Japanese honeysuckle (*Lonicera japonica*), great soloman's-seal (*Polygonatum biflorum*), multiflora rose (*Rosa multiflora*) and wild onion (*Allium ascalonicum*).

Proposed plans include approximately 1.8 acres of wetland habitat development, 3,155 linear feet of stream habitat development, 17.8 acres of upland/bottomland forest restoration (including 3.9 acres of riparian habitat), 1.7 acres of herbaceous planting within the existing utility easement, and 18.7 acres of upland/bottomland forest preservation. The goal of this mitigation site is to create a mosaic of wetland, riparian, and bottomland/upland woods habitat within an area where a portion of the property is either being farmed in row crop production or pasture land, providing very little natural habitat value. The emergent wetland mitigation area may be seeded with an emergent wetland seed mix or sedge meadow seed mix, including numerous grass and forbs species. The herbaceous planting within the existing utility easement will consist of a sedge meadow seed mix. The forested wetland mitigation area will be planted with species including, but not limited to, pin oak, Shumard oak, shellbark hickory, sweetgum, American elm, and swamp white oak. The non-wetland bottomland/upland woods reforestation area (including the riparian habitat area) will be planted with pin oak, bur oak, Shumard oak, shellbark hickory, shagbark hickory, black cherry, sugarberry, American elm, silver maple, eastern cottonwood, sycamore and sweetgum. The majority of the species proposed for planting in the non-wetland bottomland/upland forest mitigation area will be selected from the pre-approved IDNR tree list. The success criteria for the tree species planted in this mitigation site is anticipated to include 240 stems per acre of live trees maintained throughout the monitoring period. This mitigation site will be monitored by INDOT for at least 5 years to identify

that the minimum success criteria is being met. The monitoring reports will be provided to the US Fish and Wildlife Service for each monitoring year.

This mitigation site includes additional acreage beyond what is required for mitigation in Section 2 of the project. This excess acreage will be applied to Section 4 or other I-69 Sections in the future. Appendix P includes the Conceptual Mitigation plan map for this site showing the proposed planting zones on a 2005 aerial photograph. INDOT will be responsible for the short-term monitoring and maintenance of this site. INDOT will also be responsible for the long-term management of this mitigation site until an additional party is identified.

INDOT has presented an offer to the landowner to purchase this site; however, the landowner has indicated that they are not interested in selling the property at the presented offer and counter offered INDOT with a substantial increase in price. INDOT is reviewing this offer and will make a final decision on this mitigation site purchase in the near future. INDOT will be the owner and manager of this property.

Property-

The parcel is located near the intersection of CR 250S and CR 125E in Daviess County. The total property is approximately 120 acres including a residential house, farm buildings, forests, pasture fields and agricultural land; however, the parcel is crossed by the I-69 Section 2 corridor and will include a portion of I-69 right-of-way (approximately 19 acres). The remaining acreage (approximately 101 acres) will be used for mitigation purposes. Lower Veale Creek flows through the parcel and is listed on the Indiana Department of Environmental Management's (IDEM) 303(d) List of Impaired Waters for *E. coli*. The creek is associated with a surrounding 100-year floodplain and a small number of National Wetland Inventory (NWI) forested wetlands found on the property. The entire property is within the Veale Creek-Lower Watershed (05120202).

Field reviews of the mitigation site on August 3, 2007 and May 7, 2008 identified tree species consisting of mulberry (*Morus sp*.), flowering dogwood (*Cornus florida*), black locust (*Robinia pseudoacacia*), sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), black cherry (*Prunus serotina*), American elm (*Ulmus americana*), common hackberry (*Celtis occidentalis*), green ash (*Fraxinus pennsylvanica*), black walnut (*Juglans nigra*), pawpaw (*Asimina triloba*), white oak (*Quercus alba*), shagbark hickory (*Carya ovata*), shellbark hickory

(*Carya laciniosa*), sassafras (*Sassafras albidum*), shingle oak (*Quercus imbricaria*) and honeylocust (*Gleditsia triacanthos*). Approximately 10% of trees had DBHs greater than 18 inches, 40% had DBHs 9 to 18 inches and 50% had DBHs less than 9 inches. Snags were located within the area and ranged from 9 to 20 inches DBH. Flora also consisted of deertongue (*Dichanthelium clandestinum*), henbit (*Lamium amplexicaule*), stinging nettle (*Urtica dioica*), mayapple (*Podophyllum peltatum*), butterweed (*Packera glabella*), tall fescue (*Schedonorus phoenix*), timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), eastern poison ivy (*Toxicodendron radicans*), Japanese honeysuckle (*Lonicera japonica*), smooth solomon's-seal (*Polygonatum biflorum*), multiflora rose (*Rosa multiflora*), Virginia creeper (*Parthenocissus quinquefolia*), common blue violet (*Viola papilionacea*), Christmas fern (*Polystichum acrostichoides*), broomsedge bluestem (*Andropogon virginicus*) and wild onion (*Allium ascalonicum*).

The conceptual plan for the mitigation site includes approximately 4.0 acres of forested wetland habitat development, 1.5 acres of emergent wetland development, 85.5 acres of bottomland and upland forest habitat development (including 20.8 acres of riparian habitat development), 3.3 acres of herbaceous plantings within the existing utility easement, 10,485 linear feet of stream credit and 6.7 acres of forest preservation. There is also a portion of this property that is within the Preferred Alternative of Section 2 of the I-69 project. Approximately 19 acres of this site will be used for right-of-way for the new road project. A total of 101 acres of this 120 acre property will be used to mitigate for the I-69 project. This mitigation site includes additional acreage beyond what is required for mitigation in Section 2 of the project. This excess mitigation acreage will be applied to Section 4 or other I-69 Sections in the future.

The goal of this mitigation site is to create a mosaic of wetland, riparian, and bottomland/upland woods habitat within an area where a large portion of the property is either being farmed in row crop production or pasture land, which has very little natural habitat. The emergent wetland mitigation area may be seeded with an appropriate emergent wetland seed mix or sedge meadow seed mix, including numerous grass and forbs species. The forested wetland mitigation area will be seeded with, but not limited to, pin oak, swamp white oak, pecan, sweetgum, and river birch. The non-wetland bottomland/upland woods reforestation area (including 20.8 acres of riparian habitat area) will be planted with appropriate trees including, but not limited to, sycamore, American elm, eastern cottonwood, silver maple, red oak, white oak, black walnut, pin oak, bur oak, Shumard oak, shellbark hickory, shagbark hickory, sugarberry,

and sweetgum. The majority of the species proposed for planting in the non-wetland bottomland/upland forest mitigation area will be selected from the pre-approved IDNR tree list. The herbaceous seeding within the utility easement will be seeded with a sedge meadow seed mix. The success criteria for the tree species planted in this mitigation site is anticipated to include 240 stems per acre of live trees maintained throughout the monitoring period. This mitigation site will be monitored by INDOT for at least 5 years to identify that the minimum success criteria is being met. The monitoring reports will be provided to the US Fish and Wildlife Service for each monitoring year. Appendix Q includes the Conceptual Mitigation plan map for this site showing the planting zones on a 2005 aerial photograph.

A portion of this property is within the Section 2 Preferred Alternative right-of-way that includes the house and associated farm buildings. INDOT cannot provide relocation costs for the relocation of this resident and farm as part of the mitigation acquisition; therefore, this site will not be able to be purchased until after the Record of Decision for the I-69 Section 2 roadway project is complete. INDOT will be responsible for the short-term monitoring and maintenance of this site. INDOT will also be responsible for the long-term management of this mitigation site until an additional party is identified.

Property-

The Site is a single forested parcel of land approximately 17 acres in size, located approximately 550 feet east of SR 257 between CR 150S and CR 200S in Daviess County. There is a utility easement that is located diagonally across this parcel.

The goal of this mitigation site is to preserve riparian and bottomland/upland woods habitat. Proposed plans include preservation of the 17 acre property in its existing condition. No road work, excavation, or grading is anticipated to be a part of this project. The property consists of 14 acres of forests split by an approximate 3 acre utility easement. The proposed I-69 Section 2 Preferred Alternative is located approximately 1,000 feet northwest of the property. The utility easement will remain in its current location. The 14 acres of forest in this parcel will be used for mitigation purposes. There were 2 Indiana bat roost trees identified on this property from the 2004 I-69 bat studies. Both of these trees were identified as secondary roost trees. There are also 3 additional Indiana bat roost trees located within 0.1 mile of this property one of which was identified as a primary roost tree and the other 2 were secondary roost trees.

The property is predominantly forest and grassland within the utility easement area. Surrounding land use consists of agricultural land and wooded areas. Veale Creek flows around and through the parcel and is listed on the IDEM' 303(d) List of Impaired Waters for *E. coli*. The creek is associated with a surrounding 100-year floodplain and numerous NWI forested and emergent wetlands. The entire property is within the Veale Creek Watershed (05120202). No work inside the Veale Creek channel will be a part of this mitigation project.

A field review on May 7, 2008 found tree species consisting of red maple (*Acer rubrum*), river birch (*Betula nigra*), mulberry (*Morus sp.*), sweet gum (*Liquidambar styraciflua*), black locust (*Robinia pseudoacacia*), shellbark hickory (*Carya laciniosa*), American beech (*Fagus grandifolia*), shagbark hickory (*Carya ovata)*, American sycamore (*Platanus occidentalis*), American elm (*Ulmus americana*), common hackberry (*Celtis occidentalis*) and black walnut (*Juglans nigra*). Approximately 20% of trees had DBHs greater than 18 inches, 40% had DBHs 9 to 18 inches and 40% had DBHs less than 9 inches. Snags were located within the area and ranged from 9 to 22 inches DBH. Flora also consisted of henbit (*Lamium amplexicaule*), stinging nettle (*Urtica dioica*), mayapple (*Podophyllum peltatum*), butterweed (*Packera glabella*), tall fescue (*Schedonorus phoenix*), timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), poison ivy (*Toxicodendron radicans*), Water knotweed (*Polygonum amphibium*), smooth soloman's-seal (*Polygonatum biflorum*), multiflora rose (*Rosa multiflora*), Virginia creeper (*Parthenocissus quinquefolia*), common blue violet (*Viola papilionacea*), Christmas fern (*Polystichum acrostichoides*), broomsedge bluestem (*Andropogon virginicus*), reed canarygrass (*Phalaris arundinacea*), sweetflag (*Acorus americanus*) and wild onion (*Allium canadense*). Appendix R includes a 2005 Aerial map, pertinent information, and photos of this mitigation site.

INDOT is currently getting the funding in place to present the offer to the landowner. This property will be purchased in the near future. No monitoring will be required for this site. INDOT will be responsible for the long-term management of this mitigation site until an additional party is identified.

Conservation Measures

All conservation measures reported in the Revised Tier 1 BO dated August 24, 2006 (pgs 16-23) will be carried out as written. The discussion below highlights any further status change in these measures since the BO publication or measures that do not apply to this section and will not be completed.

No winter habitat or autumn/spring habitat is present in Section 2. Therefore, all measures regarding these habitats will not apply to this section. Winter and autumn/spring habitat measures that will not apply to this section include A1, A3-A5, A11, A13b, A13g, C1-C3, and D1-D4.

Further conservation measure status changes are as follows:

A2 – Blasting – The roadway will be on fill, at or above the existing ground elevation, along most of its length through Section 2. Therefore, the need for heavy blasting is not anticipated to be necessary to build this project in Section 2. If blasting is required, it would be performed in accordance with the INDOT *Standard Specifications* for roadway construction.

A7a- Tree Removal – On February 14, 2008, the USFWS BFO provided revised tree clearing restriction dates of April 1 to September 30. All tree clearing restrictions dates have been updated from April 15 – September 15 to April 1 – September 30.

A8b - Bat Friendly Bridges – This will be further evaluated in consultation with USFWS. Due to concerns relative to attracting bats to the high-speed interstate facility, it is currently proposed to not include any bat friendly bridges on I-69.

A8c – Floodplains – Where reasonable and appropriate, floodplains and oxbows will be bridged to protect environmentally sensitive areas. The Patoka River floodplain and Flat Creek will be bridged in their entirety, thus minimizing impacts to many different habitats.

A10 – Medians and Alignments - No locations where the use of variable-width medians or independent alignments would be beneficial to minimize impacts have been identified in Section 2.

A13b – Roadside Drainage – Best Management Practices will be used to prevent non-point source pollution, to control stormwater runoff, and to minimize sediment damage to water quality and aquatic habitats, INDOT *Standard Specifications and Special Provisions* will govern construction activities to control erosion and subsequent water pollution.

Stormwater runoff from the bridge crossing the Patoka River floodplain will be collected and channeled towards the ends of the bridge, where it would then be adequately treated to remove sediment and any other pollutants before being allowed to enter the Patoka River NWR. Further analysis of the collection system will be developed in detail during final design.[27]

A13d – Spill Prevention / Containment - Special measures including diversions of highway runoff from direct discharge off of bridge decks into streams, and containment basins to detain accidental spills, will be incorporated into final design plans for perennial streams within the Indiana bat maternity colony areas to address water quality concerns associated with Indiana bats. This will include the bridges crossing Hurricane Creek, Patoka River, including the South

[27] Section 2 Tier 2 Revised DEIS, Section 5.19.2.4 "Mitigation". Pg.5-335

Fork, Flat Creek, Mud Creek, East Fork of the White River, Jackson Pond tributary, Veale Creek, and Hurricane Branch of Veale Creek.

During the construction of I-69, any spill incidents on site will be handled in accordance with INDOT spill response protocol, as outlined in their *Construction Activity Environmental Manual* and *Field Operations Manual Procedure 20*. The manual states that:

> *Hazardous material releases, oil spills, fish/animal kills and radiological incidents must be reported to Office of Emergency Response, IDEM. This should occur as soon as action has been taken to either contain or control the extent of the release and protect persons, animals or fish from harm or further harm. Appropriate response actions for spills occurring on project sites follow, in order:*
>
> 1. *Identify the spilled material from a safe distance,*
> 2. *Contain the spilled material or block/restrict its flow using absorbent booms/pillow, dirt, sand or by other available means,*
> 3. *Cordon off the area of the spill,*
> 4. *Deny entry to the cordoned off area to all but response personnel, and*
> 5. *Contact OER/IDEM then Operations Support.*

Following construction of I-69, emergency spill response for hazardous materials transported on the highway will be handled by local fire departments and regional hazardous materials units coordinated through deputy state fire marshals in Bloomington and Terre Haute. Currently, law enforcement and nearly all fire departments within the Study Area possess either awareness level or operations level capabilities for responding to hazardous material spills or releases. Awareness level includes the recognition of hazardous material placards and the means to cordon off an incident site. Operations level includes booms for diking spills, personal protection equipment to work within contaminated sites, and other basic containment equipment. If called upon, INDOT state highway equipment and resources can also be deployed to assist in containment anywhere along the proposed Interstate facility.

Indiana's State Emergency Commission has established eleven Regional Response Teams throughout the state, each of which will have full Level A hazardous materials response capabilities. Currently, the hazardous materials unit of the Evansville Fire Department is the regional unit with Level A capabilities for the general area containing the Section 2 corridor. Vincennes, Terre Haute, Bloomington Township, and Marion County/Indianapolis area are the other regional units with level A capabilities within the overall I-69 project vicinity. The Crane NWSC has Level A hazardous materials capabilities for spill response at the base. The I-69 project will allow faster emergency response to incidents in many parts of the counties to be served by the new highway.[28]

A13e – Herbicide Use Plan - The use of herbicides will be minimized in environmentally sensitive areas including the Patoka River National Wildlife Refuge, Flat Creek, Prides Creek and the East Fork of the White River.

A13f – Revegetation - Revegetation of disturbed areas will occur in accordance with INDOT standard specifications. Woody vegetation will only be used a reasonable distance beyond the clear zone to ensure a safe facility. Revegetation of disturbed soils in the right-of-way and

[28] Section 2 Tier 2 Revised DEIS, Section 5.19.2.4 "Mitigation". Pg.5-335-5-336

medians will utilize native grasses and wildflowers as appropriate, such as those cultivated through INDOT's Roadside Heritage program. Locations currently identified include some areas within the interchanges at SR61/56, North Pike, South Daviess and US50.

A14 – Erosion Control – BMPs will be used in the construction of this project to minimize impacts of erosion. Erosion control measures will be put in place as a first step in construction and maintained throughout construction. Temporary erosion control devices, such as silt fencing, check dams, sediment basins, inlet protection, sodding, and other appropriate BMPs will be used to minimize sediment and debris in tributaries within the project area. Timely revegetation will be implemented after soil disturbance and monitored. Any riprap used will be of a large diameter in order to allow space for habitat for aquatic species after placement. Parking and turning areas for heavy equipment located outside the construction limits, but within the right-of-way, will be located prior to construction to minimize soil erosion.

Slopes will be designed that resist erosion. If slopes exceed 2 to 1, they will include stabilization techniques. Soil bioengineering techniques for bank stabilization will be considered where situations allow.

B1, C4 – Summer Habitat Creation / Enhancement and Preservation – Actions related to this measure are further described in the "Mitigation Focus Areas" and "Specific Mitigation Areas" sections of this document.

D8 – Access to the Patoka NWR – Interchanges in the vicinity of the Patoka River National Wildlife Refuge will include signage directing motorists to the Refuge. The nearest interchanges to the Patoka River National Wildlife Refuge will be along SR 64, west of Oakland City and along SR 61 south of Petersburg.

Training and Communication

Environmentally sensitive locations (e.g., wetlands, historic structures, and archaeology sites) in the general area will be clearly shown on construction plans. Sites within the right-of-way will be delineated. These sites will not be permitted for use as staging areas, borrow, or waste sites.[29]

All I-69 engineering supervisors, equipment operators, and other construction personnel and INDOT maintenance staff will attend a mandatory environmental awareness training that discloses where known sensitive Indiana bat and bald eagle sites are located in the project area, addresses any other concerns regarding these species, and presents a protocol for reporting the presence of any live, injured, or dead bats and eagles observed or found within or near the construction limits or right-of-way during construction, operation, and maintenance of I-69.

[29] Section 2 Tier 2 Revised DEIS, Section 7.3.4 "Mitigation Measures and Commitments, Construction" p 7-16

I-69 Community Planning Program

The Section 2 Revised Tier 2 DEIS discusses the I-69 Community Planning Program on pages 7-7 through 7-8:

> The I-69 Community Planning Program will set in place a regional strategy for providing resources to local communities to manage the growth and economic development associated with I-69. The program will provide grants for local communities (cities, towns, and counties) to prepare plans to manage potential new developments along with the I-69 corridor. The local communities could use these grants to prepare transportation land use plans, zoning and subdivision ordinances, and special highway corridor "overlay zones" for development. The total cost of this program is budgeted at $2 million. The program has the following objectives:
>
> - Develop regional strategies and resources to allow communities to achieve their desired vision of how that community will develop in the future;
> - Provide resources to establish a local planning process for communities to develop a desired future plan;
> - Develop growth management procedures to control development in accordance with local plans;
> - Develop economic development strategies consistent with the communities' plans;
> - Provide resources for local communities to implement growth management to achieve their plans; and
> - Develop protective strategies for environmentally sensitive areas, e.g., in the vicinity of the Patoka River Wildlife Refuge, and karst-related features (caves, sinkholes, sinking stream basins, springs, and others).
>
> The I-69 Community Planning Program is a two-phase effort:
>
> - **Phase 1** is a regional planning assessment and development of regional planning strategies and resources for the entire I-69 corridor impact area. It includes establishing partnerships, inventories, review of regulations and legislation, identification of needs, preparation of processes and models, identification of environmentally sensitive areas, farmland protection strategies, workshops, and providing technical planning support.
> - **Phase 2** will provide for the actual grants to local communities for the preparation of local plans and growth management ordinances. It will include public involvement activities, planning framework and corridor land use planning, economic development strategies, model planning ordinances, and developing a plan implementation program. [30]

[30] Section 2 Tier 2 Revised DEIS, Section 2, Section 7.3.1 "Mitigation Measures and Commitments: Land Use" p7-12

The current statuses of the planning efforts in Section 2 are as follows:

- Oakland City – The City Council of Oakland City formed an Advisory Plan Commission which adopted the Oakland City Comprehensive Plan on August 17, 2009. The City Council adopted the plan by resolution on August 25, 2009.
- Gibson County – The Gibson County Commissioners will make a motion to accept the Gibson County Comprehensive Plan on November 17, 2009.
- Petersburg – The Petersburg Plan Commission adopted the Petersburg Comprehensive Plan on March 10, 2009. The City Council adopted the plan by resolution on March 16, 2009.
- Pike County – The Pike County Plan Commission adopted the Pike County Comprehensive Plan on March 12, 2009. The County Commissioners adopted the plan by resolution on April 6, 2009.
- Washington – The Washington Plan Commission adopted the Washington Comprehensive Plan on June 10, 2009. The City Council adopted the plan by resolution on June 22, 2009.
- Daviess County – The Daviess County Commissioners created an Advisory Plan Commission which adopted the Daviess County Comprehensive Plan on November 2, 2009. The public hearing is scheduled for November 23, 2009.
- Dubois County – Although not mentioned previously, Dubois County located due east of Section 2 of this project was also awarded a planning grant. The Dubois County Commissioners passed a motion to accept the Dubois County Comprehensive Plan on November 2, 2009.

LITERATURE CITED

3D/International Inc. 1995. Environmental technical report: 1995 field studies for interim Indiana bat habitat mitigation at the Indianapolis International Airport in Marion County, Indiana. 23 pp. plus appendices.

Gardner, J.E., J.D. Garner, and J.E. Hoffmann. 1991. Summer Roost Selection and roosting behavior of *Myotis Sodalis* (Indiana Bat) in Illinois. Final Report. Illinois Natural History Survey and Illinois Department of Conservation, Campaign, IL. 56 pp.

Pruitt, L., S. Pruitt, and M. Litwin. 1995. Summary of Jefferson Proving Ground bat survey: 1993-1995. Report submitted to the United States Fish and Wildlife Service, Bloomington, Indiana.

US Department of Transportation Federal Highway Administration and Indiana Department of Transportation. 2009. I-69 Evansville to Indianapolis, Indiana Revised Tier 2 Draft Environmental Impact Statement Section 2: Oakland City to Washington.

APPENDIX A

SECTION 2 FOREST TRANSECTS

DATA SHEETS

I-69 Section 2 Tier 2 BA Line Transect

Investigators: BV, JD, SH, JS
Date: 08-07-07 Time: 11:24 am Length: 460 within alignment/ 430 outside alignment
Transect ID#: 1
Location Information:
County: Daviess UTM North: 4,276,910 UTM East: 489,227
Quadrangle: Montgomery Township: T3N Range: R6W Section: 31

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
10", 12", 14"		10"	30"

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
green ash, pignut hickory, sycamore, pin oak, black locust, honey locust, river birch, shagbark hickory, overcup oak, hackberry			bitternut hickory, shagbark hickory, black cherry, hackberry, bur oak, river birch, green ash, pignut hickory, pin oak		
General Size Class			General Size Class		
<9" 30%	9-18" 60%	>18" 10%	<9" 50%	9-18" 30%	>18" 20%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
X			X		
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore 16" black cherry 10", 16" river Birch 9", 9", 9", 9", 9", 9", 9", 9", 9", 9", 9", 9", 10", 10", 12", 12", 12", 12", 14" shagbark hickory 12", 12", 12", 12", 14", 15"	black cherry 12", 20", 20", 34" river birch 9", 9", 9", 9", 9", 9", 9", 9", 10", 10", 12" shagbark hickory 10", 11", 16"

Photographs and Aerial Map Showing Transect Location on back

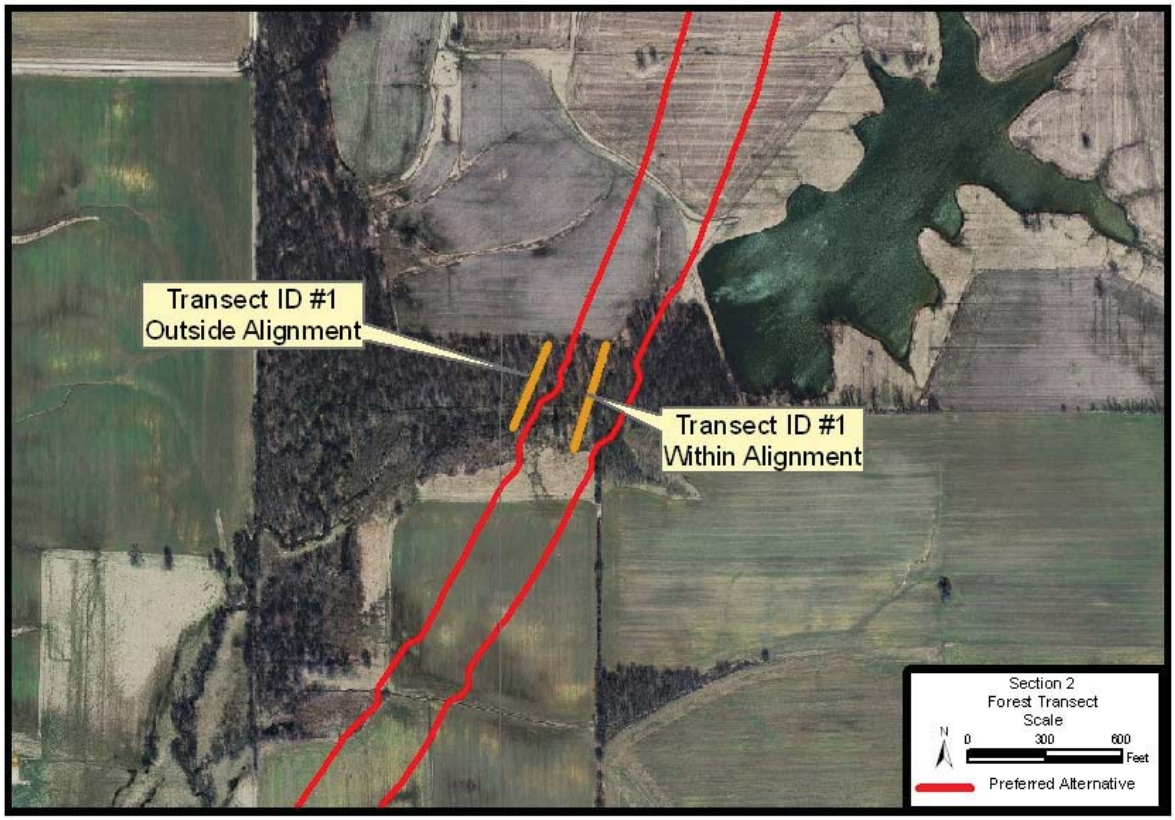


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: BV, JD, SH, JS
Date: 08-07-07 Time: 2:10 pm Length: 265 ft. within alignment/ 220 ft. outside alignment
Transect ID#: 2
Location Information:
County: Daviess UTM North: 4,274,918 UTM East: 486,768
Quadrangle: Sandy Hook Township: T2N Range: R7W Section: 11

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9", 9", 18"	26"	17"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
sycamore, green ash, tulip poplar, American elm, American beech, river birch, sugar maple, black willow			black willow, American beech, tulip poplar, black cherry, sycamore		
General Size Class			General Size Class		
<9" 50%	9-18" 40%	>18" 10%	<9" 70%	9-18" 20%	>18" 10%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives Japanese honeysuckle			Sub-canopy Invasives Japanese honeysuckle, bush honeysuckle		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore 10", 16", 18", 24" black cherry 12" river Birch 9", 10", 10", 10", 11", 11", 12", 12", 12", 12", 14", 14", 14", 15", 16", 16", 16", 18", 20", 20" black willow 9", 9"	sycamore 9" black cherry 10", 10", 12" river birch 9", 12" black willow 10", 10", 10", 10", 12"

Photographs and Aerial Map Showing Transect Location on back

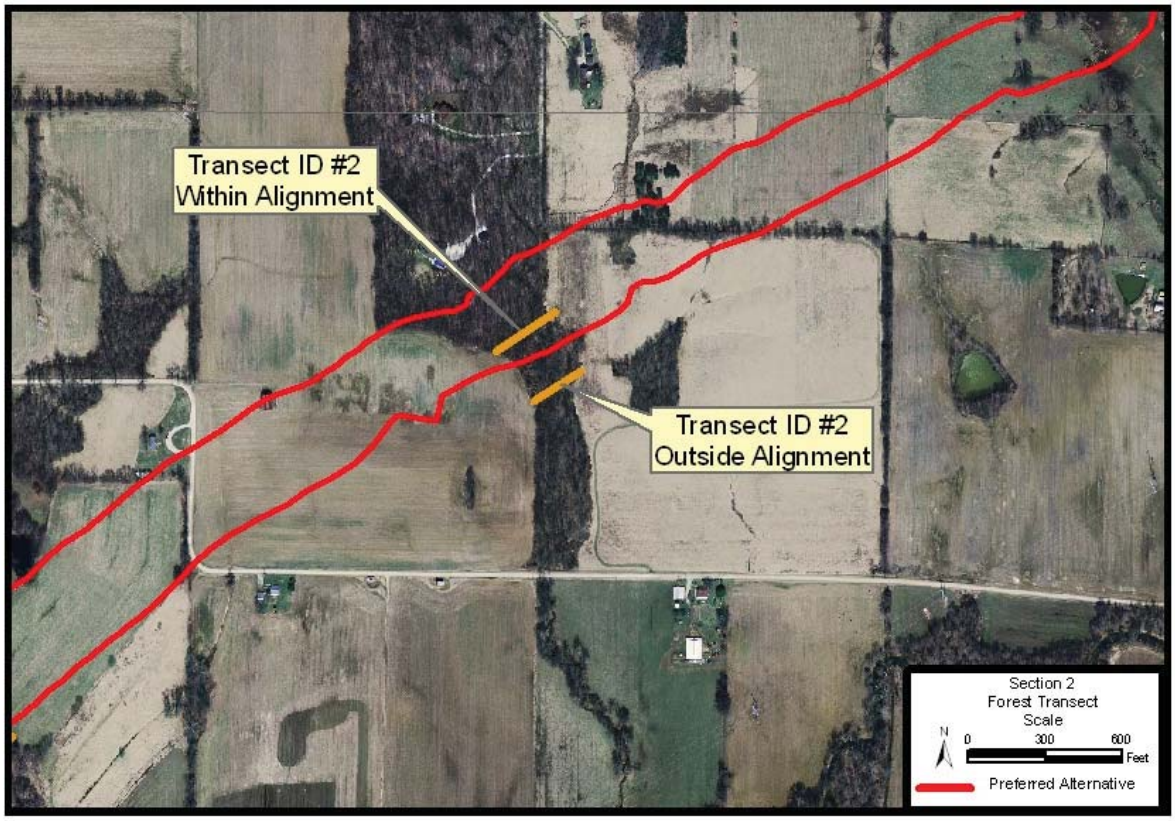


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: BV, JD, SH, JS
Date: 08-07-07 Time: 3:15 pm Length: 640 ft within alignment/ 890 ft outside alignment
Transect ID#: 3
Location Information:
County: Daviess UTM North: 4,274,625 UTM East: 486,362
Quadrangle: Sandy Hook Township: T2N Range: R7W Section: 11

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
10"	22"		22"

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
bitternut hickory, green ash, American elm, honey locust, sycamore, shumard oak, black cherry, black locust, sugar maple, tulip poplar			pin oak, red maple, bur oak, green ash, black cherry, tulip poplar, black locust		
General Size Class			General Size Class		
<9" 50%	9-18" 40%	>18" 10%	<9" 50%	9-18" 40%	>18" 10%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore 14", 16", 16" black cherry 12", 12", 14"	black cherry 10", 12" red maple 14", 14", 16", 18", 20", 21", 24", 24", 25", 36"

Photographs and Aerial Map Showing Transect Location on back

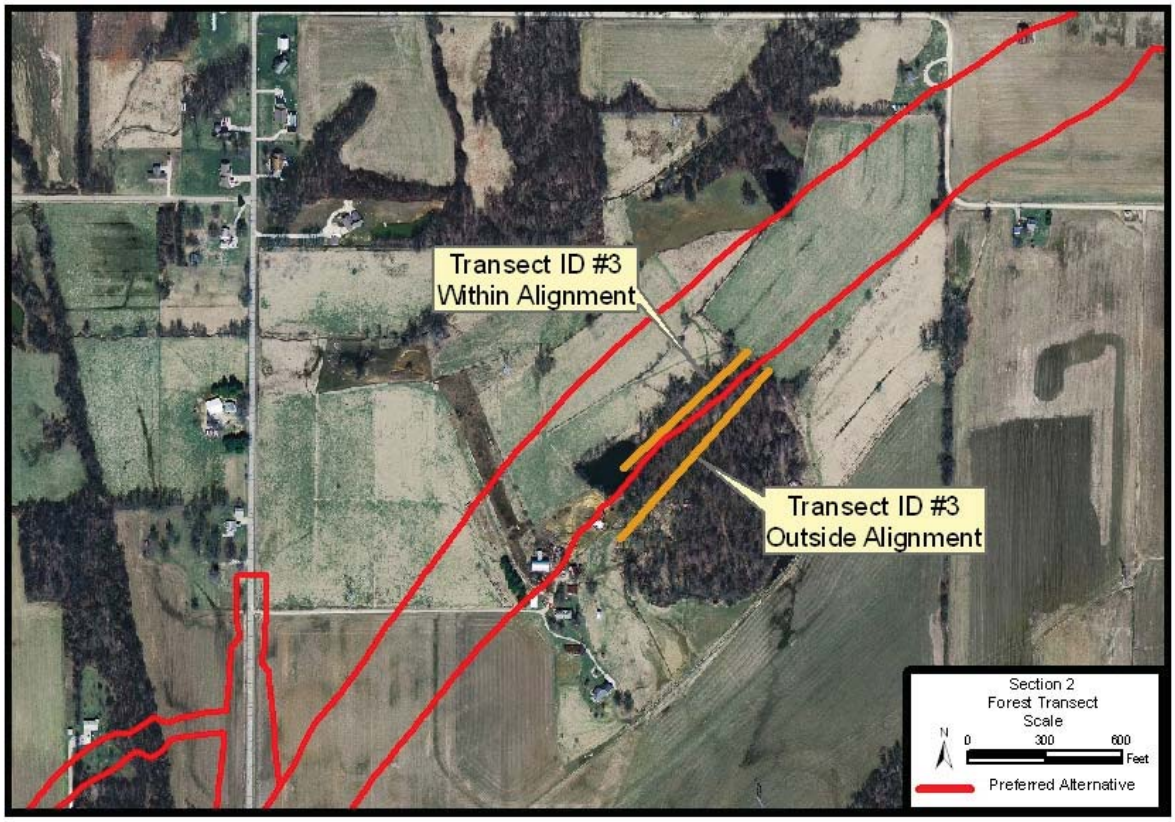


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: BV, JD, SH, JS
Date: 08-07-07 Time: 5:00 pm Length: 420 within alignment/ 190 outside alignment
Transect ID#: 4
Location Information:
County: Daviess UTM North: 4,273,053 UTM East: 485,096
Quadrangle: Sandy Hook Township: T2N Range: R7W Section: 15

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9", 13", 18"	20", 32", 34"	12", 14"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
sweet gum, northern red oak, sassafras, black cherry, black walnut, bur oak, scarlet oak, American elm, green ash, silver maple			black walnut, sycamore, American elm, silver maple, green ash, pignut hickory		
General Size Class			General Size Class		
<9" 60%	9-18" 30%	>18" 10%	<9" 30%	9-18" 60%	>18" 10%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X		X		
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
black cherry 9"	sycamore 10", 18"

Photographs and Aerial Map Showing Transect Location on back

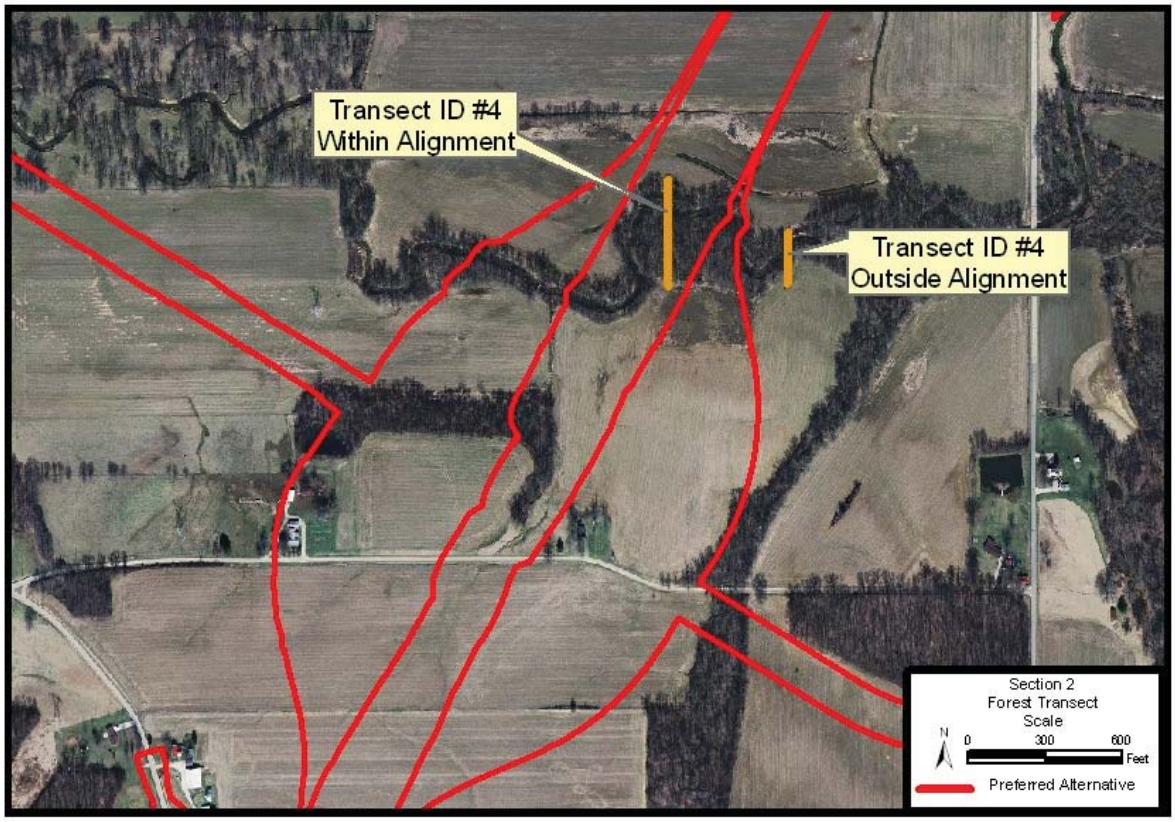


Photo taken within alignment showing forest

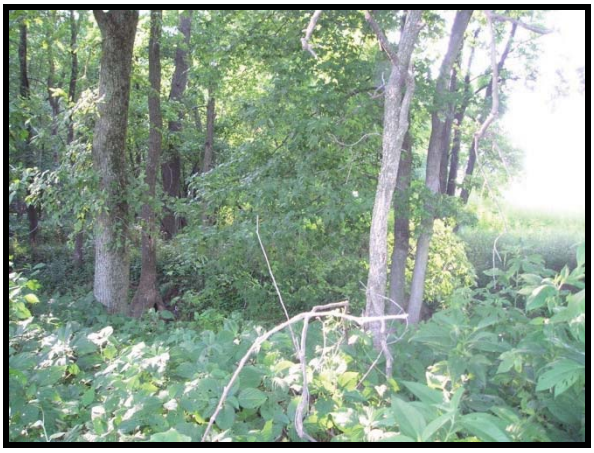


Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: BV, JD, SH, JS
Date: 08-07-07 Time: 6:00 pm Length: 780 ft within alignment/ 510 ft outside alignment
Transect ID#: 5
Location Information:
County: Daviess UTM North: 4,271,363 UTM East: 483,865
Quadrangle: Sandy Hook Township: T2N Range: R7W Section: 21/22

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
10", 10", 11", 12", 12", 13", 13", 14", 14", 14", 14", 17", 18", 18", 18"	19", 22"	12", 14", 15", 16", 18"	20", 21", 24"

Upper Canopy Dominant Tree Species						
Transect Within Alignment			**Transect Outside Alignment**		
Black walnut, American elm, red maple, sugar maple, white oak, cottonwood, shagbark hickory, sycamore			sycamore, shagbark hickory, persimmon, sugar maple, red maple, American beech, white oak, hackberry, pawpaw		
General Size Class			General Size Class		
<9" 30%	9-18" 50%	>18" 20%	<9" 0%	9-18" 60%	>18" 40%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X		X		
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore 24", 26", 40" shagbark hickory 10", 10", 14", 15",16", 16", 16", 17", 19", 20", 20", 20", 20" red maple 24"	sycamore 15" shagbark hickory 9", 9", 13", 14", 16", 16", 16", 16", 17", 20" red maple 20", 26"

Photographs and Aerial Map Showing Transect Location on back

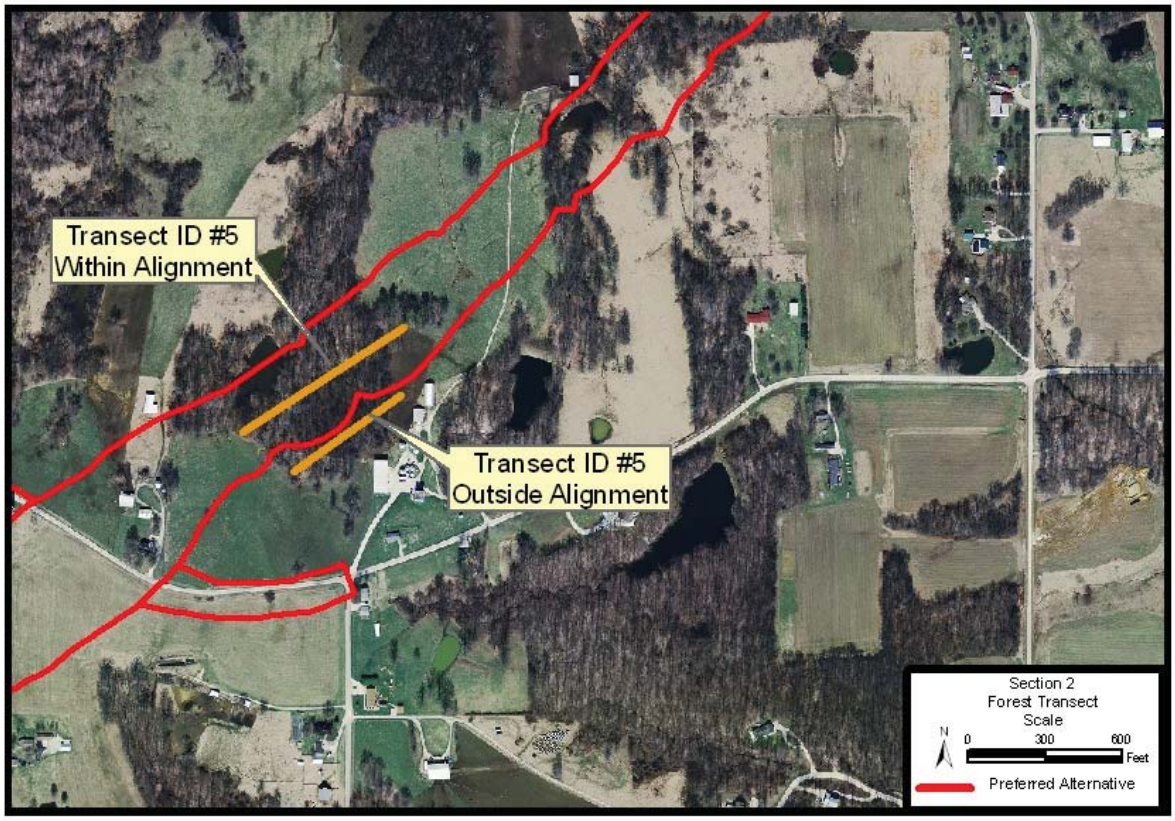


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JD, SH, JS
Date: 08-08-07 Time: 9:15 am Length: 600 ft within alignment/ 840 ft outside alignment
Transect ID#: 6
Location Information:
County: Daviess UTM North: 4,271,358 UTM East: 483,078
Quadrangle: Sandy Hook Township: T2N Range: R7W Section: 21

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9", 9", 9", 12", 14", 14", 16"		9", 12"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
sugar maple, white oak, pignut hickory, silver maple, American beech, tulip poplar, black cherry, osage orange, sycamore			sassafras, American elm, black walnut, bur oak, osage orange, sugar maple, tulip poplar, persimmon		
General Size Class			General Size Class		
<9" 30%	9-18" 60%	>18" 10%	<9" 70%	9-18" 20%	>18" 10%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
X				X	
Sub-canopy Invasives Japanese honeysuckle			Sub-canopy Invasives Japanese honeysuckle		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore 36" shagbark hickory 9", 10", 15" red maple 17", 18" black cherry 11", 13", 16", 22"	black cherry 11",12"

Photographs and Aerial Map Showing Transect Location on back

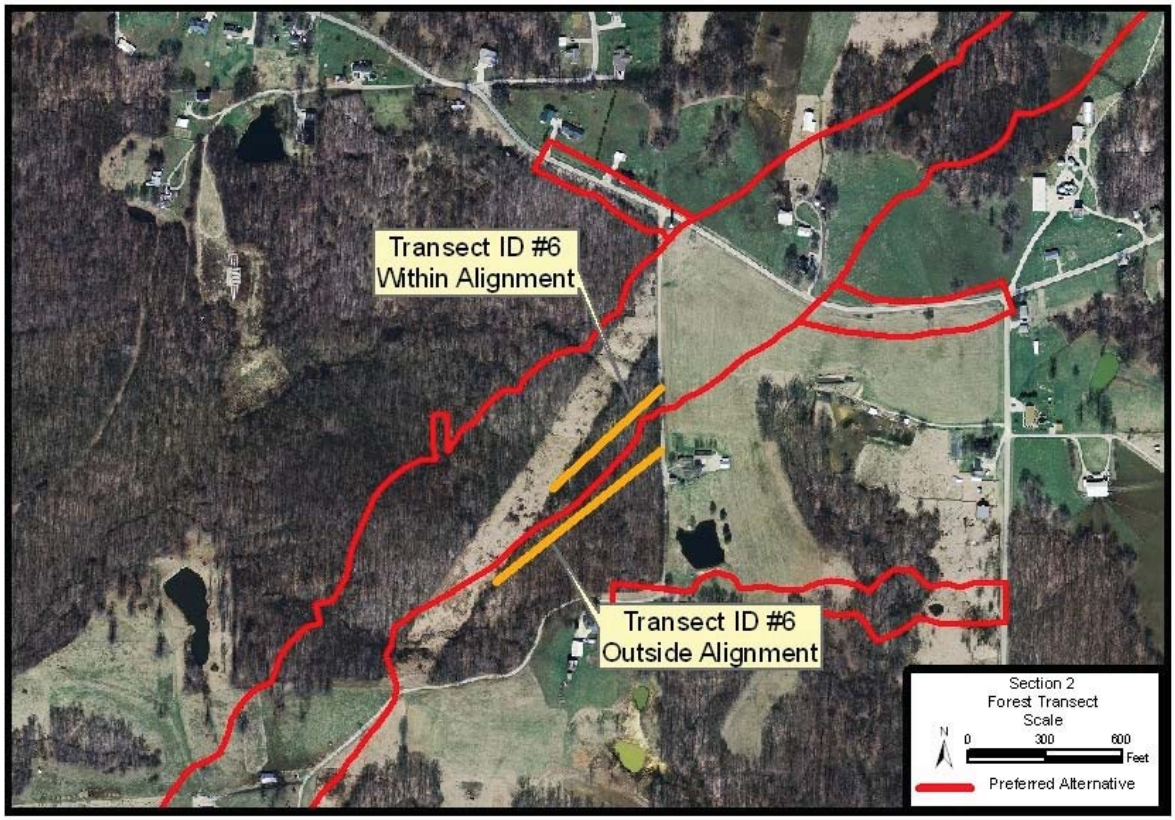


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JD, SH, JS
Date: 08-08-07 Time: 10:15 am Length: 2,175 ft within alignment/ 2,330 ft outside alignment
Transect ID#: 7
Location Information:
County: Daviess UTM North: 4,270,953 UTM East: 483,313
Quadrangle: Sandy Hook Township: T2N Range: R7W Section: 21

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
12", 14", 14", 14", 17", 18"	21"	9", 10", 12", 12"	20"

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
red maple, silver maple, persimmon, tulip poplar, pin oak, sassafras, black cherry, white oak, pignut hickory, shagbark hickory, American beech, sycamore			sassafras, American elm, tulip poplar, sugar maple, American beech, black cherry, southern red oak		
General Size Class			General Size Class		
<9" 40%	9-18" 35%	>18" 25%	<9" 60%	9-18" 30%	>18" 10%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X				X
Sub-canopy Invasives Japanese honeysuckle			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
black cherry 9", 10", 10", 10", 12", 12", 12", 12", 14", 14", 14", 18" shagbark hickory 9", 12", 16", 17" red maple 16", 17", 18", 18", 18", 28" sycamore 14", 17"	black cherry 9", 9", 10", 10", 10", 12", 12", 12", 12", 14", 18", 21" shagbark hickory 11", 14", 16", 18", 18" red maple 22", 27", 30", 32", 34" sycamore 9", 9", 17, 18", 18", 21", 21", 21", 22", 24", 25"

Photographs and Aerial Map Showing Transect Location on back

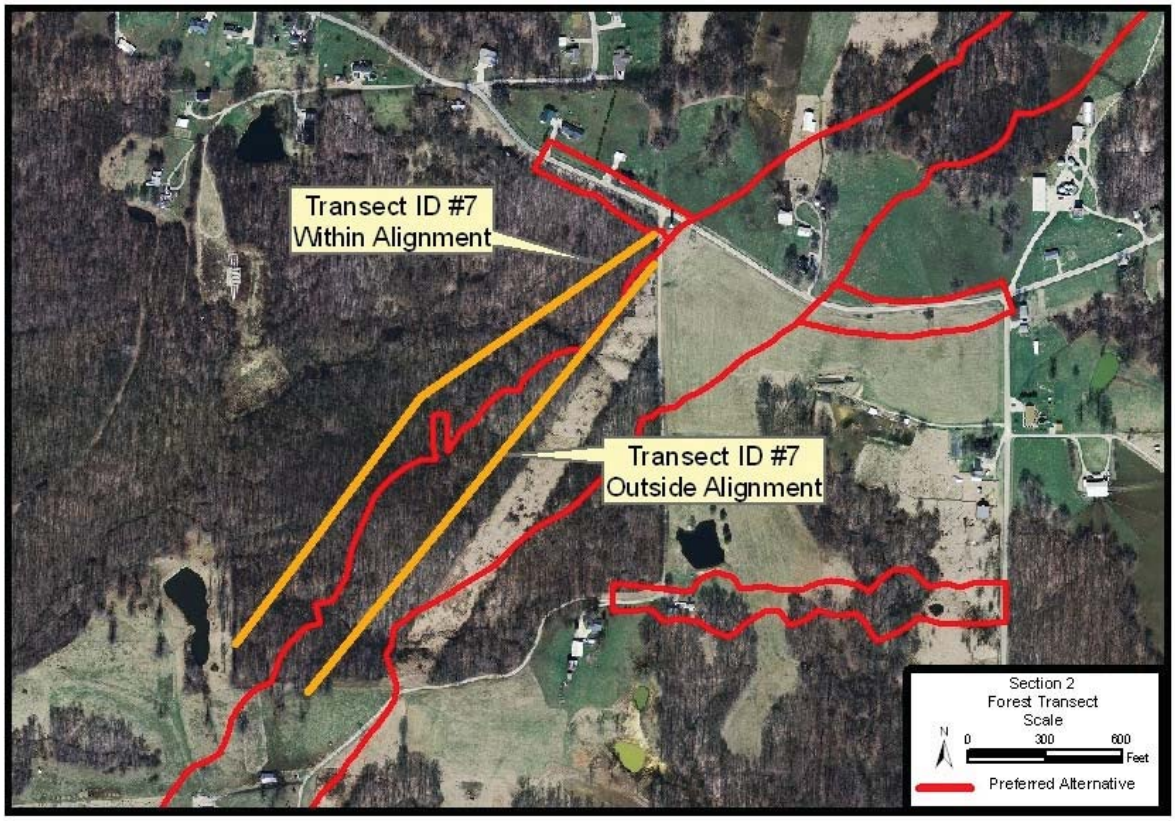


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JD, SH, JS
Date: 08-08-07 Time: 2:45 pm Length: 550 ft within alignment/ 650 ft outside alignment
Transect ID#: 8
Location Information:
County: Daviess UTM North: 4,268,094 UTM East: 483,052
Quadrangle: Sandy Hook Township: T2N Range: R7W Section: 33

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
	34"	10", 13", 16", 18"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
sweet gum, swamp white oak, American elm, pin oak, silver maple, hackberry, chinkapin oak			hackberry, silver maple, chinkapin oak, swamp white oak, sweet gum		
General Size Class			General Size Class		
<9" 70%	9-18" 25%	>18" 5%	<9" 50%	9-18" 40%	>18" 10%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**

Photographs and Aerial Map Showing Transect Location on back

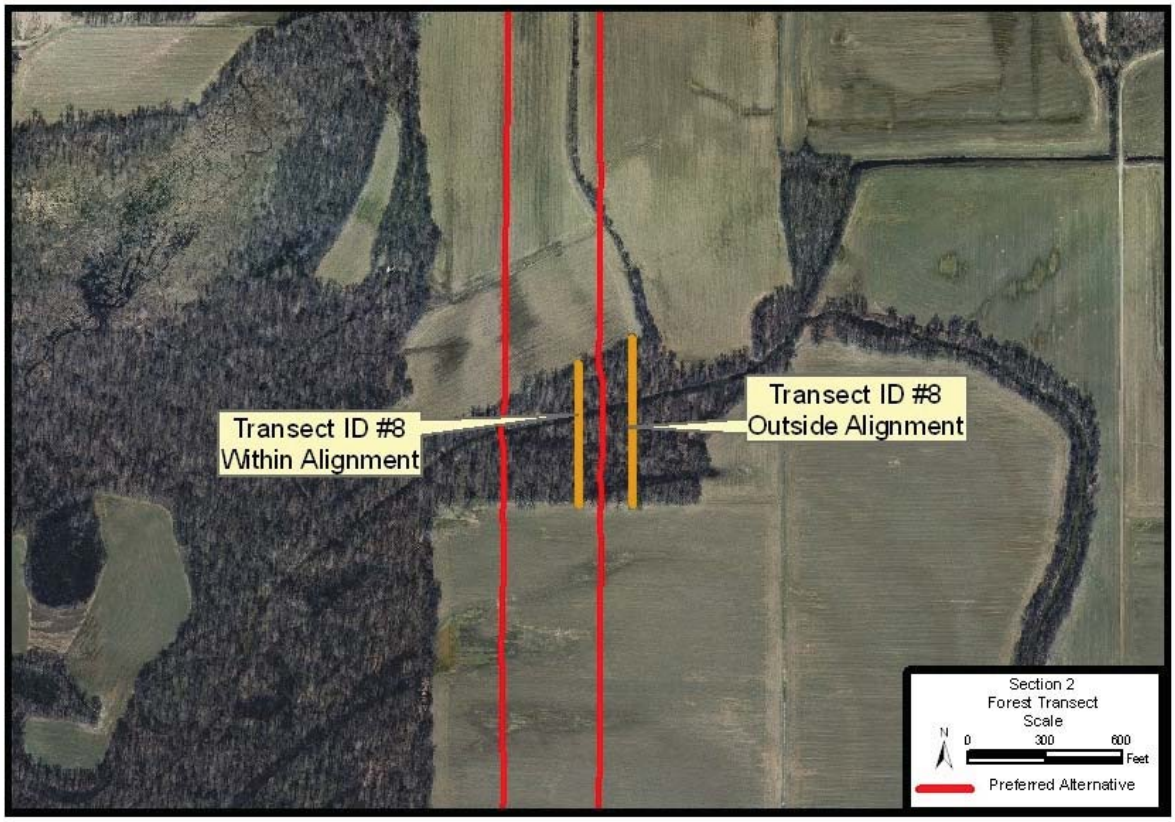


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JD, SH, JS
Date: 08-08-07 Time: 3:50 pm Length: 300 ft within alignment/ 740 ft outside alignment
Transect ID#: 9
Location Information:
County: Pike UTM North: 4,265,336 UTM East: 482,194
Quadrangle: Sandy Hook Township: T1N Range: R7W Section: 8/9

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
10", 10"		9", 18"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
silver maple, pawpaw, American elm, black walnut, sassafras, tulip poplar			tulip poplar, sycamore, chinkapin oak, green ash, black cherry, silver maple		
General Size Class			General Size Class		
<9" 70%	9-18" 25%	>18" 5%	<9" 60%	9-18" 35%	>18" 5%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore 9", 10", 10", 10", 11", 12", 20"	sycamore 9", 9", 9", 10", 10", 10", 10", 10", 10", 12" black cherry 10", 10"

Photographs and Aerial Map Showing Transect Location on back

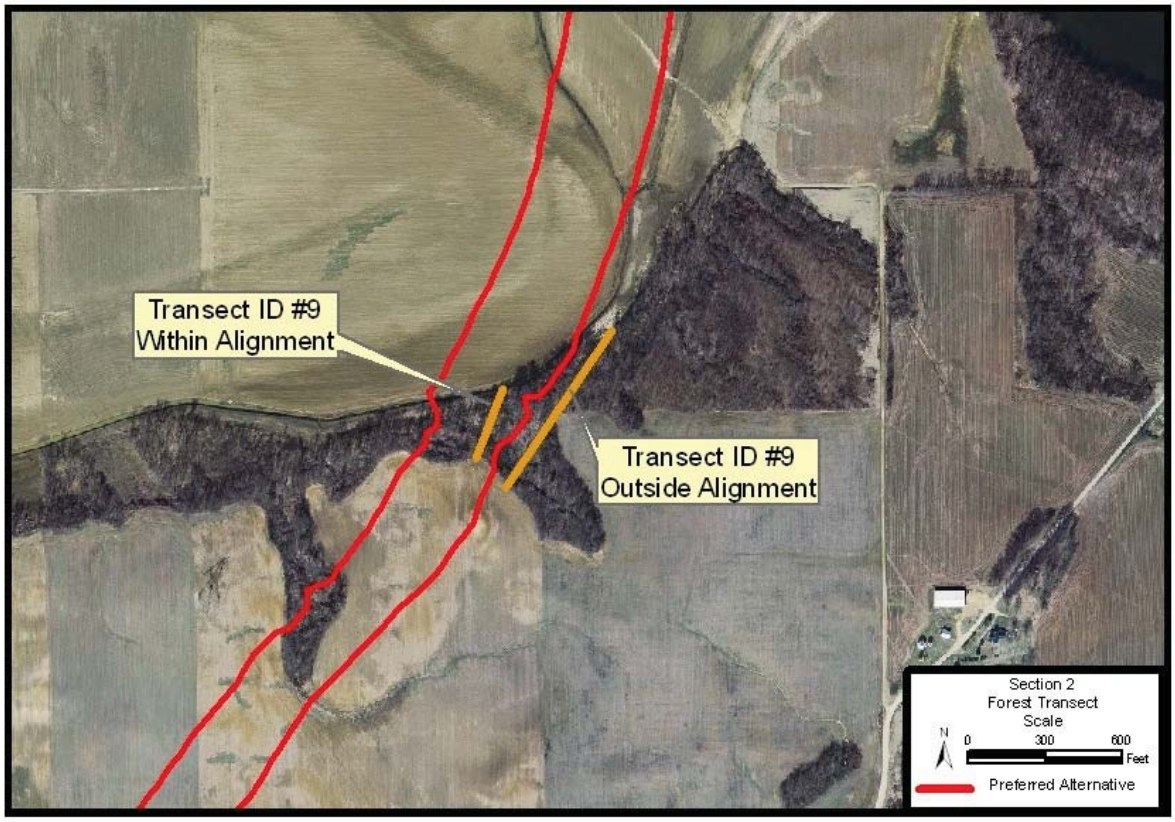


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JD, JS
Date: 8/13/07 Time: 9:50am Length: 430 ft within alignment/ 410 ft outside alignment
Transect ID#: 10
Location Information:
County: Pike UTM North: 4,263,632 UTM East: 480,804
Quadrangle: Sandy Hook Township: T1N Range: R7W Section: 17

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
10"		12", 16", 16"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
silver maple, green ash, red maple, black oak, sycamore, hackberry, bitternut hickory, bur oak, black walnut, American elm, eastern cottonwood			bitternut hickory, black oak, black cherry, box elder, sugar maple, chinkapin oak, bur oak, hackberry		
General Size Class			General Size Class		
<9" 30%	9-18" 50%	>18" 20%	<9" 40%	9-18" 45%	>18 15%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
X			X		
Sub-canopy Invasives bush honeysuckle			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
silver maple 16", 22", 28", 16"	silver maple 36", 32", 30"

Photographs and Aerial Map Showing Transect Location on back

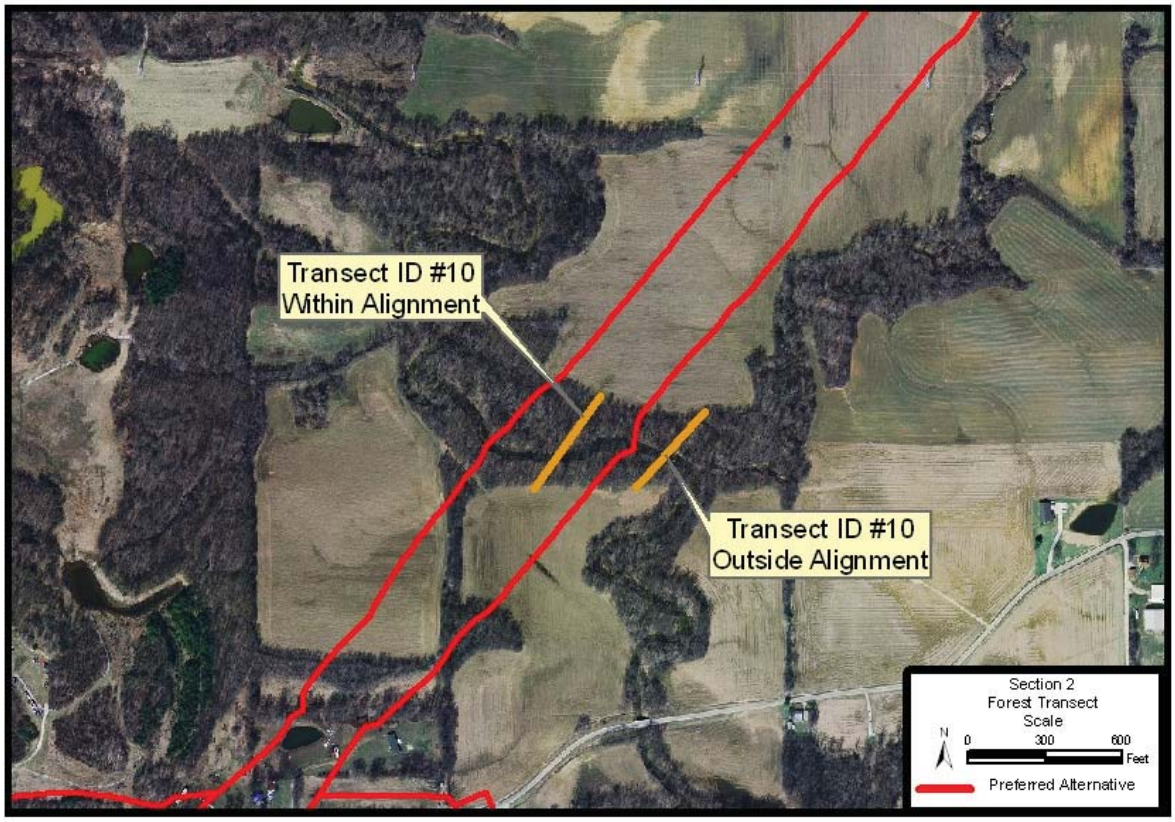


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JD, JS
Date: 8/13/07 Time: 11:05am Length: 670 ft within alignment/ 1410 ft outside alignment
Transect ID#: 11
Location Information:
County: Pike UTM North: 4,262,894 UTM East: 480,106
Quadrangle: Sandy Hook Township: T1N Range: R7W Section: 18

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9", 10", 12", 12"		14", 14"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
white pine, sycamore, black cherry, eastern cottonwood, sugar maple, American beech, box elder			sycamore, black cherry, eastern cottonwood, redbud, box elder, sweet gum, sugar maple, bur oak		
General Size Class			General Size Class		
<9" 50%	9-18" 40%	>18" 10%	<9" 60%	9-18" 35%	>18 5%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives bush honeysuckle			Sub-canopy Invasives bush honeysuckle		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
black cherry 10", 12", 14" sycamore 14", 16", 18"	black cherry 9", 9", 10", 14" sycamore 12", 14", 14", 12", 14", 12"

Photographs and Aerial Map Showing Transect Location on back

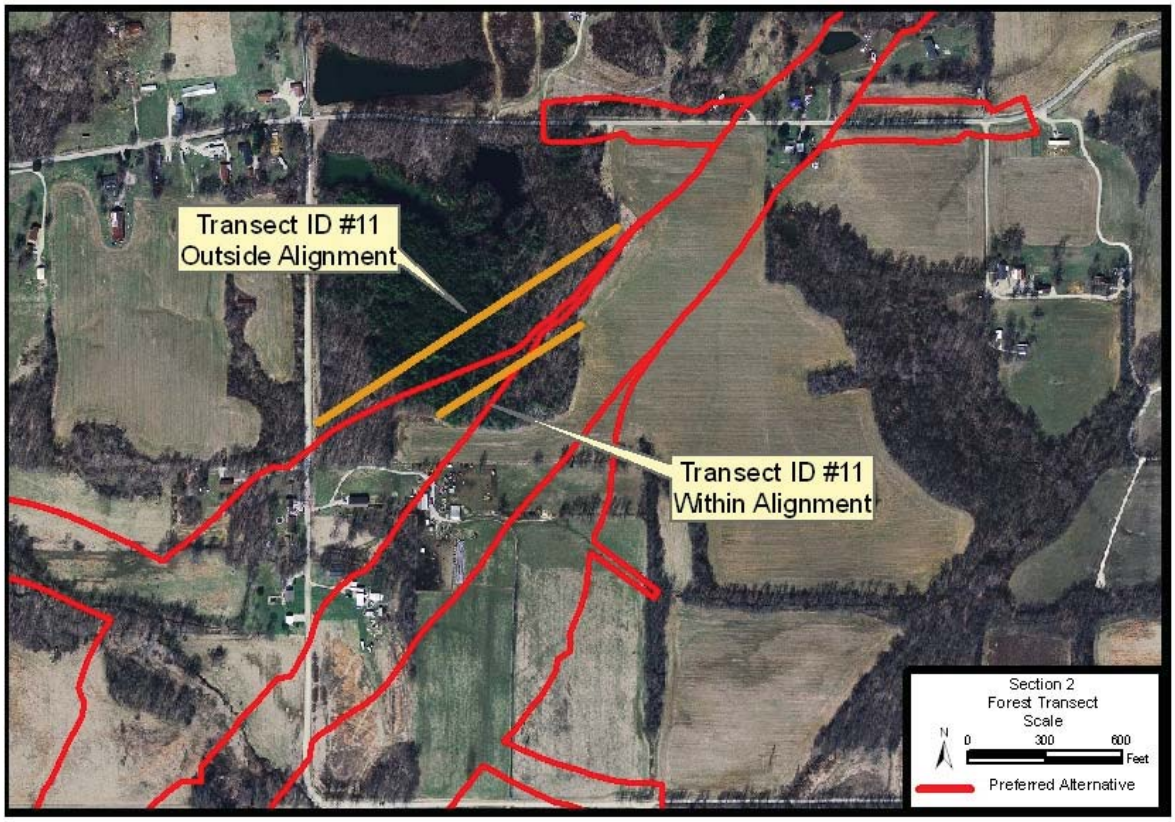


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JD, JS
Date: 8/13/07 Time: 2:00pm Length: 2,700 ft within alignment/ 2,690 ft outside alignment
Transect ID#: 12
Location Information:
County: Pike UTM North: 4,257,063 UTM East: 475,580
Quadrangle: Petersburg Township: T1S Range: R8W Section: 3

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9", 9", 10", 12", 13", 14"		18"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
green ash, silver maple, pin oak, shellbark hickory, black locust, sycamore, sweet gum, sugar maple, river birch, slippery elm			sycamore, sweet gum, slippery elm, shellbark hickory, black oak, silver maple, sugar maple		
General Size Class			General Size Class		
<9" 75%	9-18" 20%	>18" 5%	<9" 80%	9-18" 20%	>18

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
		X			X
Sub-canopy Invasives Japanese honeysuckle			Sub-canopy Invasives bush honeysuckle		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore- 10", 10", 10", 9" river birch- 9", 9", 9", 9", 9", 9", 10", 10", 10", 10", 10", 12", 12", 12", 12", 12" black cherry- 10", 10", 12"	sycamore- 9" river birch- 9", 9", 9", 9", 9", 9", 9", 9", 10", 10", 10", 10", 12", 12", 12", 12", 12" black cherry- 10"

Photographs and Aerial Map Showing Transect Location on back

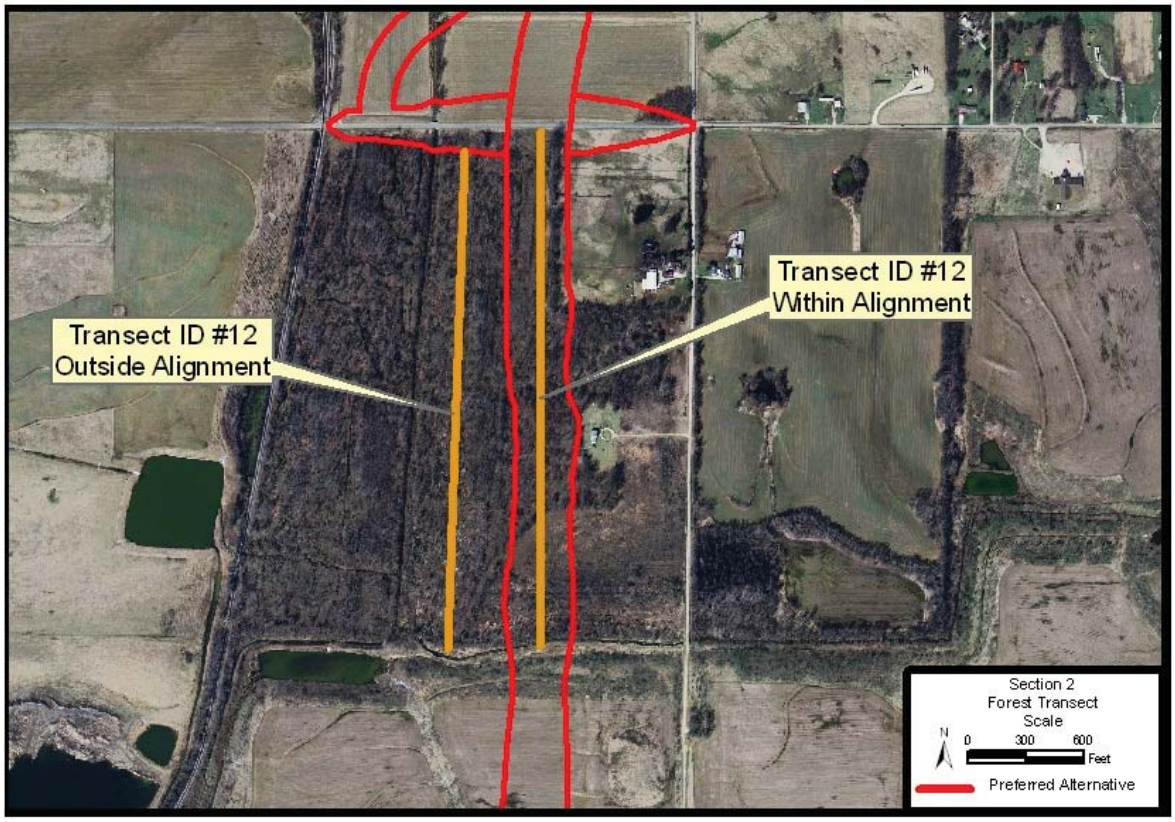


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JD, JS
Date: 8/14/07 Time: 11:10am Length: 1,750 ft within alignment/1,230 ft outside alignment
Transect ID#: 13
Location Information:
County: Pike UTM North: 4,254,868 UTM East: 474,917
Quadrangle: Petersburg Township: T1S Range: R8W Section: 10

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9", 9", 9", 9", 9", 10", 10", 10", 12", 12", 12", 12", 12", 12", 12", 12"	18", 18", 18"	9", 9", 9", 10", 10", 10", 12"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
black walnut, sugar maple, bitternut hickory, red maple, tulip poplar, American beech, hackberry, pignut hickory, basswood, sycamore, white oak, bur oak, honey locust, black cherry			sweet gum, pin oak, sycamore, tulip poplar, bur oak, eastern cottonwood, shagbark hickory, green ash, black cherry, silver maple, sugar maple, hackberry, American beech, pignut hickory		
General Size Class			General Size Class		
<9" 25%	9-18" 60%	>18" 15%	<9" 25%	9-18" 60%	>18 15%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
X			X		
Sub-canopy Invasives Japanese honeysuckle, bush honeysuckle			Sub-canopy Invasives Japanese honeysuckle, bush honeysuckle		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
red maple- 12",15",16",16",16",18",19",20",20", 20",20",22",22",26",26",33" shagbark hickory- 10",12",14",16",16" sycamore- 9",10",12" black cherry- 10",10",12",16",16",16",16",16", 16", 16",18",20",22",22",23",26" honey locust-9",9",9",10",10",10",10",10",10",10" 10",10",12",12",12",12",12",12",14",14",14",16" 16",16",16",18"	red maple- 18",18",20",36" shagbark hickory-12",14",14",16",18",22" sycamore- 10",10",10",10",10",12",12",12",12", 12"14",14",30" black cherry-10",12",14",14" honey locust- 16"

Photographs and Aerial Map Showing Transect Location on back

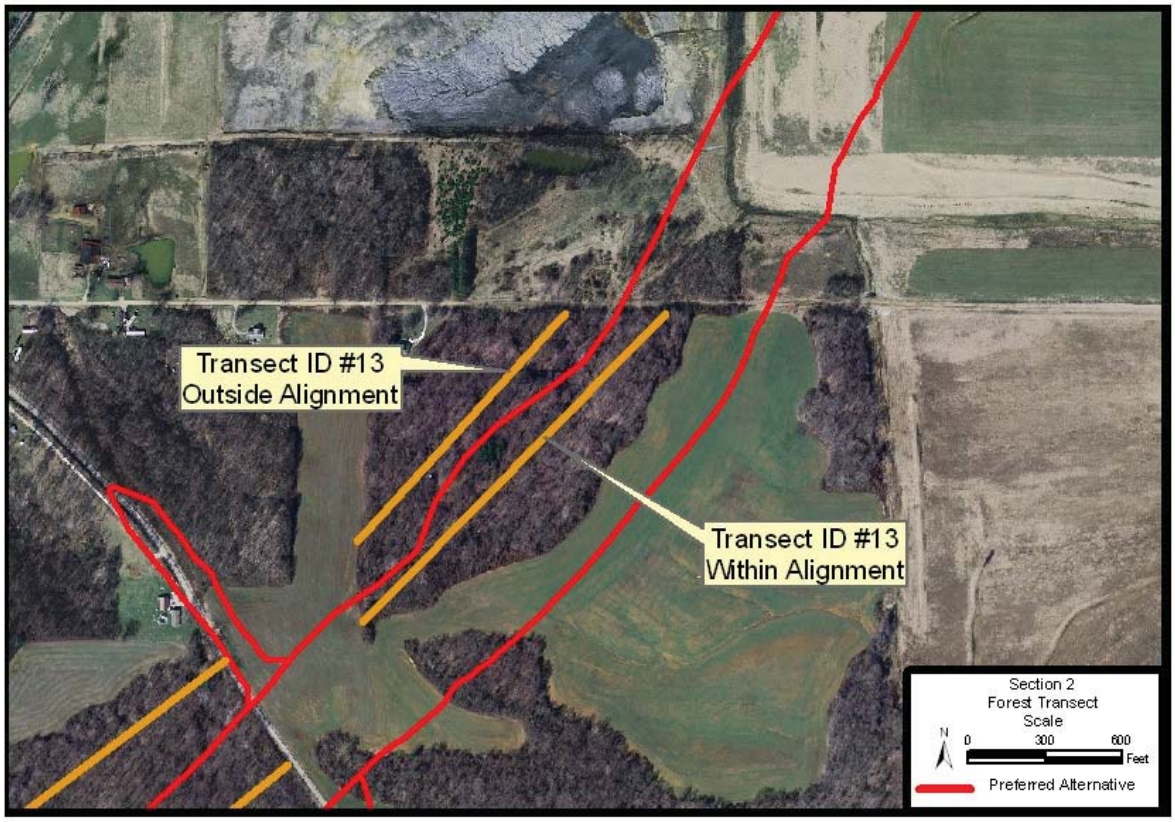


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JK, ME, BV
Date: 8/13/07 Time: 2:00pm Length: 1,800 ft within alignment/ 1,840 outside alignment
Transect ID#: 14
Location Information:
County: Pike UTM North: 4,254,188 UTM East: 474,231
Quadrangle: Petersburg Township: T1S Range: R8W Section: 10, 16

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9",10",10",10",10",11",12" 12",12"		10",10",10",10",10",14"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
shingle oak, black cherry, hackberry, sugar maple, chinkapin oak, black walnut, pin oak, persimmon, box elder, red maple, American elm, sweet gum, tulip poplar, American beech, northern red oak			sugar maple, green ash, American elm, sycamore, sweet gum, tulip poplar, sassafras, black cherry, hackberry, white pine, northern red oak, persimmon		
General Size Class			General Size Class		
<9" 30%	9-18" 40%	>18" 30%	<9" 60%	9-18" 35%	>18 5%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
		X			X
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
black cherry- 9",10",10",10",12",12",12",14",24" sycamore- 9",9",9",10",10",10",12",14",18",24" shagbark hickory- 10",12",12",14",14",14",14", 14" shellbark hickory- 12"	black cherry- 10",14" sycamore- 9",14",18",24" shagbark hickory- 10",10",12",12",12",12",12", 12",14",14",14",14",14",14",14" shellbark hickory-12",14"

Photographs and Aerial Map Showing Transect Location on back

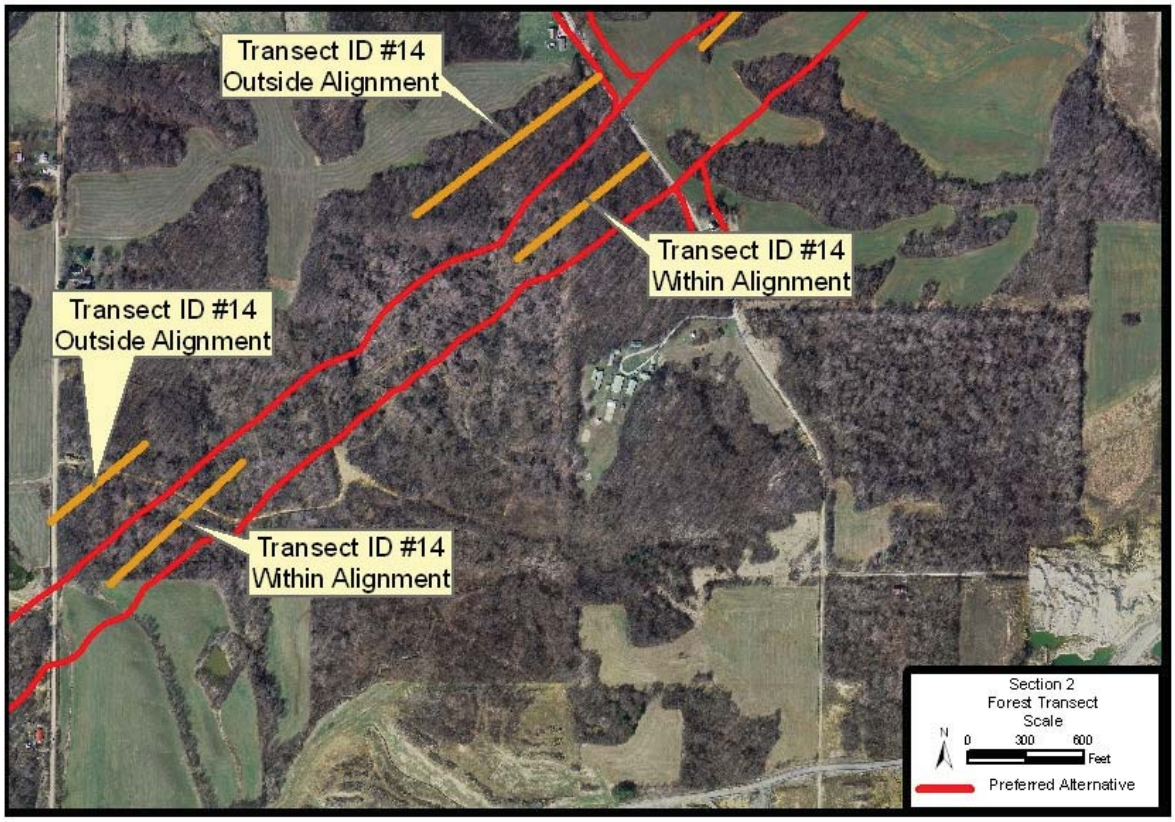


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JK, ME, BV
Date: 8/13/07 Time: 1:15pm Length: 930 within alignment/640 outside alignment
Transect ID#: 15
Location Information:
County: Pike UTM North: 4,253,549 UTM East: 473,421
Quadrangle: Petersburg Township: T1S Range: R8W Section:16

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
10",10",10",10",10",10",12",12", 12",12",12",12",12",14",14",14"			

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
sycamore, black willow, black cherry, black walnut, American elm, tulip poplar, sweet gum, shellbark hickory, northern red oak, white oak, green ash, sugar maple			sycamore, green ash, tulip poplar, red maple, black gum, slippery elm, sugar maple, sweet gum, pin oak, northern red oak		
General Size Class			General Size Class		
<9" 40%	9-18" 40%	>18" 20%	<9" 70%	9-18" 30%	>18

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore- 9",10",12",12",14",14",14" black cherry- 9",10",10",12",12" shellbark hickory- 10" shagbark hickory- 9", 12", 12", 12", 12", 14", 14", 20", 22"	sycamore 10",12"

Photographs and Aerial Map Showing Transect Location on back

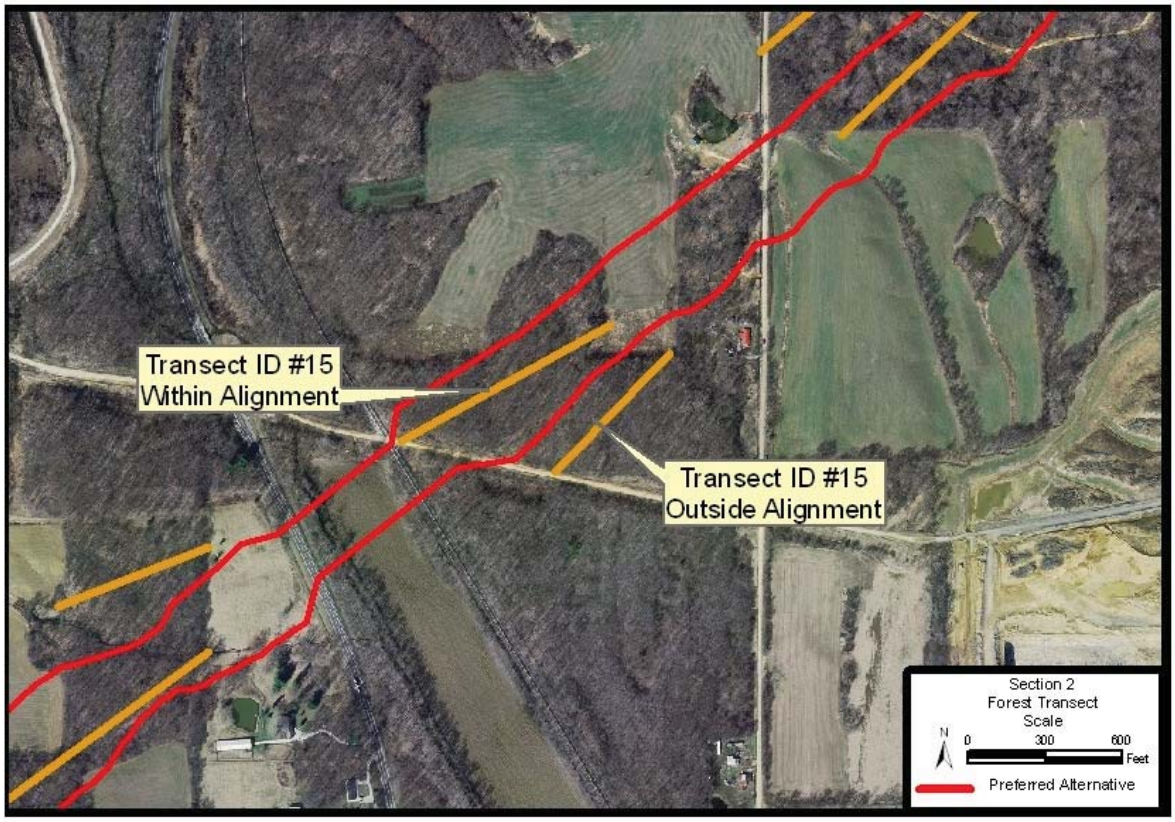


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JK, ME, BV
Date: 8/14/07 Time: 1:15pm Length: 1,250 ft within alignment/ 1,240 ft outside alignment
Transect ID#: 16
Location Information:
County: Pike UTM North: 4,253,113 UTM East: 472,905
Quadrangle: Petersburg Township: T1S Range: R8W Section: 16

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9",10",10",10",10",10",10",10",10",12",12",12",12",12",12",12",12" 14",14"	24"	9",9",10",10",12",14" 14"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
tulip poplar, sassafras, sweet gum, northern red oak, red maple, sugar maple, sycamore, eastern cottonwood, mockernut hickory, shagbark hickory			tulip poplar, sugar maple, persimmon, red maple, sassafras, mockernut hickory, black cherry, red cedar, northern red oak, sweet gum, white oak, American elm, eastern cottonwood, black gum		
General Size Class			General Size Class		
<9" 30%	9-18" 60%	>18" 10%	<9" 50%	9-18" 40%	>18 10%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
black cherry- 10",10",10",12",12",12",14",14" 14",14",16",16",16" eastern cottonwood- 10",12"30" sycamore- 24" shagbark hickory- 10",12",12",12",12",20",20" mockernut hickory-14" red maple- 14"	black cherry- 10",10",10" eastern cottonwood-48"

Photographs and Aerial Map Showing Transect Location on back

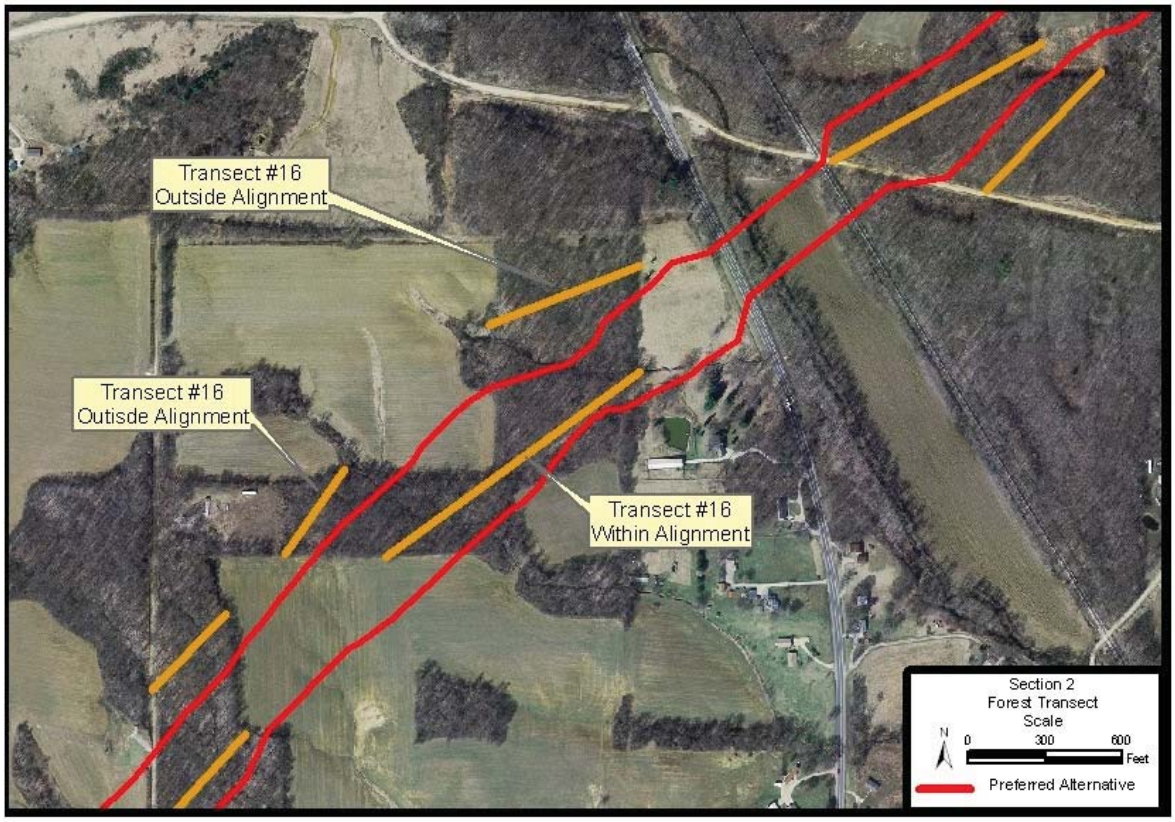


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JK, ME, BV
Date: 8/13/07 Time: 12:40 pm Length: 550 within alignment/ 405 outside alignment
Transect ID#: 17
Location Information:
County: Pike UTM North: 4,252,746 UTM East: 472,552
Quadrangle: Petersburg Township: T1S Range: R8W Section: 16

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9",10"		9",10"	36"

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
bur oak, shingle oak, green ash, northern red oak, sweet gum, sassafras, shellbark hickory, sugar maple, pin oak, sycamore, black cherry			sugar maple, shingle oak, black cherry, black gum, black walnut, bur oak, American elm, green ash, northern red oak		
General Size Class			General Size Class		
<9" 50%	9-18" 30%	>18" 20%	<9" 50%	9-18" 40%	>18 10%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore- 12" black cherry- 12"	black cherry- 9",12",18" river birch- 12" shagbark hickory- 9",12",14"

Photographs and Aerial Map Showing Transect Location on back

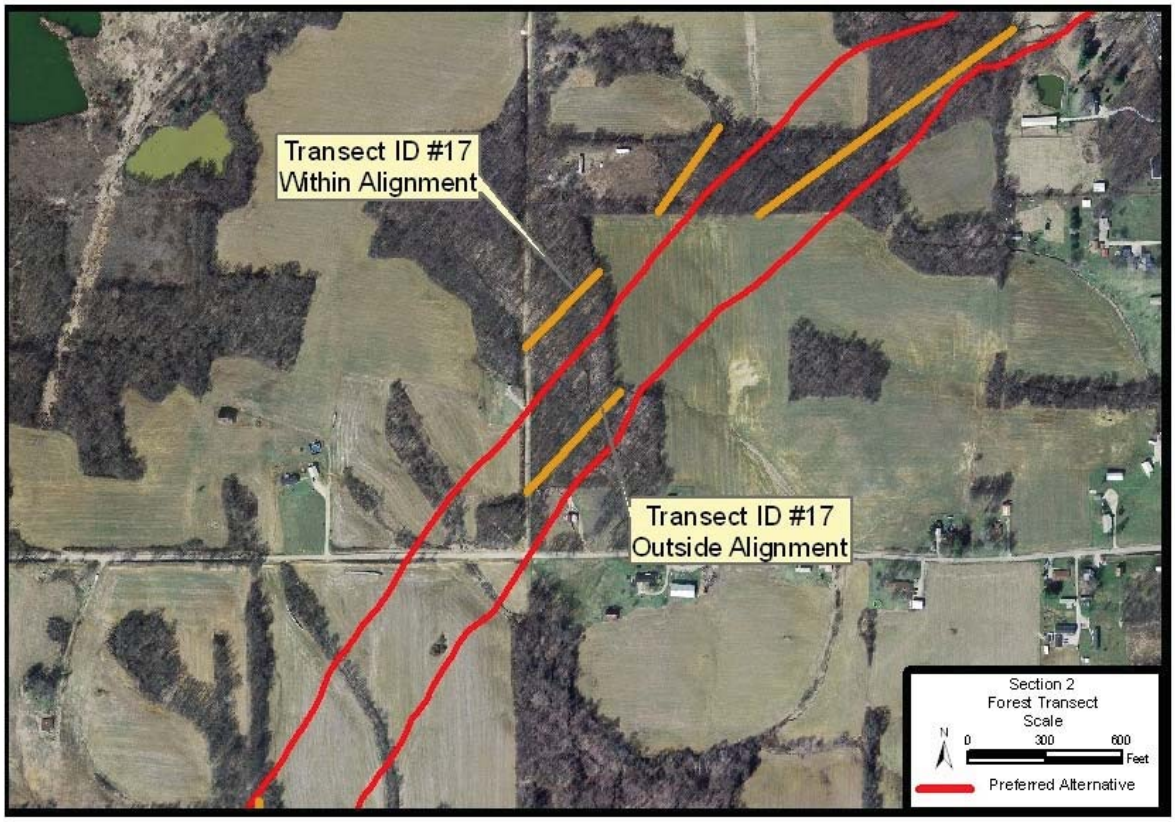


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JK, ME, BV
Date: 8/14/07 Time: 11:20am Length: 620 ft within alignment/ 750 ft outside alignment
Transect ID#: 18
Location Information:
County: Pike UTM North: 4,252,223 UTM East: 472,174
Quadrangle: Petersburg Township: T1S Range: R8W Section: 20

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9",10",10",12",12",12" 14",18",18",18"		9",10",10",10",10",12" 12",14"	24"

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
sycamore, sugar maple, box elder, pin oak, sassafras, black cherry, river birch, white oak			river birch, box elder, red maple, pin oak, tulip poplar, white oak, black cherry, sweet gum, sugar maple, green ash, American elm, northern red oak		
General Size Class			General Size Class		
<9" 40%	9-18" 40%	>18" 20%	<9" 30%	9-18" 50%	>18 20%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives none			Sub-canopy Invasives bush honeysuckle		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
black cherry- 12",12",14",14",14",14",20" river birch- 10" sycamore- 10",12",14",30",30",30"	black cherry- 10",12" river birch- 9",9",10",10",12",12",12",12",14" 14",14",14",14" shagbark hickory- 10",10",10",10",10",11, 11",12" 12",12",12",12",12",12",12",14",14",18",20",24" eastern cottonwood- 20"

Photographs and Aerial Map Showing Transect Location on back

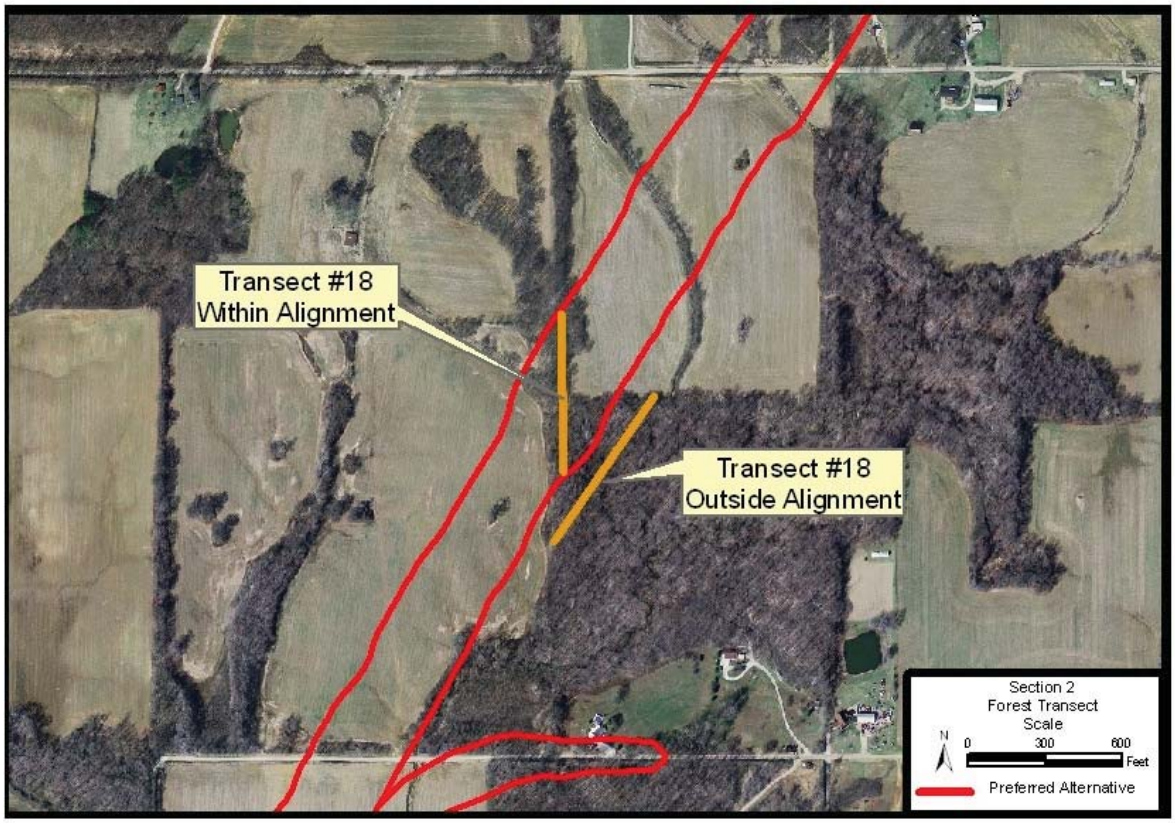


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JK, ME, BV
Date: 8/13/07 Time: 10:50am Length: 620 ft within alignment/ 560 ft outside alignment
Transect ID#: 19
Location Information:
County: Pike UTM North: 4,250,913 UTM East: 471,461
Quadrangle: Petersburg Township: T1S Range: R8W Section: 29

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9"	20"	9",9",10",14",18",18"	24"

Upper Canopy Dominant Tree Species						
Transect Within Alignment			**Transect Outside Alignment**		
Sugar maple, sweet gum, sumac, sycamore, tulip poplar, silver maple, sassafras			Sugar maple, bur oak, green ash, shellbark hickory, sassafras, white oak, black gum, sweet gum		
General Size Class			General Size Class		
<9" 90%	9-18" 10%	>18"	<9" 70%	9-18" 30%	>18

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
		X			X
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore- 14"	shellbark hickory- 10"

Photographs and Aerial Map Showing Transect Location on back

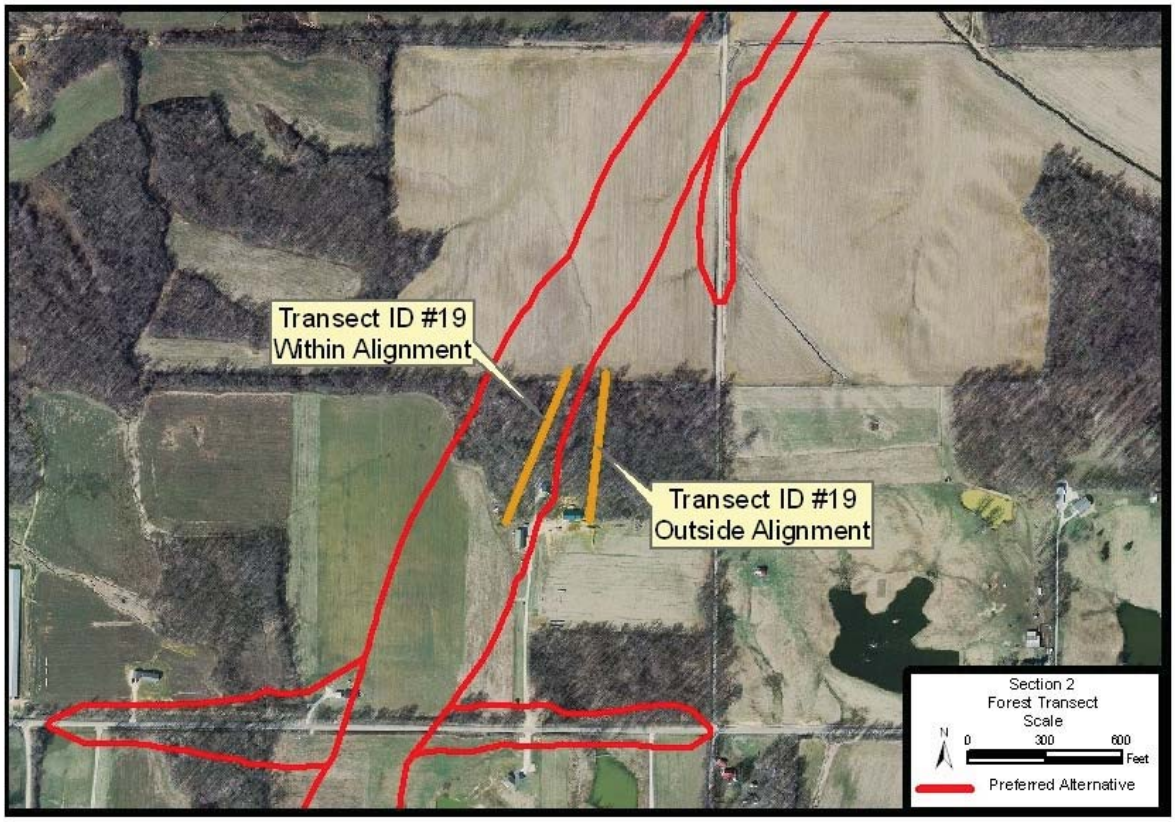


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JD, JS
Date: 8/14/07 Time: 2:30 pm Length: 360 ft within alignment/ 255 ft outside alignment
Transect ID#: 20
Location Information:
County: Gibson UTM North: 4,250,359 UTM East: 471,192
Quadrangle: Petersburg Township: T1S Range: R8W Section: 29

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
10"			

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
Sugar maple, river birch, sycamore, shagbark hickory, pignut hickory			Pignut hickory, sycamore, sugar maple, green ash, river birch, American elm		
General Size Class			General Size Class		
<9" 40%	9-18" 50%	>18" 10%	<9" 65%	9-18" 25%	>18 10%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
X			X		
Sub-canopy Invasives Japanese honeysuckle			Sub-canopy Invasives Japanese honeysuckle		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
river birch- 10",10",10",12",14",20" sycamore-24" shagbark hickory- 12",17",20"	river birch- 14" sycamore- 10",12",21",26",28" shagbark hickory- 16" honey locust- 12"

Photographs and Aerial Map Showing Transect Location on back

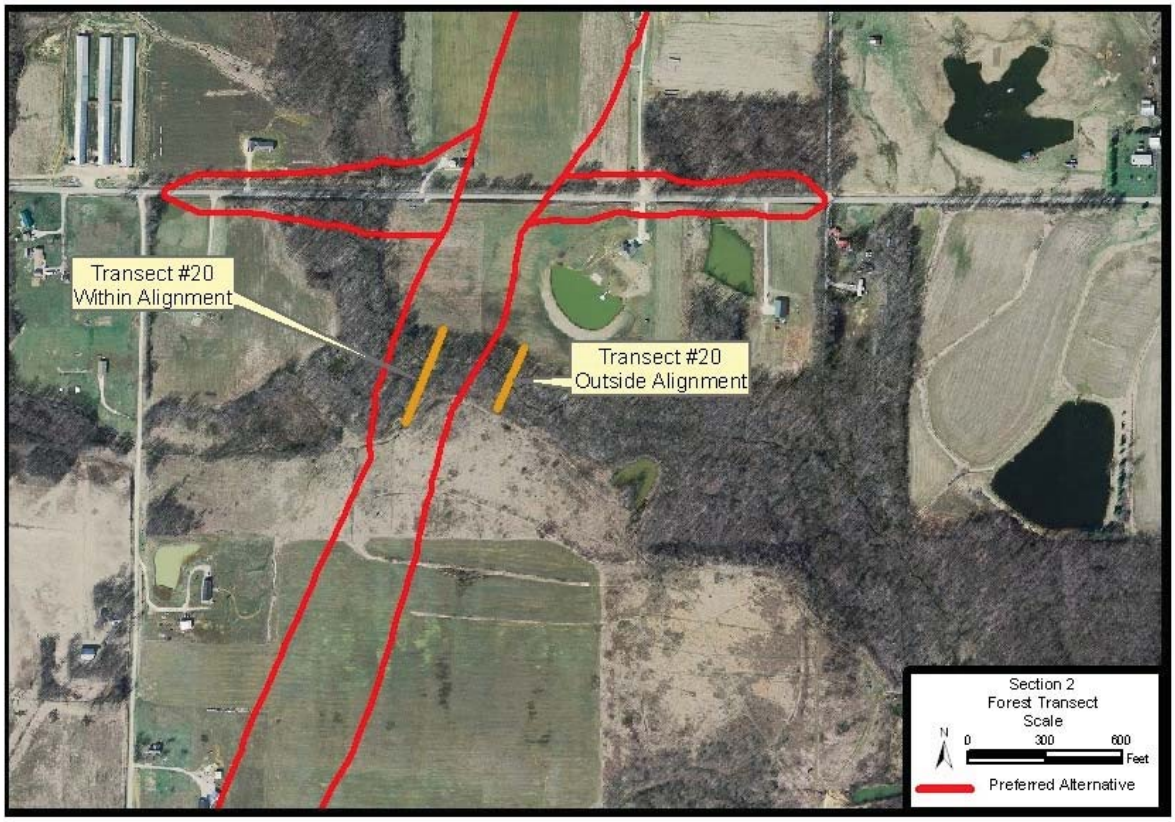


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JK, ME, BV
Date: 8/13/07 Time: 9:50am Length: 1,060 within alignment/ 720 outside alignment
Transect ID#: 21
Location Information:
County: Pike UTM North: 4,249,625 UTM East: 470,918
Quadrangle: Petersburg Township: T1S Range: R8W Section: 29

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9",10",10",10",10",12",12"		10",10"	

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
red maple, pin oak, sassafras, sweet gum, American elm, box elder, sycamore, green ash, black cherry, tulip poplar, red cedar, silver maple			pin oak, silver maple, red maple, sassafras, American elm, sweet gum, black cherry, green ash, tulip poplar, black walnut		
General Size Class			General Size Class		
<9" 50%	9-18" 40%	>18" 10%	<9" 50%	9-18" 45%	>18 5%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
sycamore- 10",14",22"30" black cherry- 10", 12" river birch- 9",9",9",9",10",10",12",12" shagbark hickory- 9" eastern cottonwood- 14"	sycamore- 9",10",10",10",10",10",11",12" black cherry-9",9" river birch-9",9",9",9",10",10"10",14" black willow- 10",10",12"

Photographs and Aerial Map Showing Transect Location on back

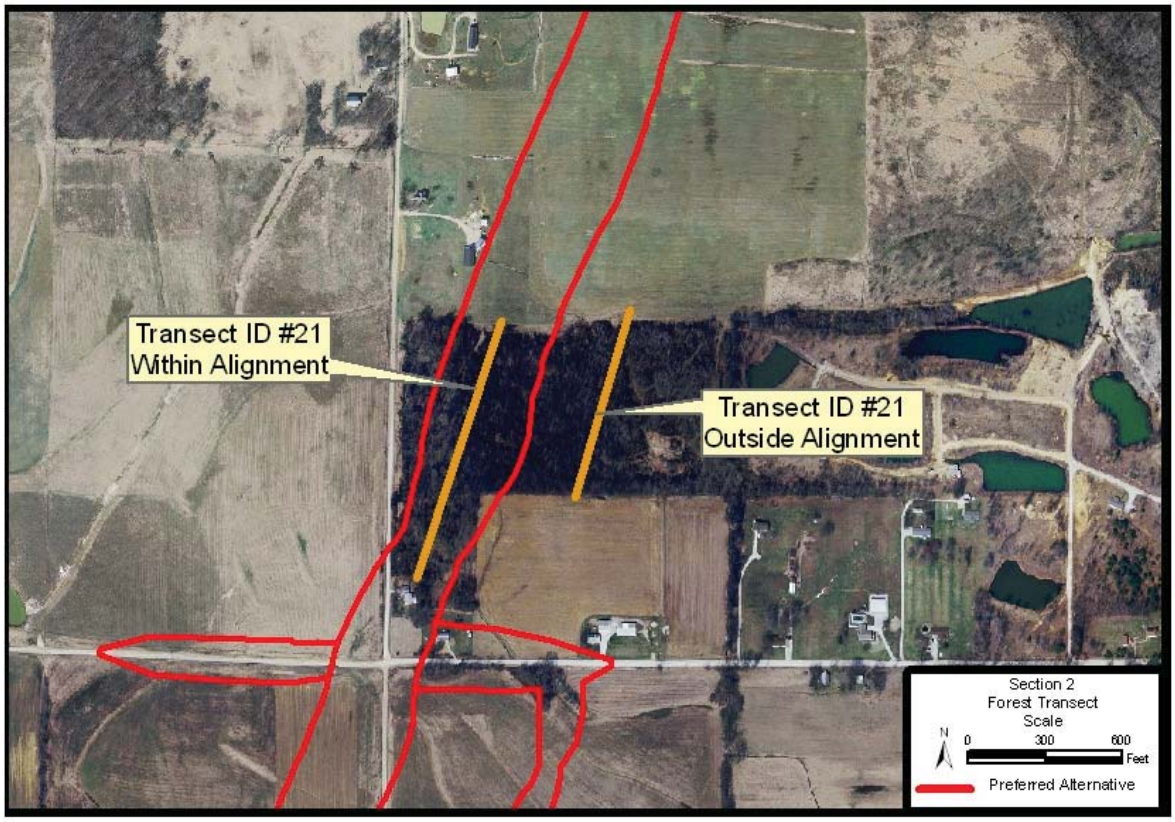


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JK, ME, BV
Date: 8/13/07 Time: 8:50am Length: 635 ft within alignment/ 670 ft outside alignment
Transect ID#: 22
Location Information:
County: Gibson UTM North: 4,248,537 UTM East: 470,432
Quadrangle: Petersburg Township: T1S Range: R8W Section: 31

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
9",9",9",10",10",11",12" 12",12",15",16",16"		9",10",10",10",10",10" 11",12",12",12",12",12" 14",14",14",16",16",18"	20"

Upper Canopy Dominant Tree Species							
Transect Within Alignment				**Transect Outside Alignment**			
silver maple, red maple, black willow, white oak, green ash, shellbark hickory, swamp chestnut oak, hackberry, American beech, black walnut				white oak, river birch, catalpa, shellbark hickory, silver maple, hackberry, American elm, sweet gum, red maple			
General Size Class				General Size Class			
<9"	20%	9-18" 70%	>18" 10%	<9"	20%	9-18" 70%	>18 10%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X		X		
Sub-canopy Invasives none			Sub-canopy Invasives none		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
shellbark hickory- 9",9",9",10",10",12",12",14" 16",16",16",16",16",16" black willow- 12",12" river birch- 9",12"	shellbark hickory- 9",9",9",10",10",11",12",12" 12",12",12",12",14",14" river birch-9",9",10",10",10",11",12",12" silver maple- 16",18",18" shagbark hickory- 9",10",12",14" sycamore-12",12",12",12",12",14",16",16",18" 24"

Photographs and Aerial Map Showing Transect Location on back

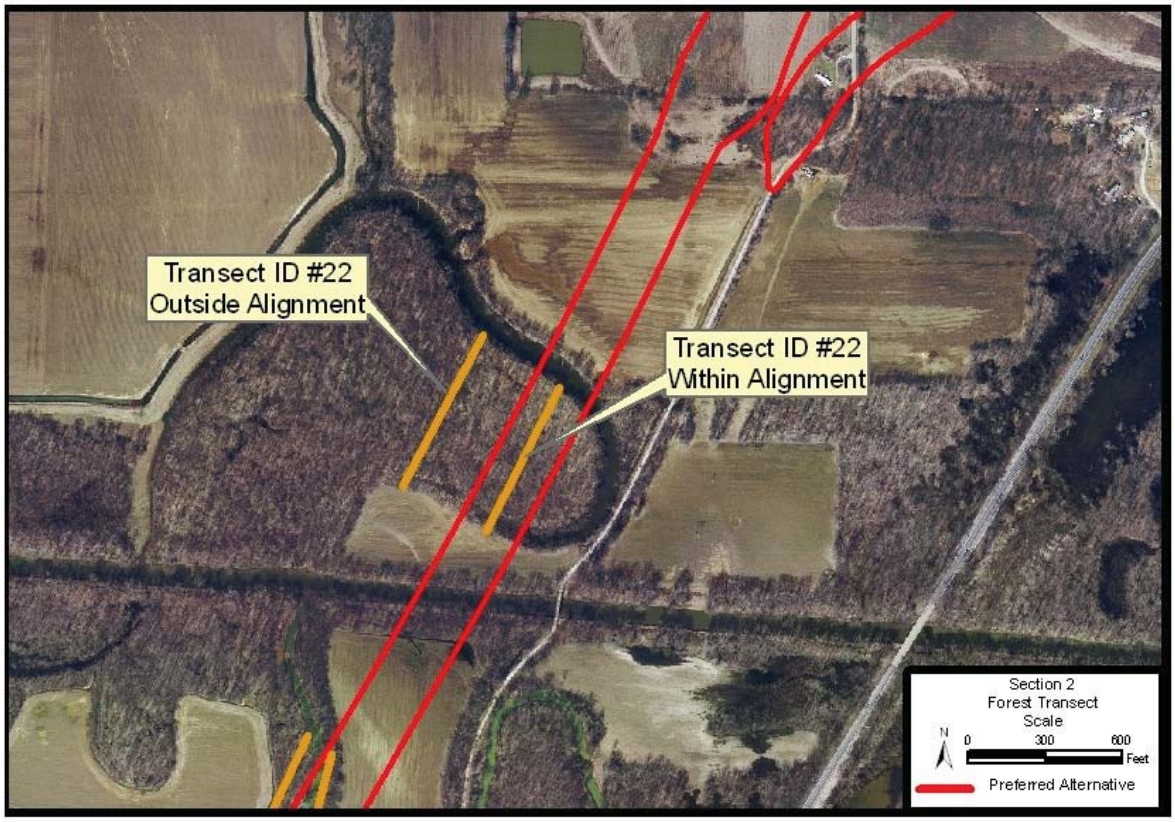


Photo taken within alignment showing forest

Photo taken outside of alignment showing forest

I-69 Section 2 Tier 2 BA Line Transect

Investigators: JK, ME, BV
Date: 8/14/07 Time: 10:15am Length: 720 ft within alignment/ 640 ft outside alignment
Transect ID#: 23
Location Information:
County: Gibson UTM North: 4,248,081 UTM East: 470,176
Quadrangle: Petersburg Township: T1S Range: R8W Section: 31

Snags (with bark)			
Transect Within Alignment		**Transect Outside Alignment**	
9 to 18" DBH	>18" DBH	9 to 18" DBH	> 18" DBH
10",10",12",12",12",14"		9",9",10",10",12"	24"

Upper Canopy Dominant Tree Species					
Transect Within Alignment			**Transect Outside Alignment**		
river birch, red maple, sycamore, pin oak, silver maple, flowering dogwood			American elm, river birch, pin oak, silver maple, sycamore, sweet gum, black cherry		
General Size Class			General Size Class		
<9" 20%	9-18" 60%	>18" 20%	<9" 30%	9-18" 50%	>18 20%

Sub-Canopy Density					
Transect Within Alignment			**Transect Outside Alignment**		
Open	Moderate	Dense	Open	Moderate	Dense
	X			X	
Sub-canopy Invasives bush honeysuckle			Sub-canopy Invasives bush honeysuckle		

Live Primary Habitat Tree Species >9" (Trees with exfoliating or deep furrowed bark)	
Transect Within Alignment	**Transect Outside Alignment**
river birch-10",10",12",12",12",12",20" sycamore-10",12",16",20",20",20",24"	river birch-9",10",10",10" sycamore-12" black cherry 12",12"

Photographs and Aerial Map Showing Transect Location on back

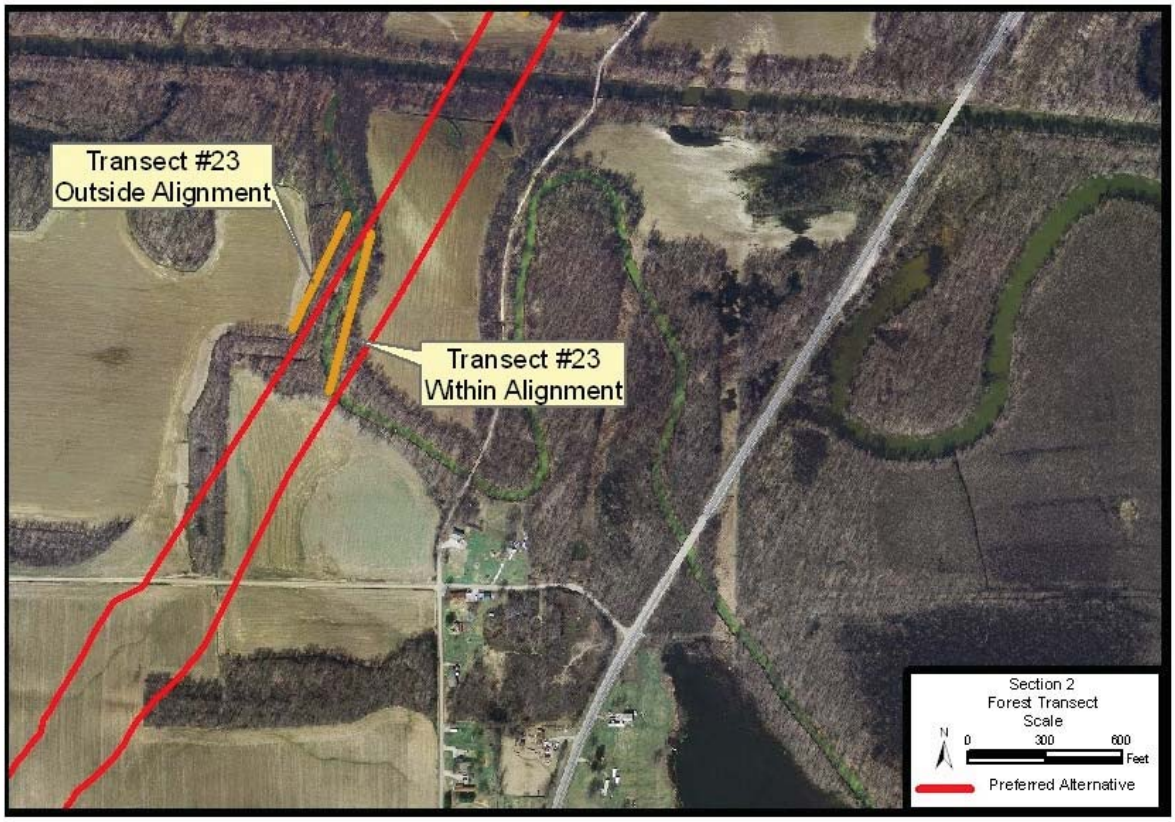
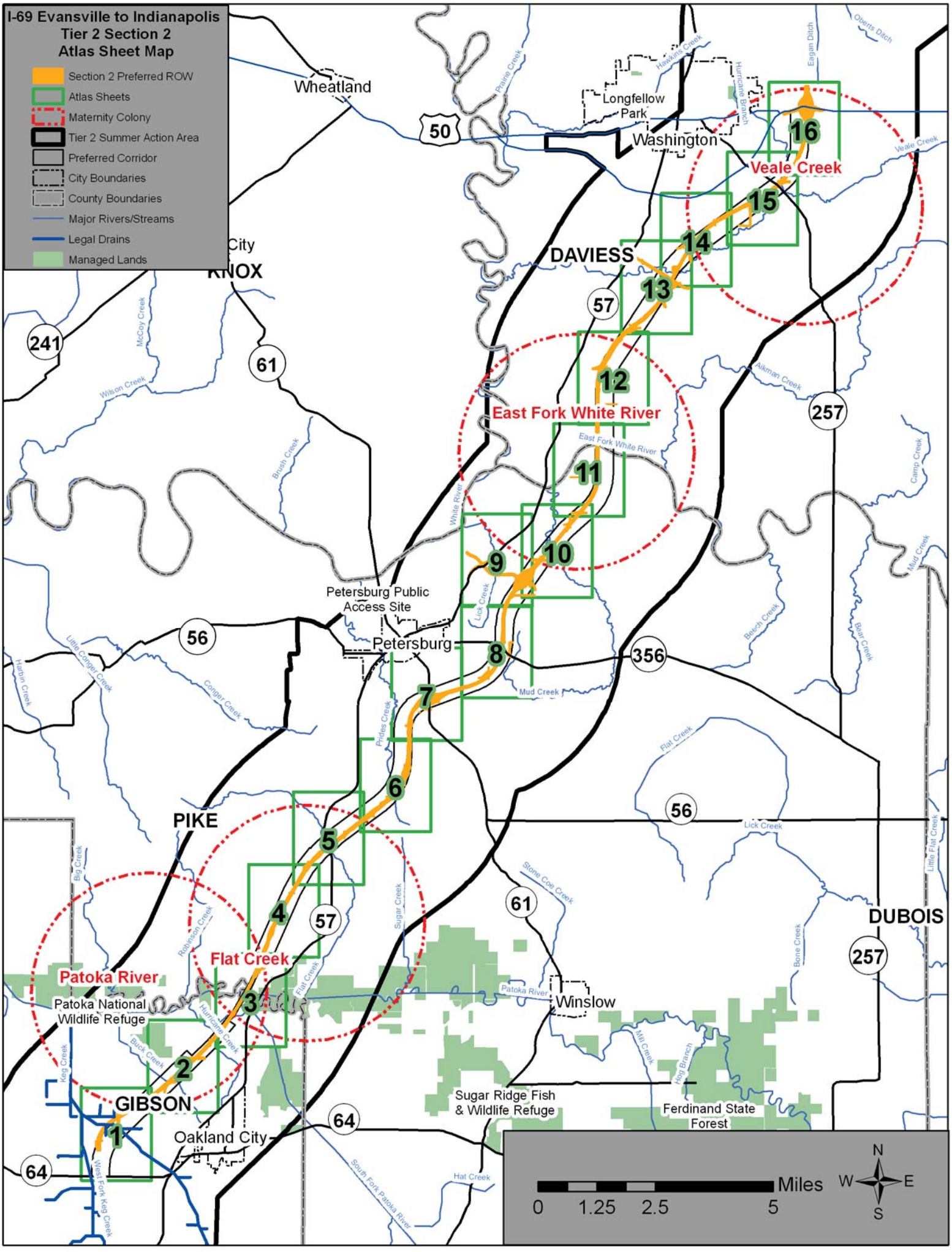


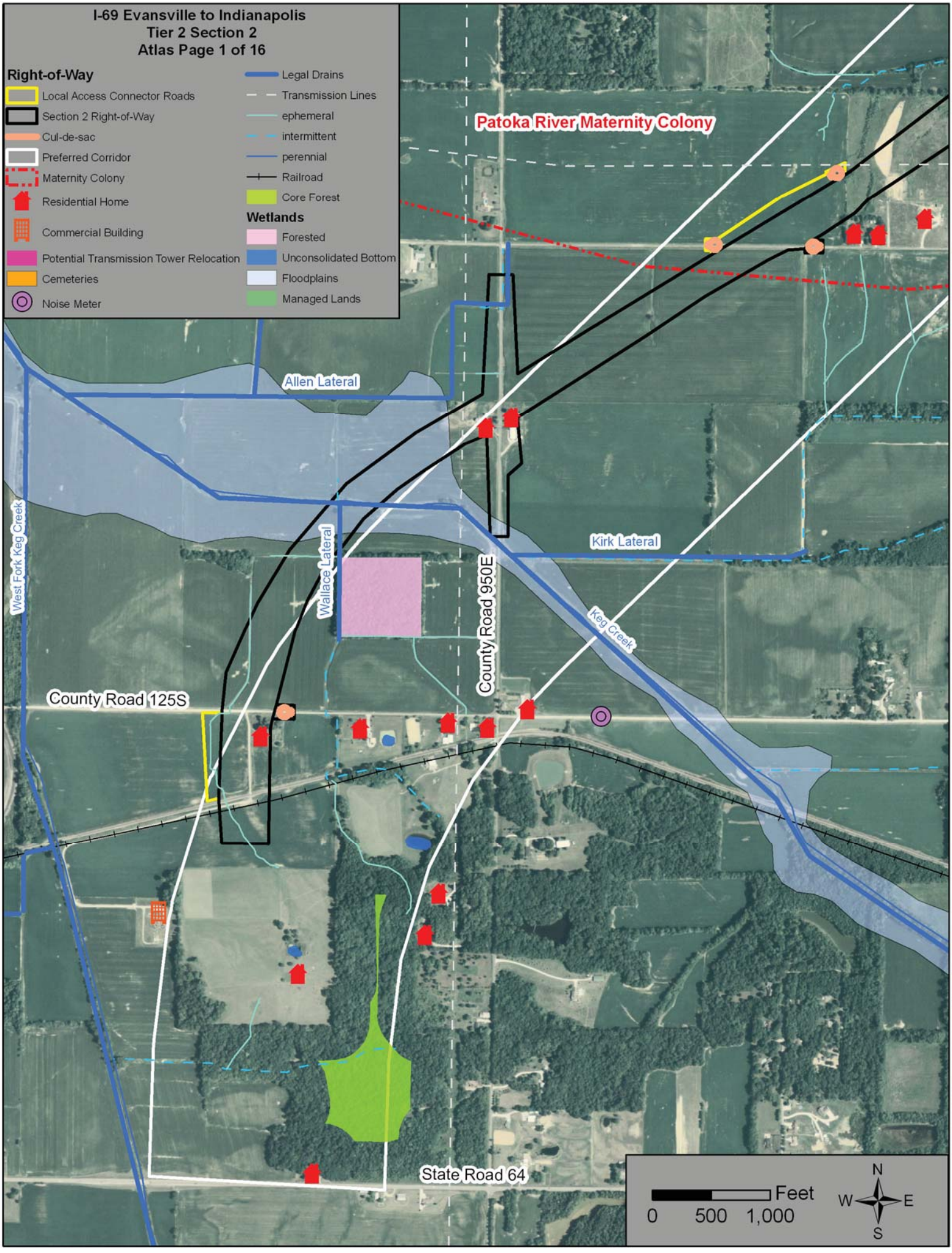
Photo taken within alignment showing forest

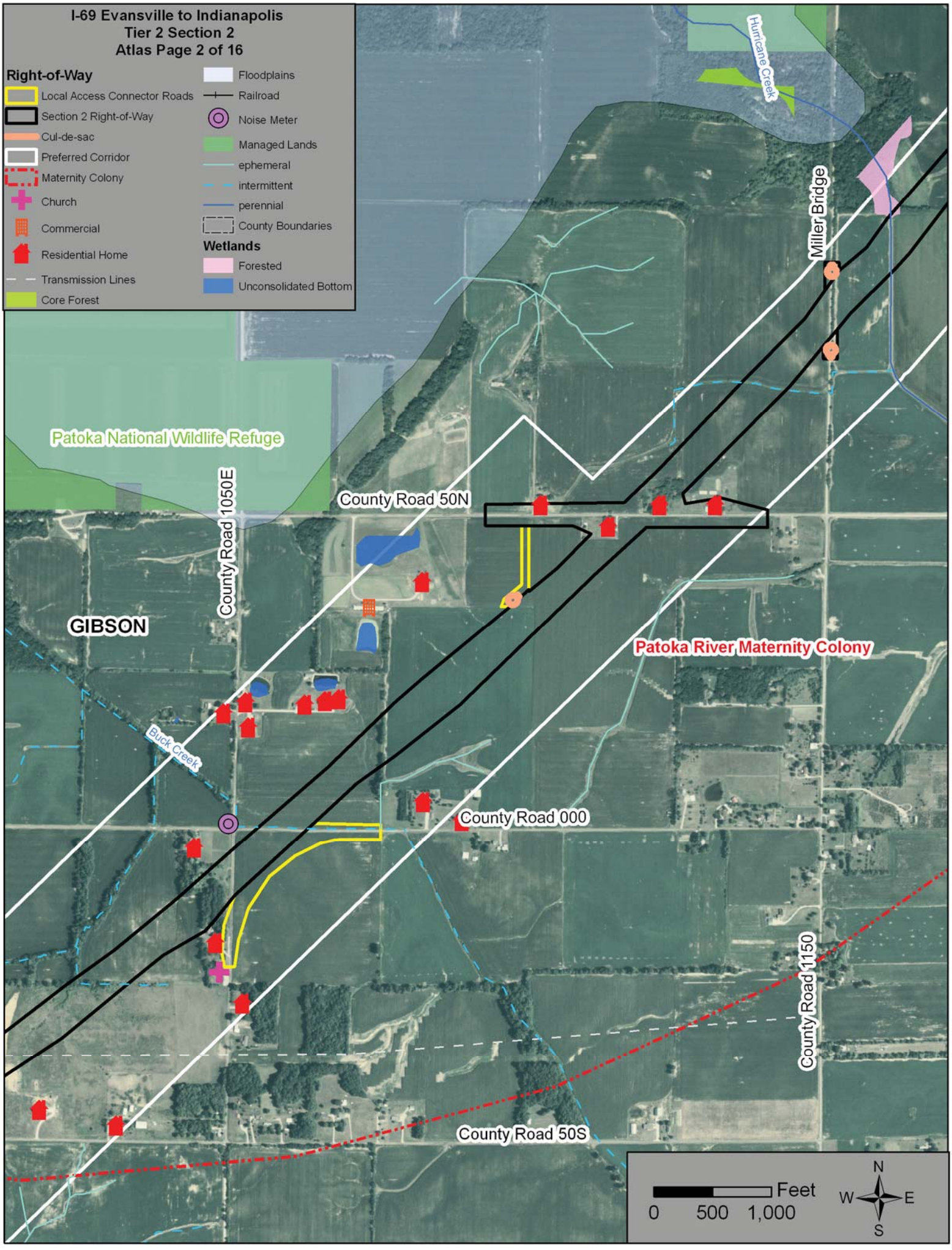
Photo taken outside of alignment showing forest

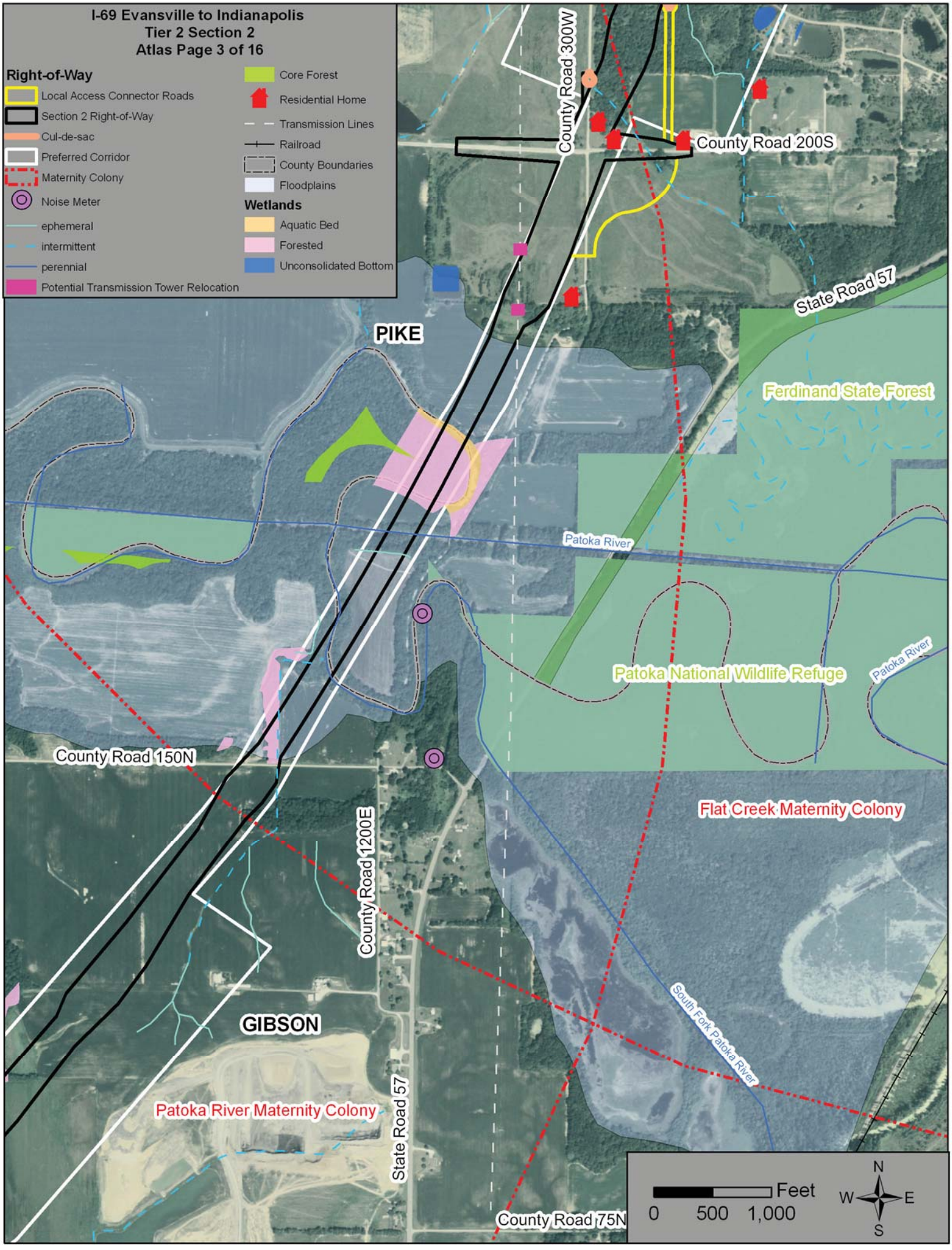
APPENDIX B

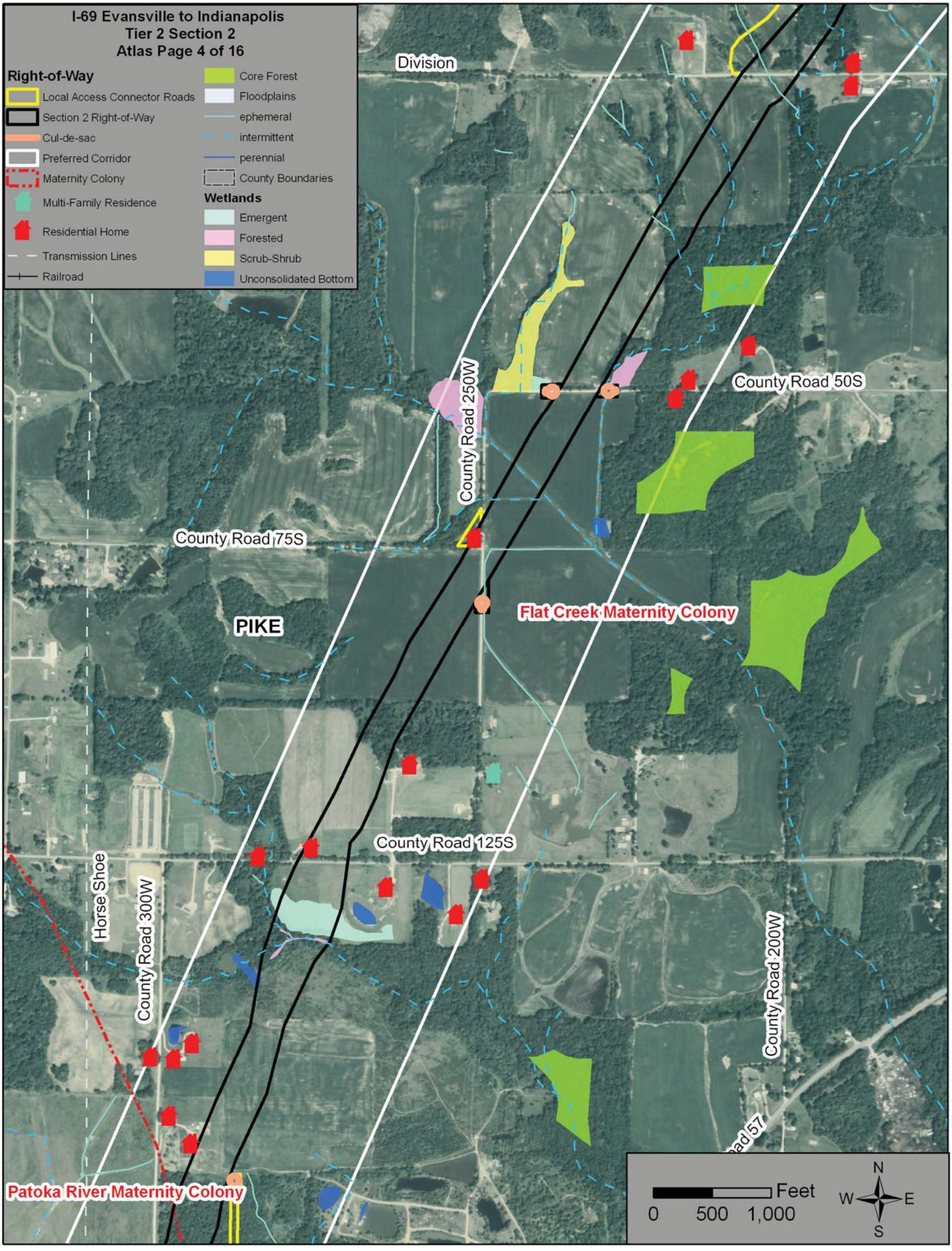
Section 2 Preferred Alternative Atlas

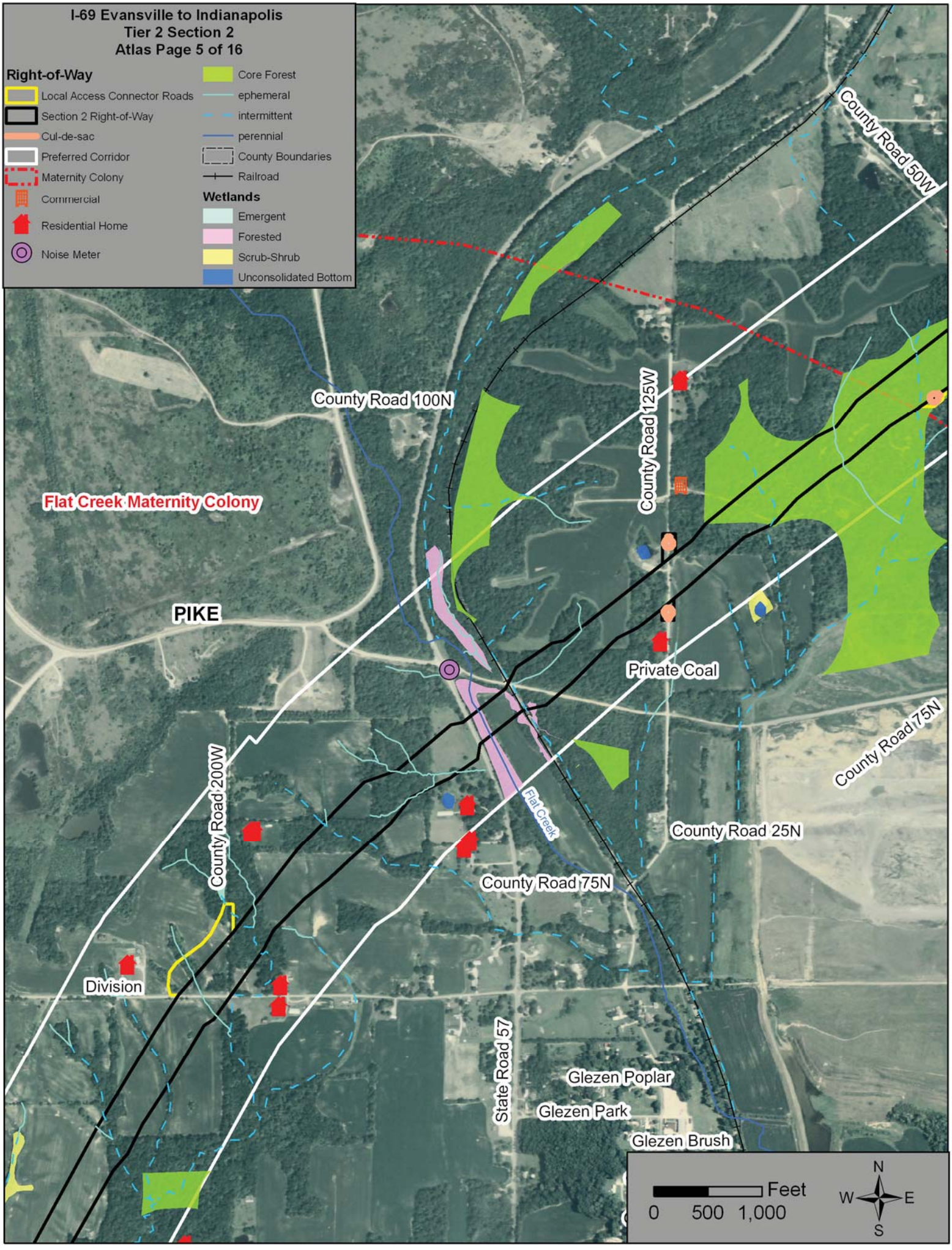

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Sheet Map
Section 2 Preferred ROW
Atlas Sheets
Maternity Colony
Tier 2 Summer Action Area
Preferred Corridor
City Boundaries
County Boundaries
Major Rivers/Streams
Legal Drains
Managed Lands
Wheatland
Longfellow Park
Washington
Veale Creek
DAVIESS
KNOX
East Fork White River
Petersburg Public Access Site
Petersburg
PIKE
Patoka River
Patoka National Wildlife Refuge
Flat Creek
GIBSON
Oakland City
Winslow
DUBOIS
Sugar Ridge Fish & Wildlife Refuge
Ferdinand State Forest
50
241
61
57
257
56
356
64
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
0
1.25
2.5
5
Miles
N
W
E
S

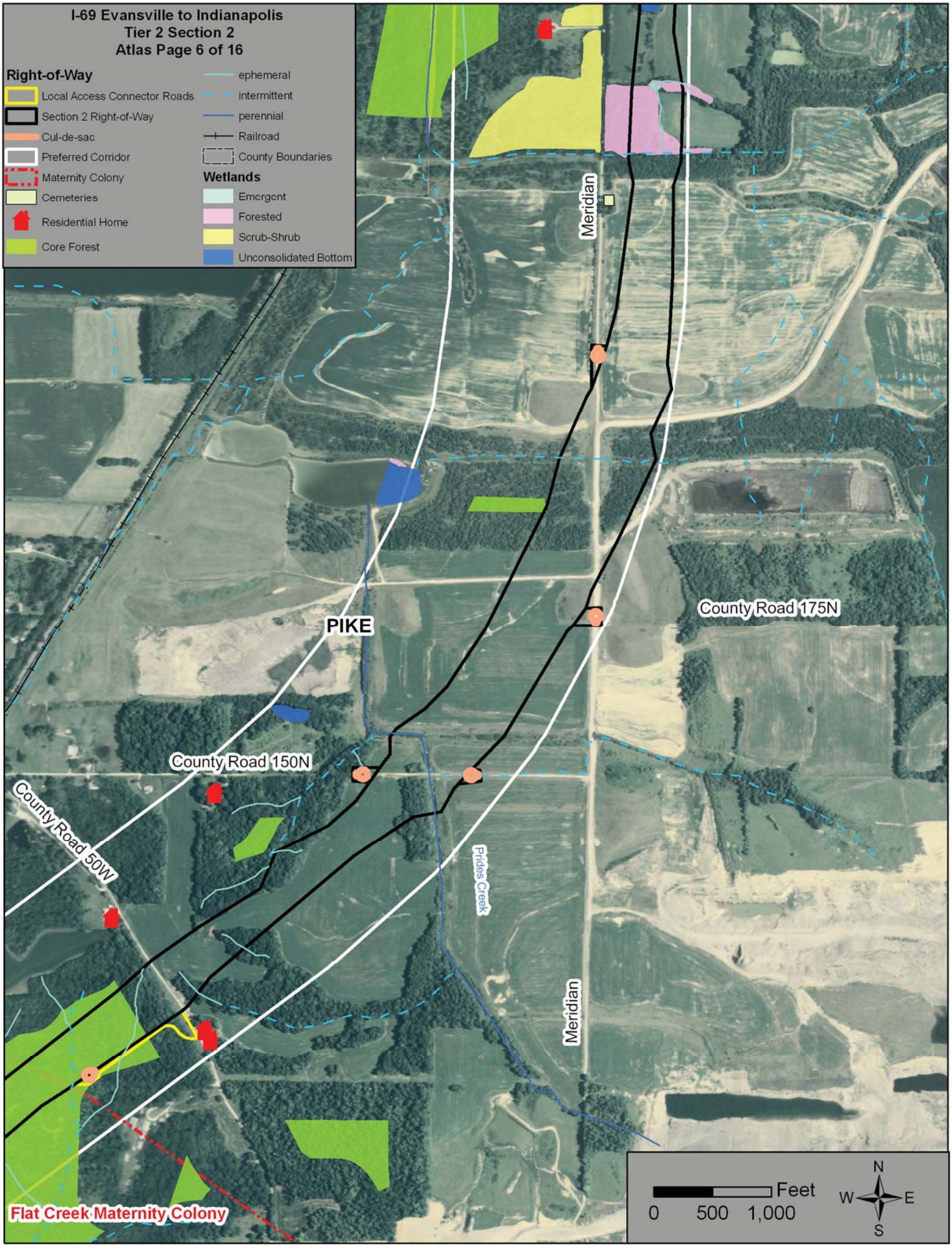

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 1 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Preferred Corridor
Maternity Colony
Residential Home
Commercial Building
Potential Transmission Tower Relocation
Cemeteries
Noise Meter
Legal Drains
Transmission Lines
ephemeral
intermittent
perennial
Railroad
Core Forest
Wetlands
Forested
Unconsolidated Bottom
Floodplains
Managed Lands
Patoka River Maternity Colony
Allen Lateral
West Fork Keg Creek
Wallace Lateral
Kirk Lateral
County Road 950E
Keg Creek
County Road 125S
State Road 64
Feet
0
500
1,000
N
W
E
S

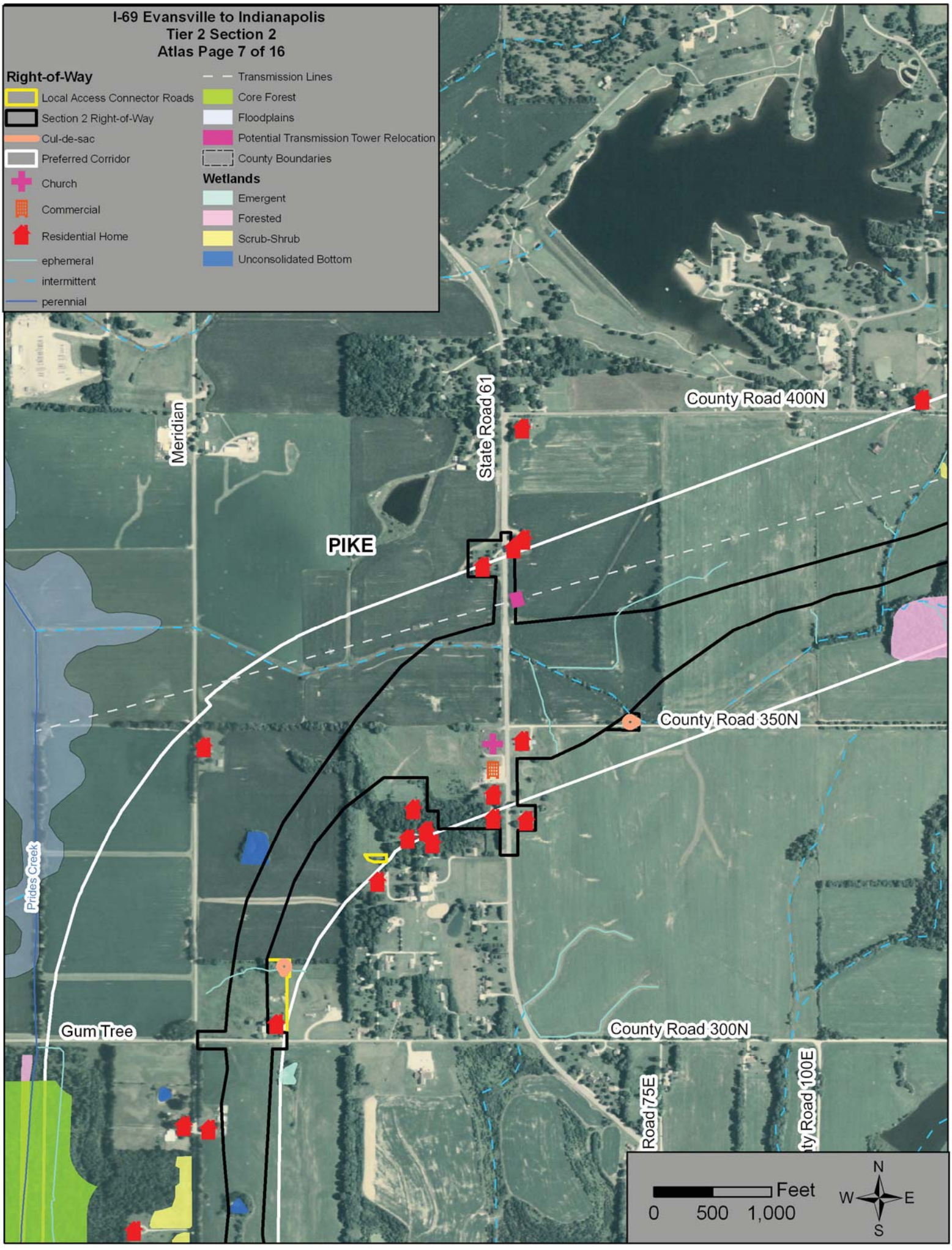

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 2 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Preferred Corridor
Maternity Colony
Church
Commercial
Residential Home
Transmission Lines
Core Forest
Floodplains
Railroad
Noise Meter
Managed Lands
ephemeral
intermittent
perennial
County Boundaries
Wetlands
Forested
Unconsolidated Bottom
Hurricane Creek
Miller Bridge
Patoka National Wildlife Refuge
County Road 1050E
County Road 50N
GIBSON
Patoka River Maternity Colony
Buck Creek
County Road 000
County Road 1150
County Road 50S
Feet
0
500
1,000
N
W
E
S

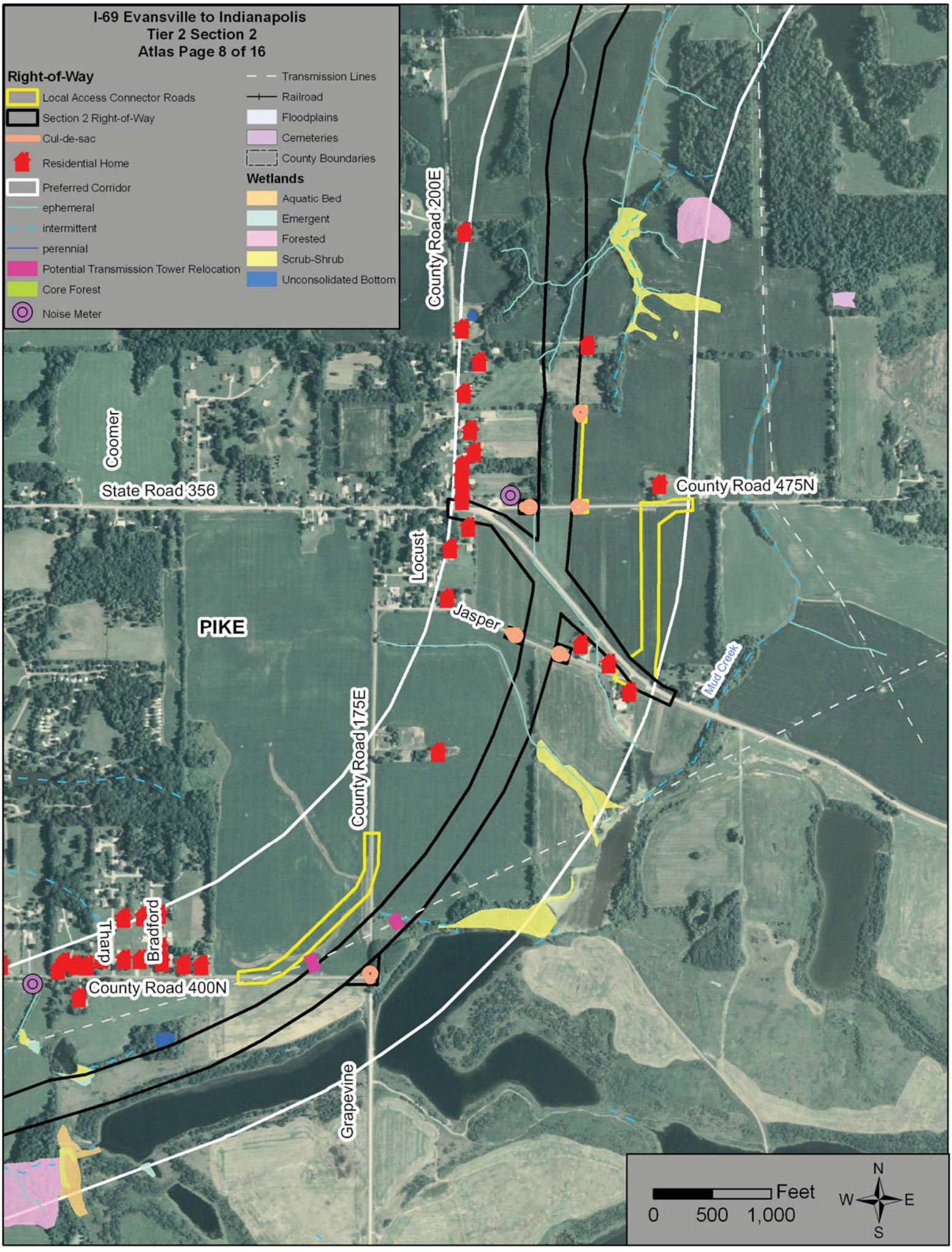

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 3 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Preferred Corridor
Maternity Colony
Noise Meter
ephemeral
intermittent
perennial
Potential Transmission Tower Relocation
Core Forest
Residential Home
Transmission Lines
Railroad
County Boundaries
Floodplains
Wetlands
Aquatic Bed
Forested
Unconsolidated Bottom
County Road 300W
County Road 200S
State Road 57
PIKE
Ferdinand State Forest
Patoka River
Patoka National Wildlife Refuge
Patoka River
County Road 150N
Flat Creek Maternity Colony
County Road 1200E
South Fork Patoka River
GIBSON
Patoka River Maternity Colony
State Road 57
County Road 75N
Feet
0
500
1,000
N
W
E
S

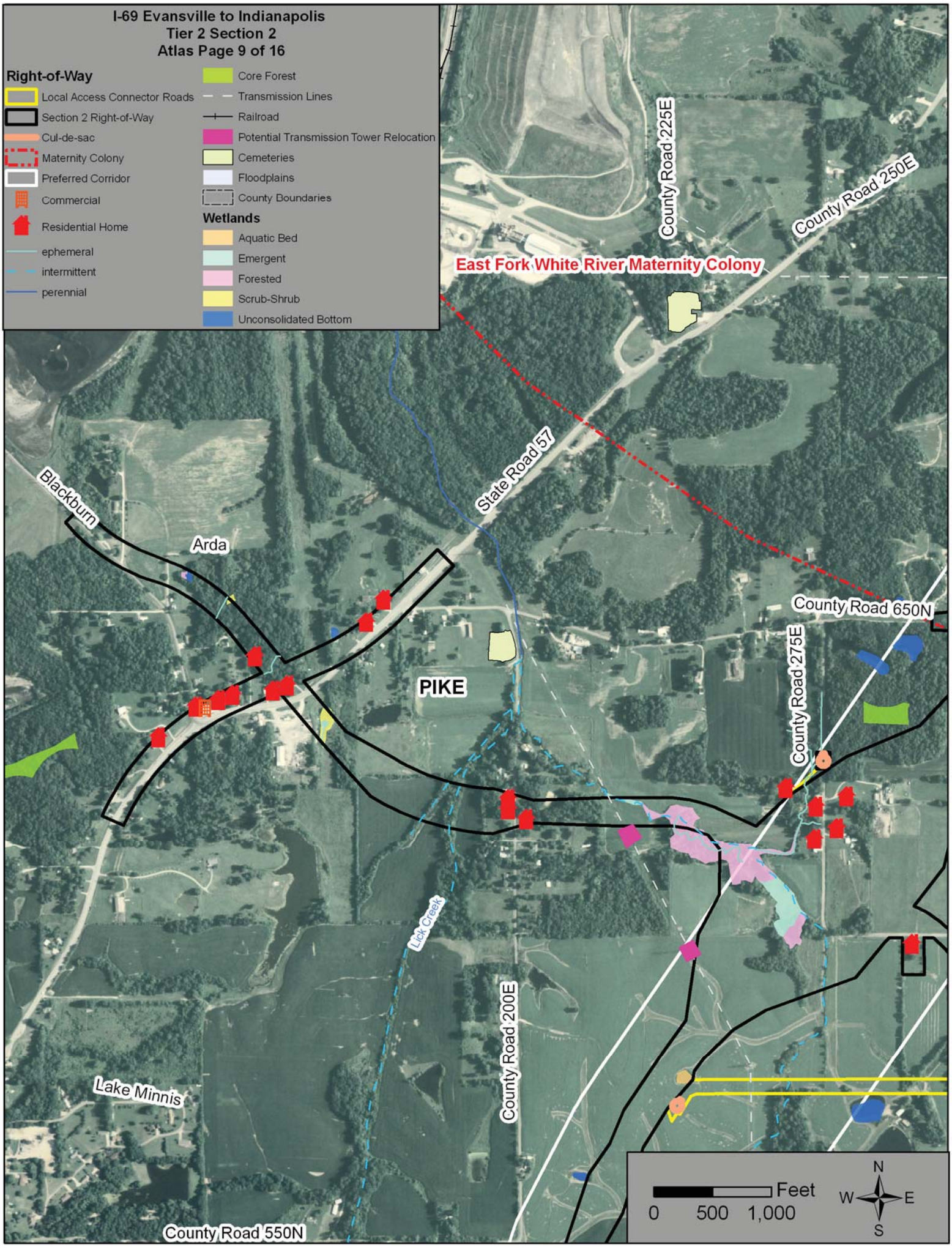

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 4 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Preferred Corridor
Maternity Colony
Multi-Family Residence
Residential Home
Transmission Lines
Railroad
Core Forest
Floodplains
ephemeral
intermittent
perennial
County Boundaries
Wetlands
Emergent
Forested
Scrub-Shrub
Unconsolidated Bottom
Division
County Road 250W
County Road 50S
County Road 75S
PIKE
Flat Creek Maternity Colony
County Road 125S
Horse Shoe
County Road 300W
County Road 200W
Patoka River Maternity Colony
Feet
0
500
1,000
N
W
E
S

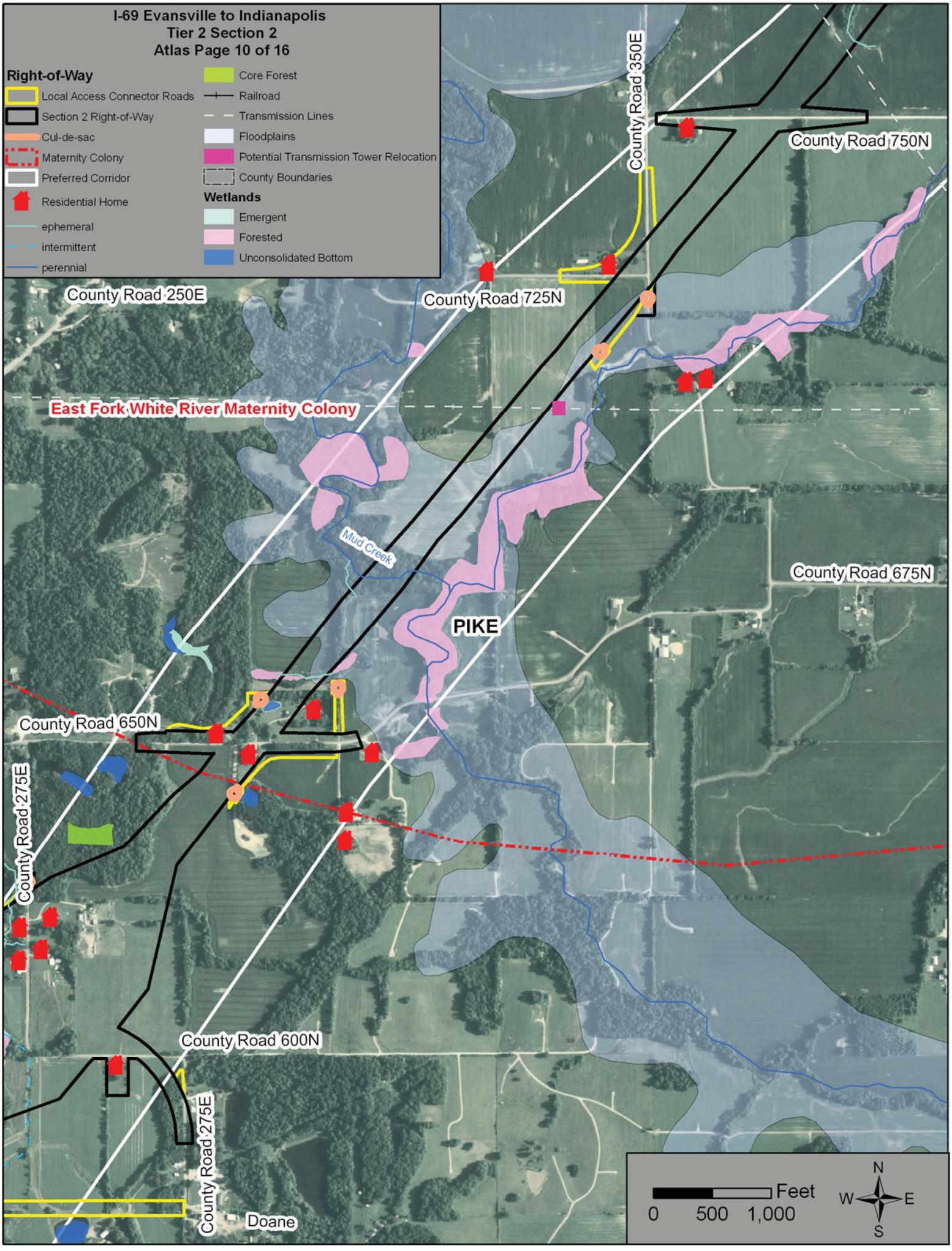

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 5 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Preferred Corridor
Maternity Colony
Commercial
Residential Home
Noise Meter
Core Forest
ephemeral
intermittent
perennial
County Boundaries
Railroad
Wetlands
Emergent
Forested
Scrub-Shrub
Unconsolidated Bottom
County Road 50W
County Road 100N
County Road 125W
Flat Creek Maternity Colony
PIKE
Private Coal
County Road 75N
County Road 200W
Flat Creek
County Road 25N
County Road 75N
Division
State Road 57
Glezen Poplar
Glezen Park
Glezen Brush
Feet
0 500 1,000
N
W
E
S

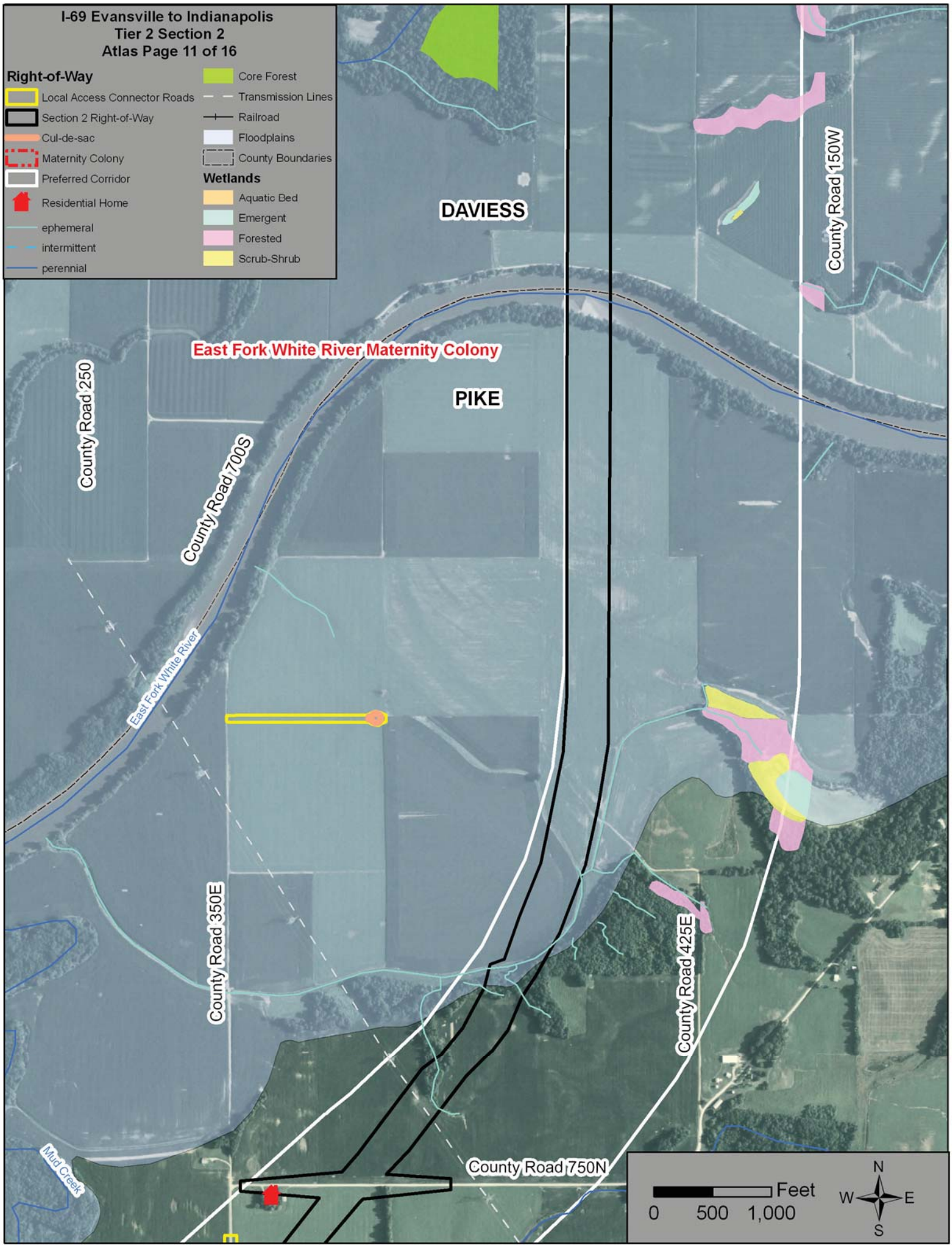

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 6 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Preferred Corridor
Maternity Colony
Cemeteries
Residential Home
Core Forest
ephemeral
intermittent
perennial
Railroad
County Boundaries
Wetlands
Emergent
Forested
Scrub-Shrub
Unconsolidated Bottom
Meridian
PIKE
County Road 175N
County Road 150N
County Road 50W
Prides Creek
Meridian
Flat Creek Maternity Colony
Feet
0
500
1,000
N
W
E
S

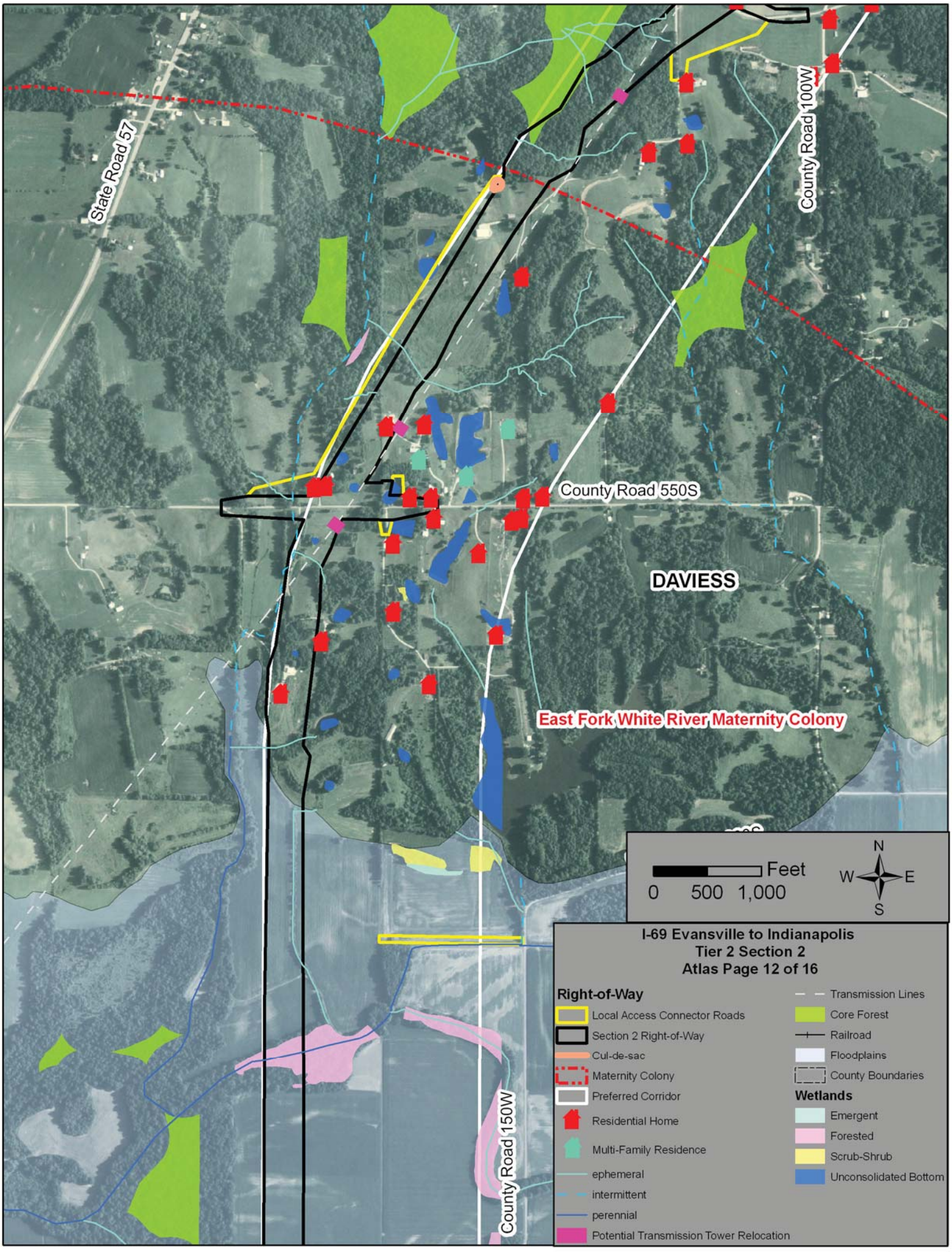

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 7 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Preferred Corridor
Church
Commercial
Residential Home
ephemeral
intermittent
perennial
Transmission Lines
Core Forest
Floodplains
Potential Transmission Tower Relocation
County Boundaries
Wetlands
Emergent
Forested
Scrub-Shrub
Unconsolidated Bottom
Meridian
State Road 61
County Road 400N
PIKE
County Road 350N
Prides Creek
Gum Tree
County Road 300N
Road 75E
ty Road 100E
Feet
0
500
1,000
N
W
E
S

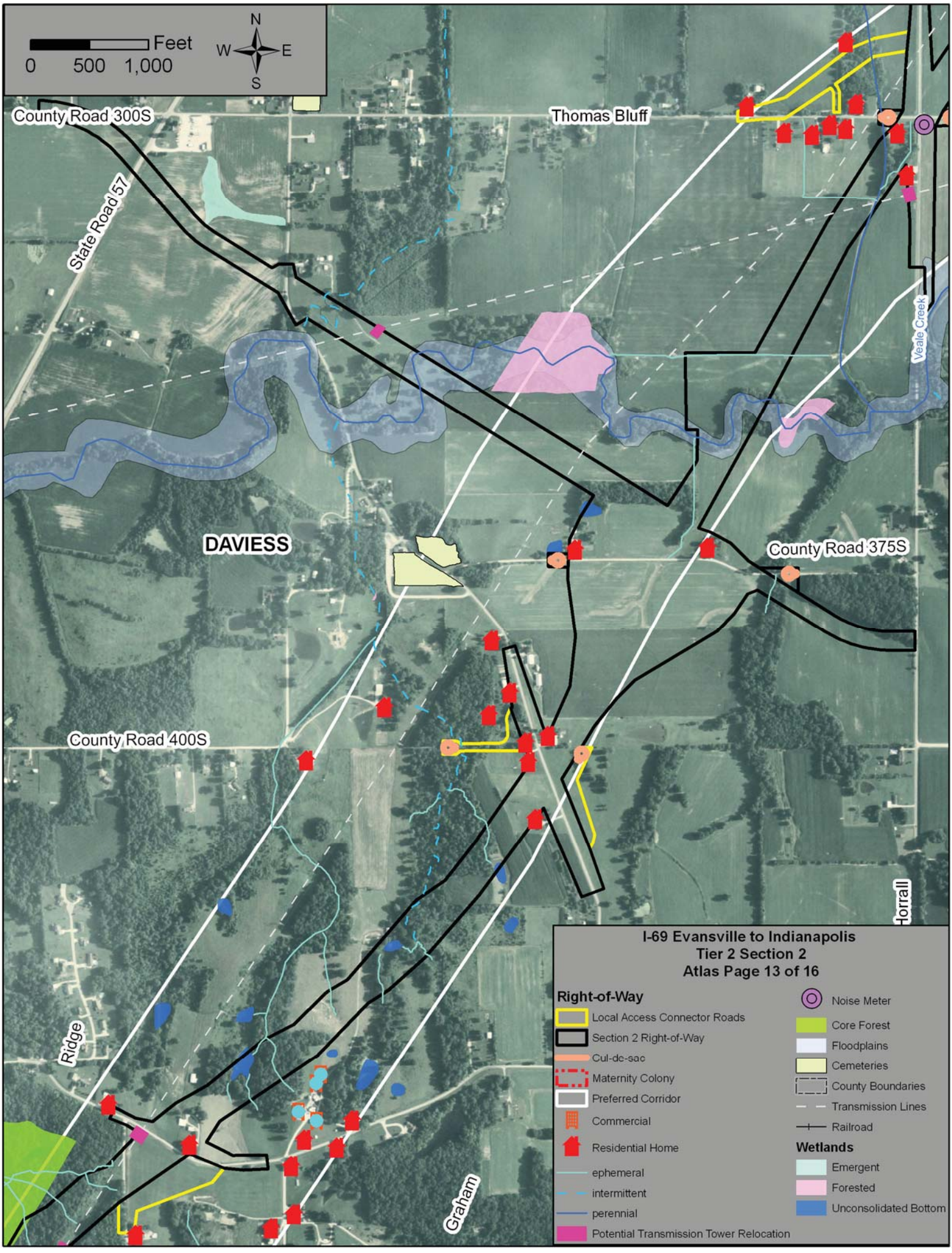

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 8 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Residential Home
Preferred Corridor
ephemeral
intermittent
perennial
Potential Transmission Tower Relocation
Core Forest
Noise Meter
Transmission Lines
Railroad
Floodplains
Cemeteries
County Boundaries
Wetlands
Aquatic Bed
Emergent
Forested
Scrub-Shrub
Unconsolidated Bottom
County Road 200E
Coomer
State Road 356
County Road 475N
Locust
Jasper
PIKE
Mud Creek
County Road 175E
Thorp
Bradford
County Road 400N
Grapevine
Feet
0
500
1,000
N
W
E
S

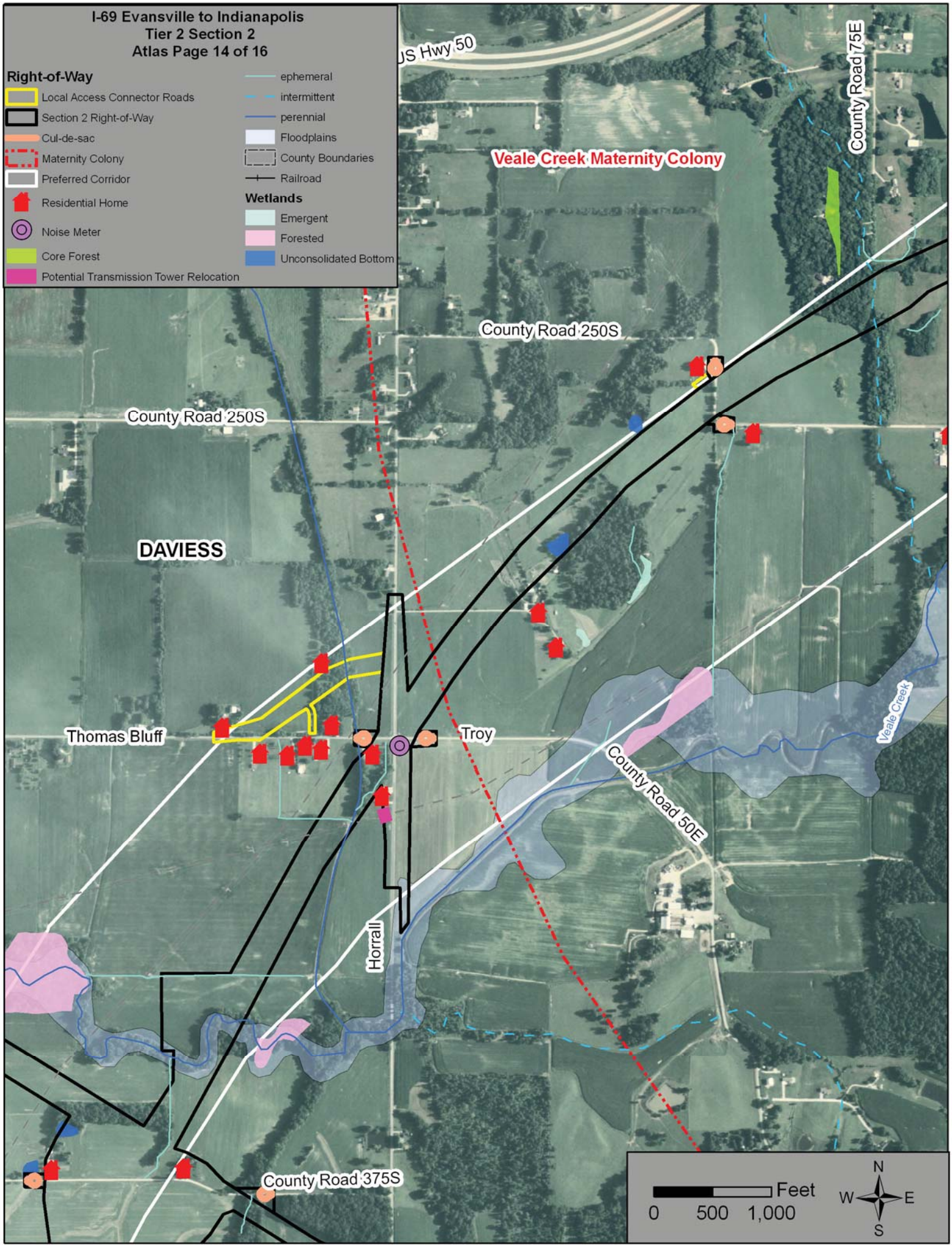

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 9 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Maternity Colony
Preferred Corridor
Commercial
Residential Home
ephemeral
intermittent
perennial
Core Forest
Transmission Lines
Railroad
Potential Transmission Tower Relocation
Cemeteries
Floodplains
County Boundaries
Wetlands
Aquatic Bed
Emergent
Forested
Scrub-Shrub
Unconsolidated Bottom
East Fork White River Maternity Colony
County Road 225E
County Road 250E
State Road 57
Blackburn
Arda
PIKE
County Road 650N
County Road 275E
Lick Creek
County Road 200E
Lake Minnis
County Road 550N
Feet
0
500
1,000
N
W
E
S

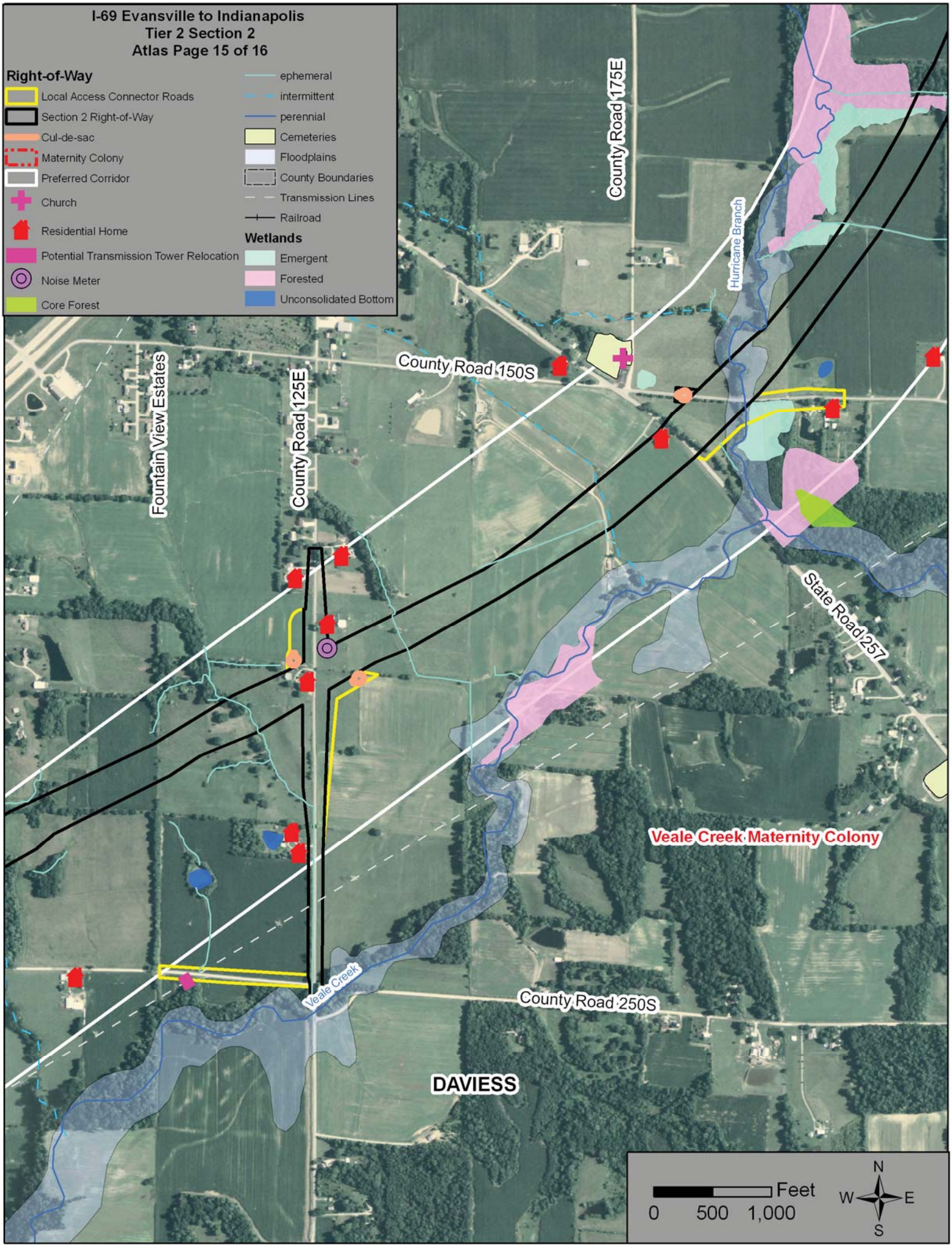

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 10 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Maternity Colony
Preferred Corridor
Residential Home
ephemeral
intermittent
perennial
Core Forest
Railroad
Transmission Lines
Floodplains
Potential Transmission Tower Relocation
County Boundaries
Wetlands
Emergent
Forested
Unconsolidated Bottom
County Road 350E
County Road 750N
County Road 250E
County Road 725N
East Fork White River Maternity Colony
Mud Creek
County Road 675N
PIKE
County Road 650N
County Road 275E
County Road 600N
County Road 275E
Doane
Feet
0
500
1,000
N
W
E
S

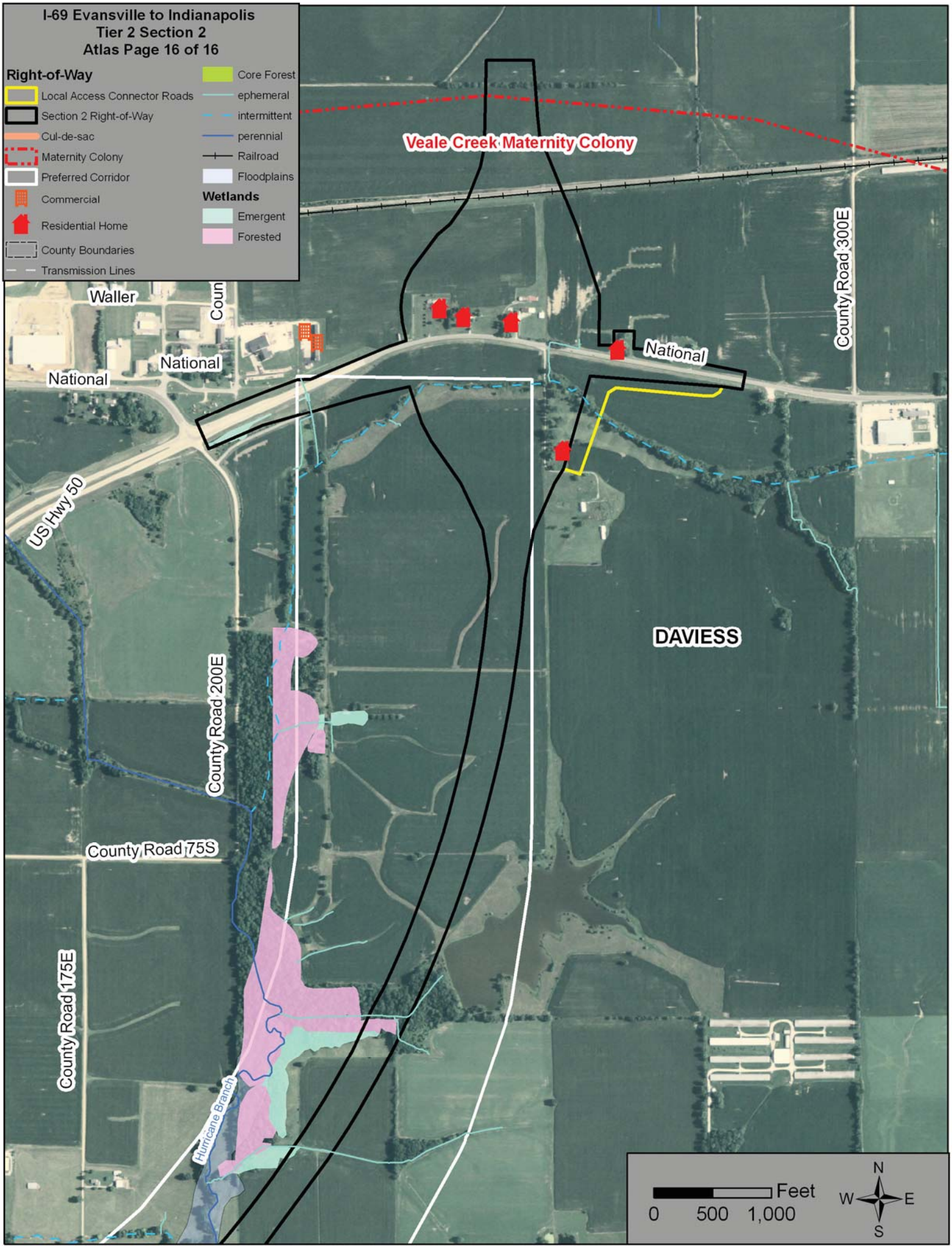

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 11 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Maternity Colony
Preferred Corridor
Residential Home
ephemeral
intermittent
perennial
Core Forest
Transmission Lines
Railroad
Floodplains
County Boundaries
Wetlands
Aquatic Bed
Emergent
Forested
Scrub-Shrub
DAVIESS
PIKE
East Fork White River Maternity Colony
County Road 150W
County Road 250
County Road 700S
East Fork White River
County Road 350E
County Road 425E
County Road 750N
Mud Creek
Feet
0
500
1,000
N
W
E
S


State Road 57
County Road 100W
County Road 550S
DAVIESS
East Fork White River Maternity Colony
County Road 150W
Feet
0 500 1,000
N
W E
S
I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 12 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Maternity Colony
Preferred Corridor
Residential Home
Multi-Family Residence
ephemeral
intermittent
perennial
Potential Transmission Tower Relocation
Transmission Lines
Core Forest
Railroad
Floodplains
County Boundaries
Wetlands
Emergent
Forested
Scrub-Shrub
Unconsolidated Bottom


Feet
0 500 1,000
N
W E
S
County Road 300S
Thomas Bluff
State Road 57
Veale Creek
DAVIESS
County Road 375S
County Road 400S
Ridge
Graham
I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 13 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Maternity Colony
Preferred Corridor
Commercial
Residential Home
ephemeral
intermittent
perennial
Potential Transmission Tower Relocation
Noise Meter
Core Forest
Floodplains
Cemeteries
County Boundaries
Transmission Lines
Railroad
Wetlands
Emergent
Forested
Unconsolidated Bottom


I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 14 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Maternity Colony
Preferred Corridor
Residential Home
Noise Meter
Core Forest
Potential Transmission Tower Relocation
ephemeral
intermittent
perennial
Floodplains
County Boundaries
Railroad
Wetlands
Emergent
Forested
Unconsolidated Bottom
US Hwy 50
County Road 75E
Veale Creek Maternity Colony
County Road 250S
County Road 250S
DAVIESS
Thomas Bluff
Troy
Veale Creek
County Road 50E
Horrall
County Road 375S
Feet
0
500
1,000
N
W
E
S

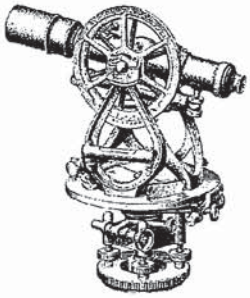

I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 15 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Maternity Colony
Preferred Corridor
Church
Residential Home
Potential Transmission Tower Relocation
Noise Meter
Core Forest
ephemeral
intermittent
perennial
Cemeteries
Floodplains
County Boundaries
Transmission Lines
Railroad
Wetlands
Emergent
Forested
Unconsolidated Bottom
County Road 175E
Hurricane Branch
County Road 150S
Fountain View Estates
County Road 125E
State Road 257
Veale Creek Maternity Colony
Veale Creek
County Road 250S
DAVIESS
Feet
0
500
1,000
N
W
E
S


I-69 Evansville to Indianapolis
Tier 2 Section 2
Atlas Page 16 of 16
Right-of-Way
Local Access Connector Roads
Section 2 Right-of-Way
Cul-de-sac
Maternity Colony
Preferred Corridor
Commercial
Residential Home
County Boundaries
Transmission Lines
Core Forest
ephemeral
intermittent
perennial
Railroad
Floodplains
Wetlands
Emergent
Forested
Veale Creek Maternity Colony
Waller
National
National
National
US Hwy 50
County Road 300E
County Road 200E
County Road 75S
County Road 175E
DAVIESS
Hurricane Branch
Feet
0
500
1,000
N
W
E
S

APPENDIX C

Section 2

Legal Drain Letter



Gibson County Surveyor's Office

Michael W. Stevenson, P.L.S.
Gibson County Surveyor
101 N. Main St., Courthouse
Princeton, Indiana 47670
(812) 385-4853

October 20, 2009

To whom it may concern:

At this time the Gibson County Surveyor's Office does not have plans to remove trees along the regulated drains listed below, however trees along these drains can make it difficult to maintain the ditch. It would be my desire to have all trees removed along these ditches for accessibility but it is not feasible to remove these trees unless maintenance needs to be performed in the area. I cannot think of an instance where we would ever need to remove all trees from the top of bank out to the 75 foot right-of-entry unless there was a major reconstruction of a ditch being performed. If we were to remove trees without reconstruction of the ditch, I would estimate that 30 to 40 foot would be sufficient for maintenance. I do not, however, wish to relinquish my rights to remove trees out to the 75 foot limit if I deem it necessary.

The "legal drains" or "regulated drains" which are being discussed are as follows:

1. East Fork Main of the Brownlee Ditch System (west of Station 218+94.5)
2. Kirk Lateral to East Fork Main of the Brownlee Ditch System
3. Wallace Lateral to East Fork Main of the Brownlee Ditch System
4. Allen Lateral to East Fork Main of the Brownlee Ditch System
5. Branch #1 to Allen Lateral to East Fork Main of the Brownlee Ditch System
6. Branch #2 to Allen Lateral to East Fork Main of the Brownlee Ditch System

Sincerely,

Michael W. Stevenson, P.L.S.
Gibson County Surveyor

APPENDIX D

Overall Impact Summary

Summary of Impacts for I-69															
Project Section*	**Direct Habitat Loss Estimated in the Tier 1 BA Addendum (acres)**					**Direct Habitat Loss Estimated in the Tier 2 BA (acres)****					**Total Habitat Available in the Summer Action Area after Construction (acres)*****				
	Total Forest ******	**Upland Forest (UP)**	**Forested Wetland (PFO)**	**Scrub Shrub (SS)**	**Emergent (EM)**	**Total Forest**	**UP**	**PFO**	**SS**	**EM**	**Total Forest**	**UP**	**PFO**	**SS**	**EM**
1	55	48	7	0	3	27.4	27.4	0.02	0	1.3	14, 693	12,908	1,785	480	292
2	280	236	44	3	2	226.8	210.7	16.1	0.4	6.7	25,840	18,554	7,286	1,094	870
3	112	102	10	0	3	71.1	67.8	2.5	1.1	2.6	15, 556	12,232	3,324	131	527
4	1,132	1,112	20	1	0	1,132	1,112	20	1	0	54,874	54,077	797	6	46
5	303	295	8	0	2	303	295	8	0	2	31,648	29,990	1,658	87	335
6	266	257	9	0	6	266	257	9	0	6	19, 593	17,686	1,907	42	494
Total	**2,148**	**2,050**	**98**	**4**	**16**	**2,026.3**	**1,969.9**	**55.6**	**2.5**	**18.6**	**162,204**	**145,447**	**16,757**	**1, 840**	**2, 564**
Total Habitat Loss	**2,169**					**2,047.4**					**166,608**				
*Note that the only sections that have been altered from the Tier 1 BA Addendum are the sections for which a Tier 2 BA has been completed at this time. All other sections reflect the same number that was estimated in the Tier 1 BA Addendum.															
**These impact acreages only include the EEAC impacts.															
***These acreages include the Tier 2 data (EEAC data within the corridor and right-of-way and NWI (wetlands) or 2001 USGS (forest) data for the remaining area) within the remaining summer action area.															
****As presented in the Biological Opinion, Tier 2 Total Forest Loss includes wetland forest.															

APPENDIX E

Indirect Development Land Use Analysis

			NLCD 2001								CORRIDOR MODEL TAZ LAYER						
TAZ ID	COUNTY NUMBER	COUNTY NAME	DEVELOPED (ac)	UNUSABLE (ac)	AG/OTHER in FLOODPLAIN (ac)	FOREST in FLOODPLAIN (ac)	AVAILABLE AG/OTHER (ac)	AVAILABLE FOREST (ac)	TOTAL LANDCOVER (ac)	TOTAL TAZ AREA (ac)	NOBUILD GROWTH (ac)	BUILD GROWTH (ac)	INDUCED GROWTH (ac)	INDUCED HOUSEHOLDS	INDUCED HOUSEHOLDS (ac)	INDUCED EMPLOYMENT	INDUCED EMPLOYMENT (ac)
1400217	14	Daviess IN	59.346	0.000	0.000	0.000	1008.580	5.477	1073.403	1073.403	0.505	2.778	2.273	0	0.000	35	2.273
1400221	14	Daviess IN	53.771	0.000	0.000	0.000	548.389	0.782	602.943	602.943	0.000	3.766	3.766	0	0.000	58	3.766
1400222	14	Daviess IN	159.933	1.701	0.000	0.000	262.912	80.588	505.134	505.134	18.535	63.232	44.697	177	44.697	0	0.000
1400223	14	Daviess IN	118.820	0.000	0.000	0.000	53.313	18.465	190.597	190.597	14.798	18.629	3.831	0	0.000	59	3.831
1400224	14	Daviess IN	93.259	0.000	0.000	0.000	290.306	15.380	398.946	398.946	1.342	14.220	12.879	51	12.879	0	0.000
1400504	14	Daviess IN	40.424	0.000	0.000	0.000	368.005	84.067	492.495	492.495	2.020	9.488	7.468	0	0.000	115	7.468
1400803	14	Daviess IN	40.842	0.000	0.000	0.000	125.941	32.426	199.208	199.208	5.051	8.817	3.766	0	0.000	58	3.766
1402204	14	Daviess IN	116.440	0.000	4.056	9.162	1358.059	79.799	1567.515	1567.515	0.758	8.290	7.532	0	0.000	116	7.532
2600508	26	Gibson IN	34.730	0.000	0.000	0.000	176.564	8.304	219.598	219.598	0.000	2.038	2.038	0	0.000	32	2.038
2600519	26	Gibson IN	77.240	3.302	25.663	22.199	255.883	222.756	607.042	607.041	4.350	8.740	4.390	18	4.390	0	0.000
2600921	26	Gibson IN	40.951	9.435	0.000	0.000	93.366	178.658	322.410	322.410	0.000	4.390	4.390	18	4.390	0	0.000
6300301	63	Pike IN	77.708	1.473	0.000	0.000	281.952	75.894	437.027	437.027	6.573	8.261	1.688	0	0.000	26	1.688
6300309	63	Pike IN	66.809	1.041	0.000	0.000	561.557	178.798	808.205	808.205	0.260	0.584	0.325	0	0.000	5	0.325
6300310	63	Pike IN	23.584	0.000	0.000	0.000	232.163	14.914	270.661	270.661	1.515	9.343	7.828	31	7.828	0	0.000
6300502	63	Pike IN	120.138	0.000	112.761	3.540	548.077	7.647	792.163	792.163	1.039	2.403	1.364	0	0.000	21	1.364
6300505	63	Pike IN	30.390	0.000	0.000	0.000	0.000	0.000	30.390	30.390	1.213	2.576	1.364	0	0.000	21	1.364
6300506	63	Pike IN	66.344	0.000	0.000	0.000	341.475	30.883	438.702	438.702	7.006	7.720	0.714	0	0.000	11	0.714
6300518	63	Pike IN	51.737	0.992	0.000	0.000	462.583	171.417	686.728	686.728	0.000	0.714	0.714	0	0.000	11	0.714
6300709	63	Pike IN	150.118	0.890	0.000	0.000	956.761	279.958	1387.727	1387.727	4.798	29.040	24.242	96	24.242	0	0.000
6300711	63	Pike IN	105.469	0.000	0.000	0.000	775.305	118.000	998.774	998.774	0.000	1.558	1.558	0	0.000	24	1.558
6301203	63	Pike IN	141.407	0.889	0.000	0.000	208.156	7.930	358.381	358.381	0.390	0.714	0.325	0	0.000	5	0.325
6302901	63	Pike IN	35.873	1.922	36.864	45.880	112.818	209.581	442.937	442.937	1.263	1.912	0.649	0	0.000	10	0.649

NOTE: TAZ highlighted in YELLOW (TAZ 6300505) has more "BUILD" Acres (NoBuild + Induced) than "Available Ag/Other" acres. The aerial shows that there is approximately 6 acres of open land available to accomadate the 2.576 acres of development.

Appendix F has been removed because the mitigation property is still undergoing the acquisition process

Appendix G

Mitigation Site Documentation

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-004

Tract Name 1

Tract Name 2 N/A

Owner USFWS (Patoka River NWR)

Manager USFWS (Patoka River NWR)

Property Location

County	Section	Township	Range	Indiana Bat Maternity Colony
Pike				
Political Township Logan	35	1S	9W	Patoka River

Mitigation Summary

Total Property Acres 19.65

Wetlands

Anticipated Credits	0	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	2	Acres
Approved Credits	2	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	**0**	**Acres**
Preserved	**2**	**Acres**

Streams

Anticipated Credits	0	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	0	0	0	Acres
Forested	0	0	0	Acres
Scrub-Shrub	0	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White **8-Digit HUC** 05120209 **14-Digit HUC** 05120209080010

Current Status

Project Phase Released **Purchased** Yes **Purchase Type** Fee Simple **Constructed** N/A **Begin Construction Date** N/A

Designed N/A **End Construction Date** N/A

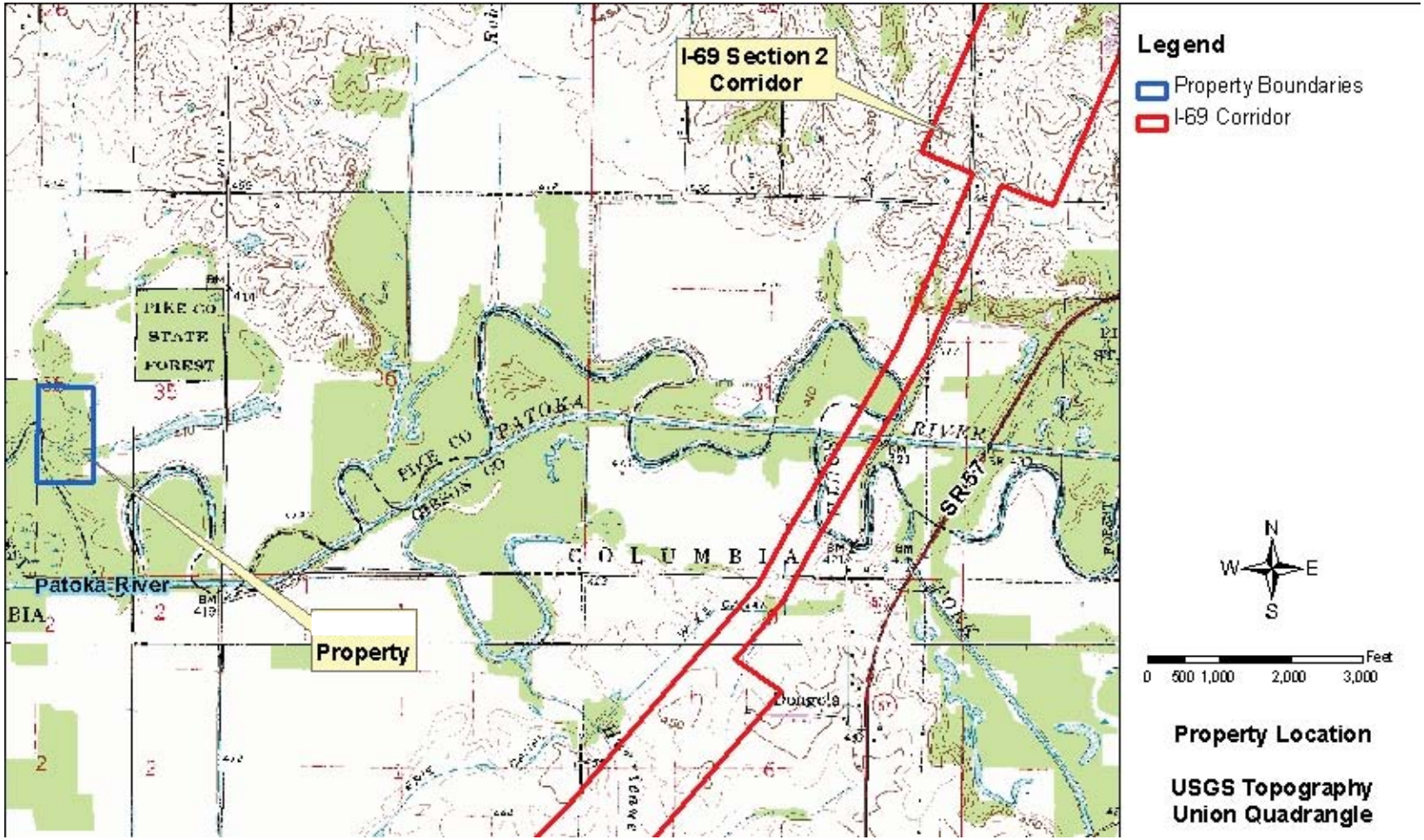
Comments INDOT assisted in the purchase of this property by the USFWS as part of the Patoka River NWR. The USFWS has granted 2 acres of forest preservation mitigation credits towards I-69 for INDOT assistance in a letter dated February 13, 2006.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-004 **Tract Name**



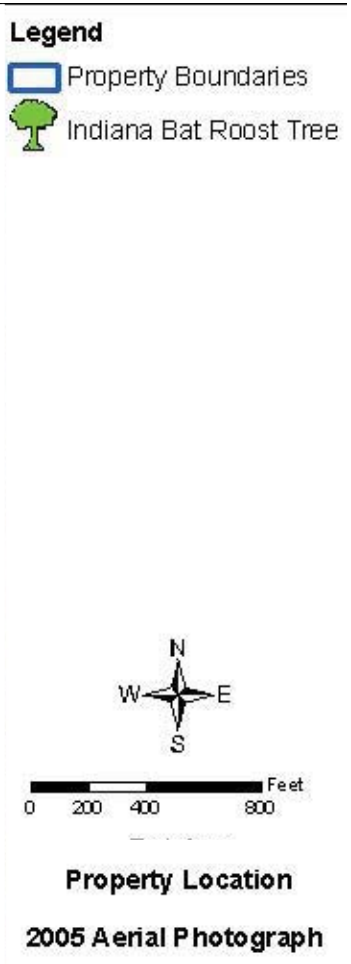
Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-004 **Tract Name**

Property Detail Map has been removed for confidentiality reasons related to the federally endangered Indiana bat (*Myotis sodalis*)



Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-004
Tract Name

Phase Final State-No Construction
Year 2008

1

View of potential bat roost tree, Unknown location - 8/14/2008.

2

View of marsh, Unknown location - 7/30/2008

3

View of marsh/potential bat roost trees, Unknown location - 7/30/2008.

4

View of marsh/potential bat roost trees, Unkown location - 7/30/2008.

5

View of marsh/potential bat roost trees, Unknown location - 7/30/2008.

6

View of heron rookery and potential bat roost trees, Unknown location - 7/30/2008.

United States Department of the Interior
Fish and Wildlife Service

Bloomington Field Office (ES)
620 South Walker Street
Bloomington, IN 47403-2121
Phone: (812) 334-4261 Fax: (812) 334-4273

13 February 2006

Mr. Tom Seeman, P.E.
Project Manager - Indiana Department of Transportation
Indiana Government Center North, Room N642
100 North Senate Avenue
Indianapolis, Indiana 46204

Re: INDOT's Assistance in Purchasing the Jack Property in Pike County

Dear Mr. Seeman,

It has come to our attention that INDOT is willing to assist the USFWS (Division of Refuges, Patoka River National Wildlife Refuge) in the purchasing of the Jack Property in the Patoka River Bottoms. The financial contribution from INDOT would be $1,950. Such a donation will allow USFWS to have the sufficient funds to purchase this property and further enhance the other refuge holdings in the area.

The Jack Property is 19.65 acres (Tract 77) in size and almost completely wooded. It's location is west of Miller Road and immediately northwest of the Miller Bridge over the Patoka River in Pike County. At this time, Mr. Bill McCoy, manager of the Patoka River National Wildlife Refuge, is handling this transaction. We recommend that the INDOT (Division of Right-of-Way and Acquisition) contact him at the following address and telephone number for further information and assistance: 510 ½ West Morton, Box 217, Oakland City, Indiana 47660 at 812-749-3199.

The value of this 19.65 acre property is exceptional with its natural habitat, dead trees, snags, and it is known to have a primary roost tree for the Indiana bat. The property is located in prime summer habitat for this species, and approximately 2 miles west of the proposed I-69. The purchasing of this property and its incorporation into the Patoka River NWR would be a valuable contribution to the species.

We appreciate INDOT's sensitivity and receptivity in being pro-active and partnering with USFWS in the purchasing of this property. We consider the acquisition of this property an I-69 conservation measure and it is our intention to provide 2 acres of mitigation (i.e., acreage in proportion with INDOT's financial contribution towards the total purchase price) for INDOT's

financial contribution towards the purchase of this parcel. Such acres will be put towards the mitigation acres required for the proposed construction of I-69.

If you should have any questions, please contact Mr. Andy King at 812-334-4261 ext. 216.

Sincerely,

Scott E. Pruitt
Field Supervisor

cc: Janice Osadzcuk, INDOT
Tony DeSimone, FHWA
Kent Ahrenholtz, BLA
Jason DuPont, BLA
Bill McCoy, FWS, Patoka River NWR

Appendix H

Mitigation Site Documentation

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-002

Tract Name 1

Tract Name 2 N/A

Owner INDOT

Manager INDOT

Property Location

County	Section	Township	Range	Indiana Bat Maternity Colony
Pike				
Political Township Logan	31	1S	8W	Flat Creek/Patoka River

Mitigation Summary

Total Property Acres 20*

Wetlands

Anticipated Credits	0	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	13.9	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	**11.5**	**Acres**
Preserved	**2.4**	**Acres**

Streams

Anticipated Credits	0	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	0	0	0	Acres
Forested	0	0	0	Acres
Scrub-Shrub	0	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White **8-Digit HUC** 05120209 **14-Digit HUC** 05120209080010

Current Status

Project Phase Planning/Design **Purchased** Yes **Purchase Type** Fee Simple **Constructed** No **Begin Construction Date** N/A

Designed No **End Construction Date** N/A

Comments Anticipated mitigation credits are based on a conceptual mitigation plan only. Actual mitigation amounts may vary upon final design.

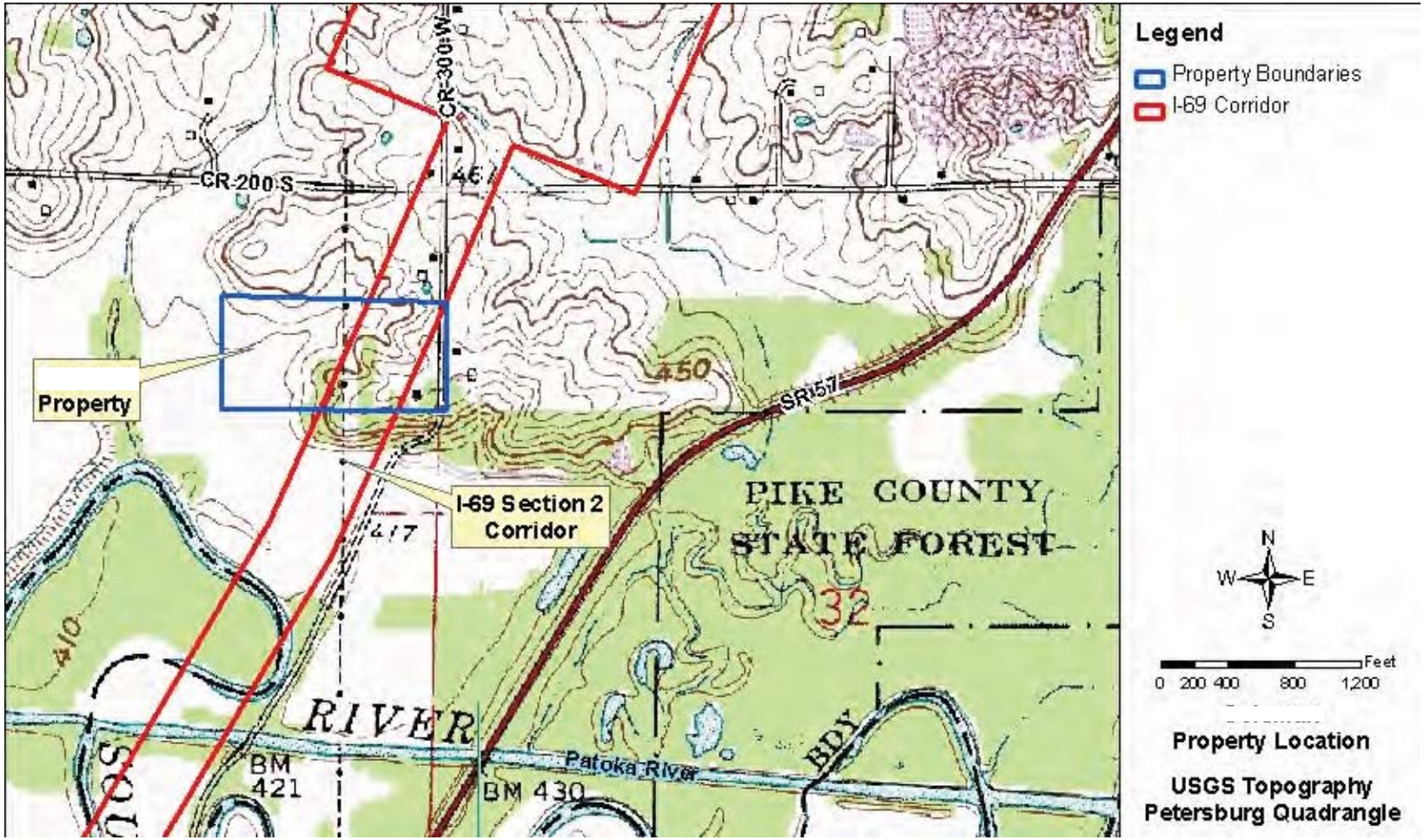
*Balance of property acreage other than forest mitigation consists of 6.1 acres of future I-69 Right-of-Way.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-002 **Tract Name**



Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-002 **Tract Name**

Note: Planting zones and mitigation plan is conceptual only. Mitigation acreages and actual planting zones may vary upon final design.

Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-002
Tract Name

Phase Pre-Construction
Year 2008

1

Looking North at Tree Mitigation Area - 2/29/08

2

Looking North - 2/29/08

3

Looking East - 2/29/08

4

Looking South - 2/29/08

5

Looking West - 2/29/08

6

Looking SW at Detention Pond in SW corner of property - 2/29/08

Form WD-1
8/98

WARRANTY DEED

Project: ST-069-0 (A)
Code: 4702
Parcel: 3

THIS INDENTURE WITNESSETH, That _____

the Grantor(s), of Pike County, State of Indiana Convey(s) and Warrant(s) to the STATE OF INDIANA, the Grantee, for and in consideration of the sum of Forty-two Thousand Five Hundred and no/100-- Dollars ($42,500.00) (of which said sum $42,500.00 represents land and improvements acquired and $ -0- represents damages) and other valuable consideration, the receipt of which is hereby acknowledged, certain Real Estate situated in the County of Pike, State of Indiana, and being more particularly described in the legal description attached hereto as Exhibit "A" of which exhibit is incorporated herein by reference.

This conveyance is subject to any and all easements, conditions and restrictions of record.

The Grantor(s) hereby specifically acknowledge(s) and agree(s) that the Real Estate conveyed herein is conveyed in fee simple and that no reversionary rights whatsoever shall remain with the Grantor(s), or any successors in title to the abutting lands of the Grantor(s), notwithstanding any subsequent abandonment, vacation, disuse, nonuse, change of use, conveyance, lease and/or transfer by the Grantee or its successors in title, of a portion or all of the said Real Estate or any right of way, roadway or roadway appurtenances established thereupon. This acknowledgement and agreement is a covenant running with the land and shall be binding upon the Grantor(s) and all successors and assigns.

Interests in land acquired by the Indiana Department of Transportation
Grantee mailing address:
100 North Senate Avenue
Indianapolis, IN 46204-2219
I.C. 8-23-7-31

This Instrument Prepared By _____
Attorney at Law

Project: ST-069-0 (A)
Code: 4702
Parcel: 3
Page: 2 of 2

IN WITNESS WHEREOF, the said Grantor(s) has executed this instrument this 4th day of NOVEMBER, 2004.

_____(Seal) _____(Seal)
Signature Signature

_____ _____
Printed Name Printed Name

_____(Seal) _____(Seal)
Signature Signature

_____ _____
Printed Name Printed Name

STATE OF INDIANA :
SS:
COUNTY OF PIKE :

Before me, a Notary Public in and for said State and County, personally appeared Annetta Coleman and Theresa Hill, the Grantor(s) in the above conveyance, and acknowledged the execution of the same on the date aforesaid to be her voluntary act and deed and who, being duly sworn, stated that any representations contained therein are true.

Witness my hand and Notarial Seal this 4th day of NOVEMBER, 2004.

L. Scott Anderson
Signature

L. SCOTT ANDERSON
Printed Name

My Commission expires FEBRUARY 5, 2007

I am a resident of MORGAN County.

EXHIBIT "A"

Project ST-069-0(A)
Code 4702
Parcel 3 Fee
Form WD-1

The South One Half of the Northeast Quarter of the Northeast Quarter of Section Thirty-one (31), Township One (1) South, Range Eight (8) West, containing 20 acres more or less.

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-003

Tract Name 1

Tract Name 2 N/A

Owner INDOT

Manager INDOT

Property Location

County	Section	Township	Range	Indiana Bat Maternity Colony
Pike				
Political Township Logan	32	1S	8W	Flat Creek/Patoka River

Mitigation Summary

Total Property Acres 60*

Wetlands

Anticipated Credits	0	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	44.4	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	**44.4**	**Acres**
Preserved	**0**	**Acres**

Streams

Anticipated Credits	0	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	0	0	0	Acres
Forested	0	0	0	Acres
Scrub-Shrub	0	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White **8-Digit HUC** 05120209 **14-Digit HUC** 05120209060090

Current Status

Project Phase Planning/Design **Purchased** Yes **Purchase Type** Fee Simple **Constructed** No **Begin Construction Date** N/A

Designed No **End Construction Date** N/A

Comments Property is 2 Tracts (20 & 40 Acres). 20 Acre tract is in Section 31. Anticipated mitigation credits are based on a conceptual mitigation plan only. Actual mitigation amounts may vary upon final design.

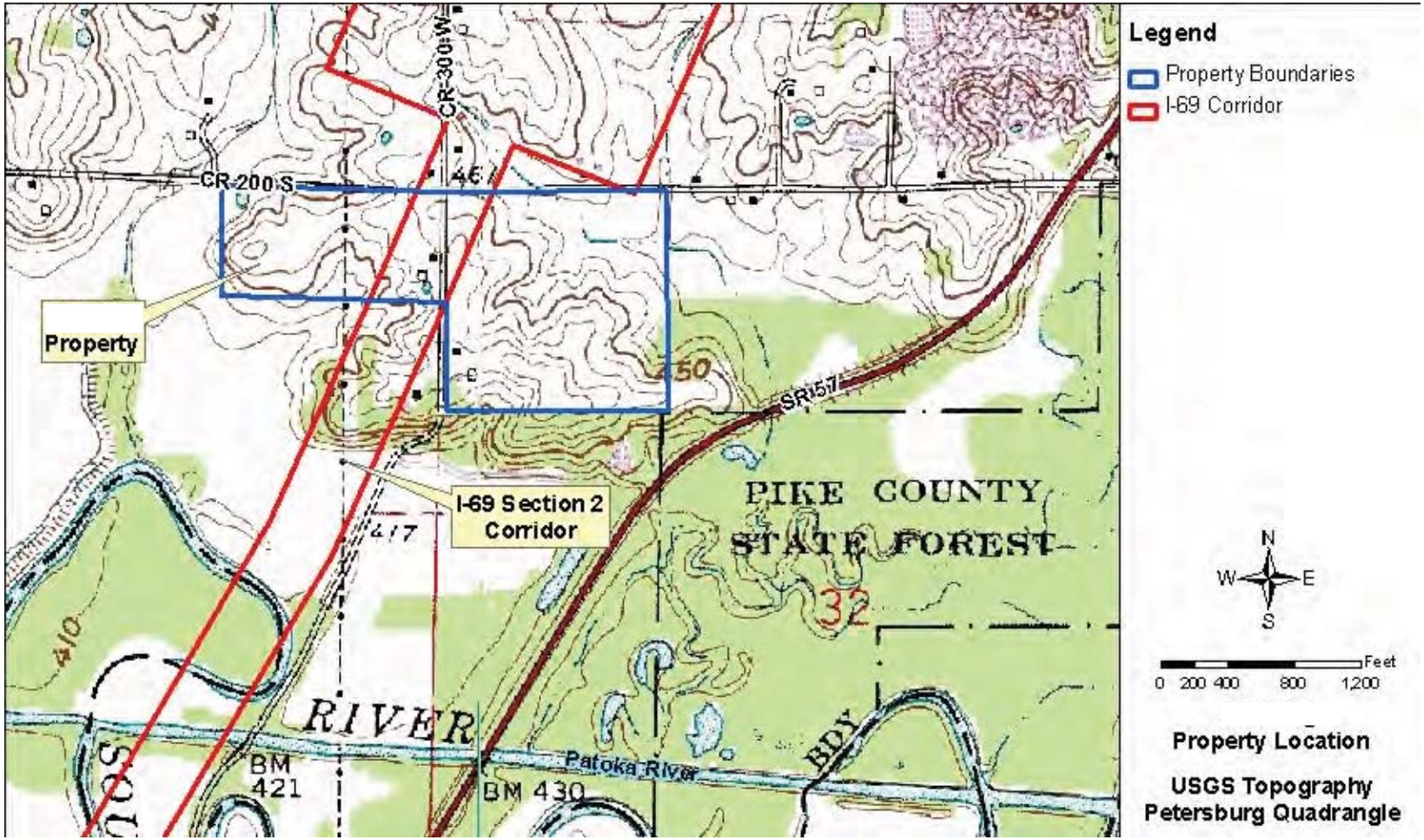
*Balance of property acreage other than forest mitigation consists of 15.6 acres of future I-69 Right-of-Way.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-003 **Tract Name**



Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-003 **Tract Name**

Note: Planting zones and mitigation plan is conceptual only. Mitigation acreages and actual planting zones may vary upon final design.

Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-003
Tract Name

Phase Pre-Construction
Year 2008

1

View of 20-acre parcel facing North - 2/29/08

2

View of 20-acre parcel facing East - 2/29/08

3

View of 20-acre parcel facing South - 2/29/08

4

View of 20-acre parcel facing West - 2/29/08

5

View of 40-acre parcel facing East - 2/29/08

6

View of 40-acre parcel facing NE - 2/29/08

Form WD-1
8/98

WARRANTY DEED

Project: ST-069-0 (A)
Code: 4702
Parcel: 2
Page: 1 of 11

THIS INDENTURE WITNESSETH, That _____ as Trustee of Revocable Trust Agreement dated the 13th day of November, 1992", an undivided ½ interest and _____ as tenants in common, an undivided ½ interest _____ the Grantor(s), of Vanderburgh County, State of Indiana Convey(s) and Warrant(s) to the STATE OF INDIANA, the Grantee, for and in consideration of the sum of One Hundred Fifteen Thousand Two Hundred and no/100 Dollars ($115,200.00) (of which said sum $115,200.00 represents land and improvements acquired and $ -0- represents damages) and other valuable consideration, the receipt of which is hereby acknowledged, certain Real Estate situated in the County of Pike, State of Indiana, and being more particularly described in the legal description attached hereto as Exhibit "A" of which exhibit is incorporated herein by reference.

This conveyance is subject to any and all easements, conditions and restrictions of record.

The Grantor(s) hereby specifically acknowledge(s) and agree(s) that the Real Estate conveyed herein is conveyed in fee simple and that no reversionary rights whatsoever shall remain with the Grantor(s), or any successors in title to the abutting lands of the Grantor(s), notwithstanding any subsequent abandonment, vacation, disuse, nonuse, change of use, conveyance, lease and/or transfer by the Grantee or its successors in title, of a portion or all of the said Real Estate or any right of way, roadway or roadway appurtenances established thereupon. This acknowledgment and agreement is a covenant running with the land and shall be binding upon the Grantor(s) and all successors and assigns.

The undersigned persons executing this deed represent and certify that he/she is a Trustee of the Revocable Trust Agreement dated the 13th day of November, 1992 (Title of Trust); and that pursuant to the Trust Agreement, has full authority to manage the affairs of said Trust and sign and execute documents on its behalf; that this authority has not been revoked; and therefore, is fully authorized and empowered to convey to the State of Indiana the real estate of the Trust; and on the date of the of execution of said conveyance instruments; it had full authority to so act.

Interests in land acquired by the Indiana Department of Transportation
Grantee mailing address:
100 North Senate Avenue
Indianapolis, IN 46204-2219
I.C. 8-23-7-31

This Instrument Prepared By _____
Attorney at Law

IN WITNESS WHEREOF, the said Grantor(s) have executed this instrument this 15th day of SEPTEMBER, 2004.

_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name
_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name
_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name

IN WITNESS WHEREOF, the said Grantor(s) have executed this instrument this 17th day of SEPTEMBER, 2004.

_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name
_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name
_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name

IN WITNESS WHEREOF, the said Grantor(s) have executed this instrument this 17th day of SEPTEMBER, 2004.

_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name
_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name
_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name

IN WITNESS WHEREOF, the said Grantor(s) have executed this instrument this 17th day of SEPTEMBER, 2004.

_____(Seal) _____(Seal)
Signature Signature

_____ _____
Printed Name Printed Name

_____(Seal) _____(Seal)
Signature Signature

_____ _____
Printed Name Printed Name

_____(Seal) _____(Seal)
Signature Signature

_____ _____
Printed Name Printed Name

IN WITNESS WHEREOF, the said Grantor(s) have executed this instrument this 15th day of SEPTEMBER, 2004.

_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name
_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name
_____(Seal)	_____(Seal)
Signature	Signature
_____	_____
Printed Name	Printed Name

STATE OF Indiana :
SS:
COUNTY OF Vanderburgh :

Before me, a Notary Public in and for said State and County, personally appeared _____

_____,

the Grantor(s) in the above conveyance, and acknowledged the execution of the same on the date aforesaid to be Her voluntary act and deed and who, being duly sworn, stated that any representations contained therein are true.

Witness my hand and Notarial Seal this 15th day of September, 2004.

_____
Signature

_____
Printed Name

My Commission expires 6-30-08

I am a resident of Vanderburgh County.

STATE OF Indiana :
SS:
COUNTY OF Vanderburgh :

Before me, a Notary Public in and for said State and County, personally appeared _____

_____,

the Grantor(s) in the above conveyance, and acknowledged the execution of the same on the date aforesaid to be his voluntary act and deed and who, being duly sworn, stated that any representations contained therein are true.

Witness my hand and Notarial Seal this 17th day of September, 2004.

_____
Signature

_____
Printed Name

My Commission expires 6-30-08

I am a resident of Vanderburgh County.

STATE OF OHIO :
SS:
COUNTY OF HAMILTON :

Before me, a Notary Public in and for said State and County, personally appeared _____
_____,
the Grantor(s) in the above conveyance, and acknowledged the execution of the same on the date aforesaid to be HER voluntary act and deed and who, being duly sworn, stated that any representations contained therein are true.

Witness my hand and Notarial Seal this 17TH day of SEPTEMBER, 2004.

_____
Signature

_____
Printed Name

My Commission expires _____
THOMAS P. FINN
Notary Public, State of Ohio
My Commission Expires Apr. 25, 2005

I am a resident of _____ County.

STATE OF PENNSYLVANIA :
SS:
COUNTY OF ALLEGHENY :

Before me, a Notary Public in and for said State and County, personally appeared _____

_____,

the Grantor(s) in the above conveyance, and acknowledged the execution of the same on the date aforesaid to be HIS voluntary act and deed and who, being duly sworn, stated that any representations contained therein are true.

Witness my hand and Notarial Seal this 17TH day of SEPTEMBER, 2004.

_____
Signature

_____
Printed Name

My Commission expires JUNE 20, 2005

I am a resident of ALLEGHENY County.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Jane M. Young, Notary Public
Upper St. Clair Twp., Allegheny County
My Commission Expires June 20, 2005
Member, Pennsylvania Association of Notaries

STATE OF Indiana :
COUNTY OF Vanderburgh : **SS:**

Before me, a Notary Public in and for said State and County, personally appeared _____

_____,

the Grantor(s) in the above conveyance, and acknowledged the execution of the same on the date aforesaid to be his voluntary act and deed and who, being duly sworn, stated that any representations contained therein are true.

Witness my hand and Notarial Seal this 15th day of September, 2004.

_____
Signature

_____
Printed Name

My Commission expires Aug. 23, 2010

I am a resident of Vanderburgh County.

EXHIBIT "A"

Project: ST-069-0(A)
Code 4702
Parcel 2 Fee
Form WD-1

The North Half of the Northeast Quarter of the Northeast Quarter of Section Thirty-one (31), Township One (1) South, Range Eight (8) West, containing Twenty (20) acres, more or less.

ALSO, the Northwest Quarter of the Northwest Quarter of Section Thirty-two (32), Township One (1) South, Range Eight (8) West, containing Forty (40) acres, more or less.

Appendix I

Mitigation Site Documentation

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-019

Tract Name 1

Tract Name 2 N/A

Owner Peabody Energy (Future Patoka River NWR)

Manager USFWS (Patoka River NWR)

Property Location

County	Section	Township	Range	Indiana Bat Maternity Colony
Gibson/Pike				
Political Township Columbia/Pat	5	2S	8W	Flat Creek/Patoka River

Mitigation Summary

Total Property Acres 1049

Wetlands

Anticipated Credits	6	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	0	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	**0**	**Acres**
Preserved	**0**	**Acres**

Streams

Anticipated Credits	45,550	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	0	0	0	Acres
Forested	6	0	0	Acres
Scrub-Shrub	0	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White **8-Digit HUC** 05120209 **14-Digit HUC** 05120209060080

Current Status

Project Phase Acquisition **Purchased** No **Purchase Type** Fee Simple **Constructed** N/A **Begin Construction Date** N/A

Designed N/A **End Construction Date** N/A

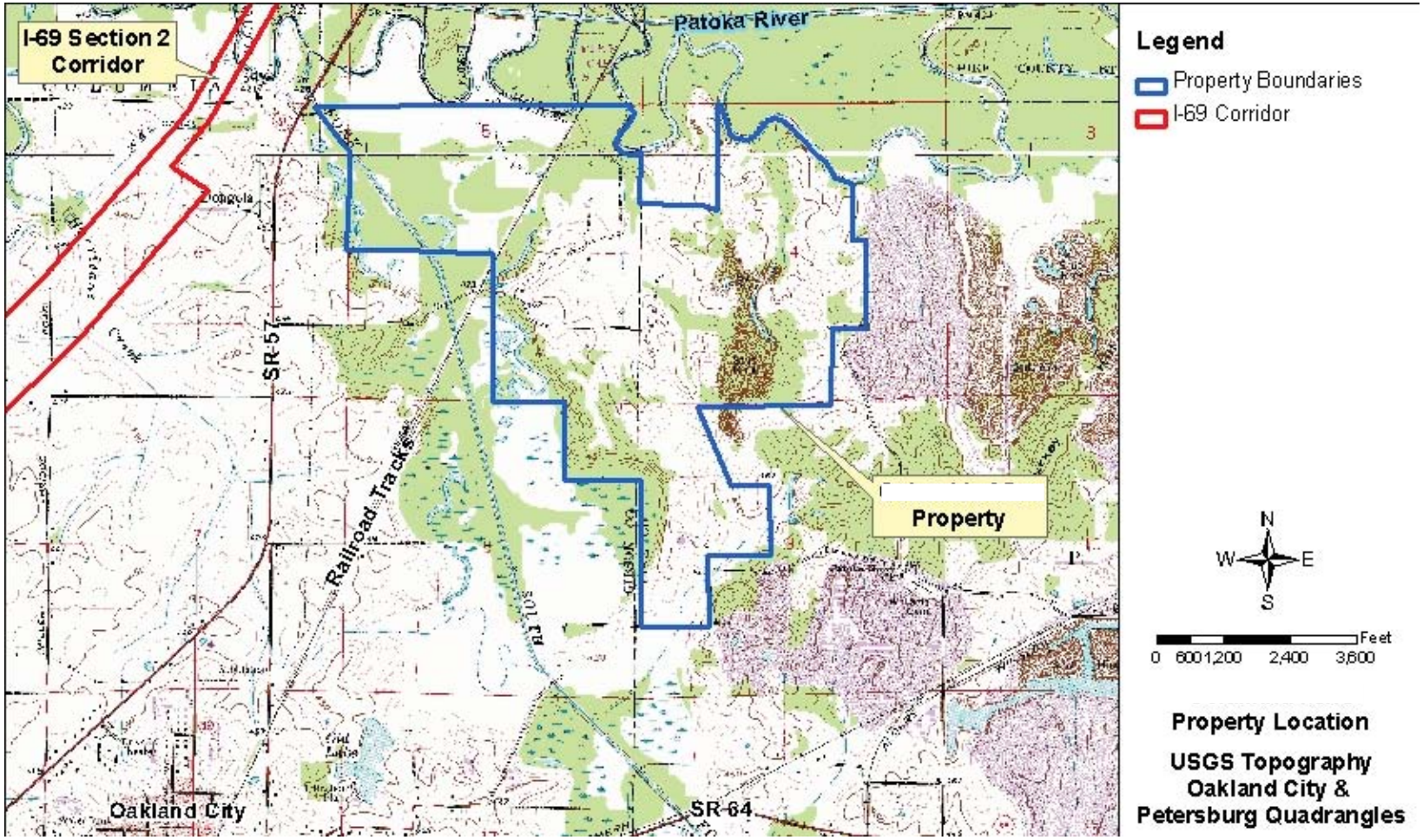
Comments INDOT will assist USFWS with purchase of property (includes approximately 500 acres of wetland/wetland buffer, the majority of the wetland acreage includes bottomland forest areas with high-quality bat foraging) in exchange for credits listed.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-019 **Tract Name**

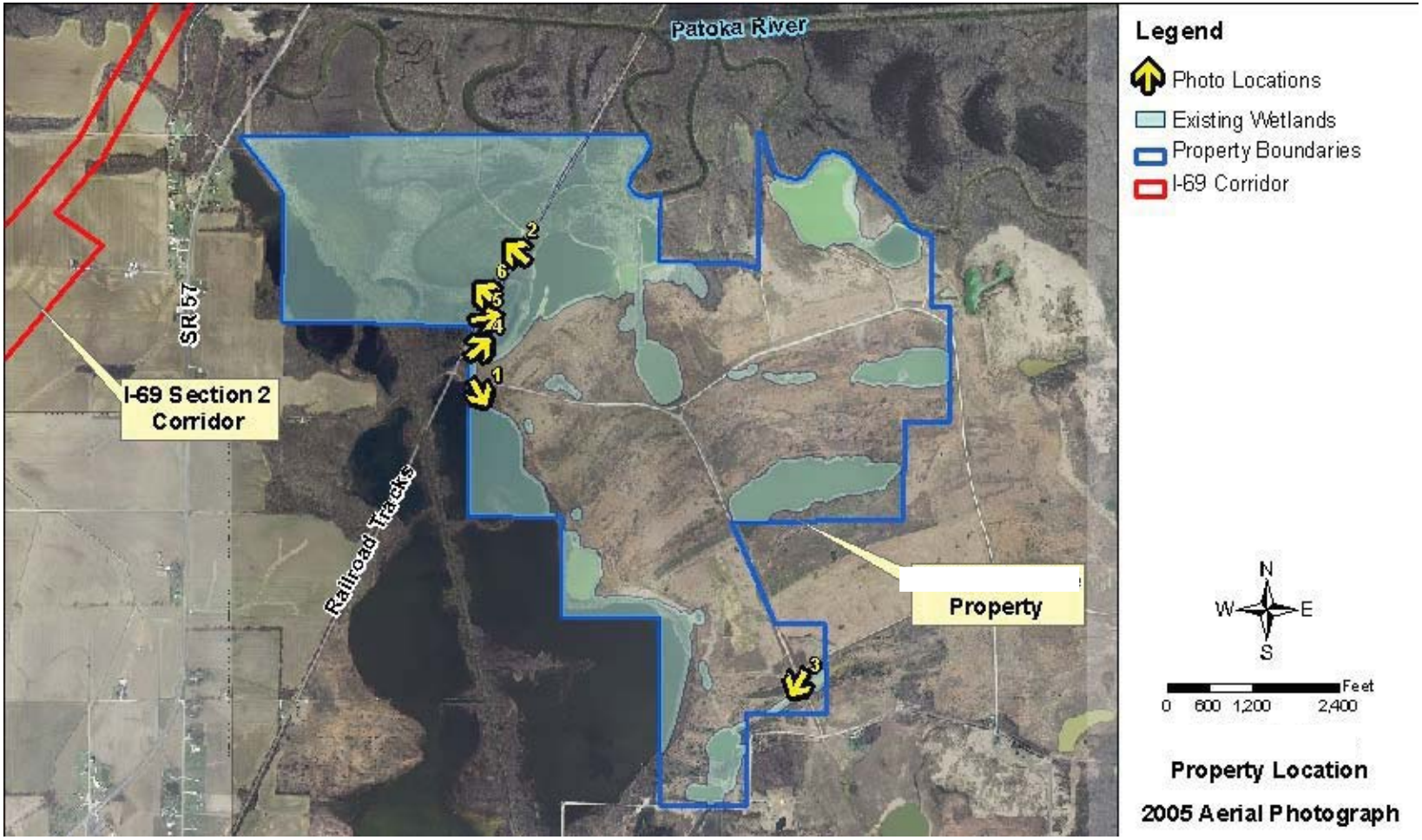


Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-019 **Tract Name**



Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-019
Tract Name

Phase Final State-No Construction
Year 2009

1

Snakey Point Marsh - 3/30/09

2

Wet Marsh with Deadwood Forest- 3/30/09

3

Intermittent Stream Channel with Wooded Riparian Area - 3/30/09

4

Old Channel of South Fork - 3/30/09

5

Deadwood Forest - 3/30/09

6

Floodplain Forest - 3/30/09

IDEM

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

RECEIVED

OCT 12 2009

BLA - EVANSVILLE

October 8, 2009

Ms. Michelle Allen
Indiana Department of Transportation
100 N. Senate Avenue, Room N642
Indianapolis, IN 46204

Dear Ms. Allen:

Re:
Project: I-69 Section 2
County: Gibson

The Office of Water Quality has reviewed your correspondence received via electronic mail dated August 26, 2009, requesting clarification to the mitigation preservation requirements for use at the

The standard compensatory mitigation ratio, which is to be provided within the 8-digit Hydrologic Unit Code (HUC) watershed, for forested wetlands is 4:1 and stream mitigation is 1:1. These ratios are based on the actual creation or restoration of forested wetlands or streams. When preservation is proposed as compensatory mitigation, the mitigation ratio becomes exponentially larger at 10:1 or greater. When you propose out of kind preservation where you are preserving wetland for stream, the ratio increases even further. The ratio increases further still if the proposed compensatory mitigation is outside the 8-digit watershed in which the impacts have occurred. The reason for the exponential increase is because you are preserving existing aquatic resources rather than creating new ones; thus, there is no assurance that there will be no net loss of aquatic resources. In order for preservation to be accepted as mitigation, the aquatic resources proposed to be protected must be of exceptional value or in danger of being developed. The proposed preservation area contains wetlands and other aquatic resources of exceptional value within a highly impacted watershed and the overall protection and inclusion into the National Wildlife Refuge System will ensure its continued protection.

Based on your letter dated August 26, 2009, you are proposing preservation as compensatory mitigation for impacts to 45,550 linear feet of ephemeral and intermittent streams and 6 acres of forested wetland. Based on the May 7, 2009, site inspection with representatives from INDOT and IDEM, the agency agrees with the site selected for compensatory mitigation for the impacts stated above. At a minimum, preservation should be provided at a 30-50:1 ratio for stream and forested wetland impacts. The reason for the ratio and range is because you are proposing preservation versus creation; your preservation is out of kind and you are out of the 8-digit watershed for some of the impacts. A buffer around the preservation area is also required.

At a minimum, a 50-100 feet wide buffer should be included around the preservation area. This proposal, in addition to the proposed mitigation bank, will adequately offset the loss of aquatic resources associated with Section 2 & 3 of I-69.

Thank you for allowing us the opportunity to comment on this project. Should you have any questions about this letter please contact Jason Randolph, Project Manager, of my staff at 317-233-0467, or you may contact the Office of Water Quality through the IDEM Environmental Helpline (1-800-451-6027).

Sincerely,

Marylou Poppa Renshaw, Chief
Watershed Planning Branch
Office of Water Quality

cc: Deb Snyder, USACE-Louisville, Indianapolis Field Office
Jeremy Kieffner, Bernardin Lochmueller and Associates

SCANNED TO ELECTRONIC FILE
103-0001-IPL
PROJECT NUMBER
10/22/09
DATE INITIAL
EVANSVILLE INDIANAPOLIS ILLINOIS

Appendix J

Mitigation Site Documentation

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-006

Tract Name 1

Tract Name 2 N/A

Owner INDOT (Future Patoka River NWR Property)

Manager INDOT (Future Patoka River NWR Property)

Property Location

County	Political Township	Section	Township	Range	Indiana Bat Maternity Colony
Gibson	Columbia	1	2S	9W	Patoka River

Mitigation Summary

Total Property Acres 20*

Wetlands

Anticipated Credits	12.05	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	7.49	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	0	Acres
Preserved	7.49	Acres

Streams

Anticipated Credits	0	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	0.4	0	0	Acres
Forested	11.65	0	0	Acres
Scrub-Shrub	0	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White **8-Digit HUC** 05120209 **14-Digit HUC** 05120209080010

Current Status

Project Phase Construction **Purchased** Yes **Purchase Type** Fee Simple **Constructed** No **Begin Construction Date** 5/1/2009

Designed Yes **End Construction Date** N/A

Comments Contract has been let and the site is under construction. Final planting delayed due to flooding.

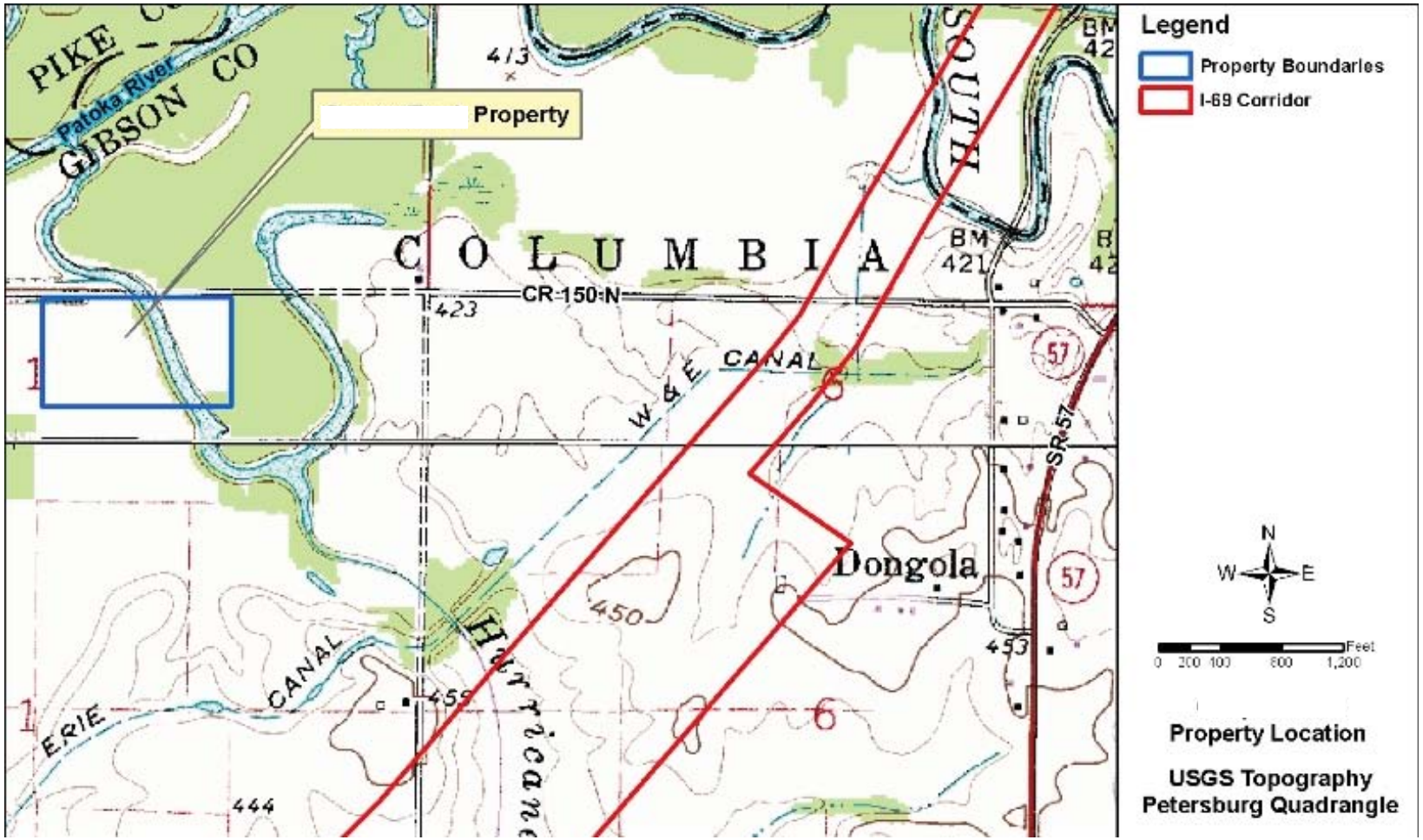
*Balance of property acreage other than wetland and forest mitigation consists of approximately 0.46 acre of existing county road right-of-way.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-006 **Tract Name**

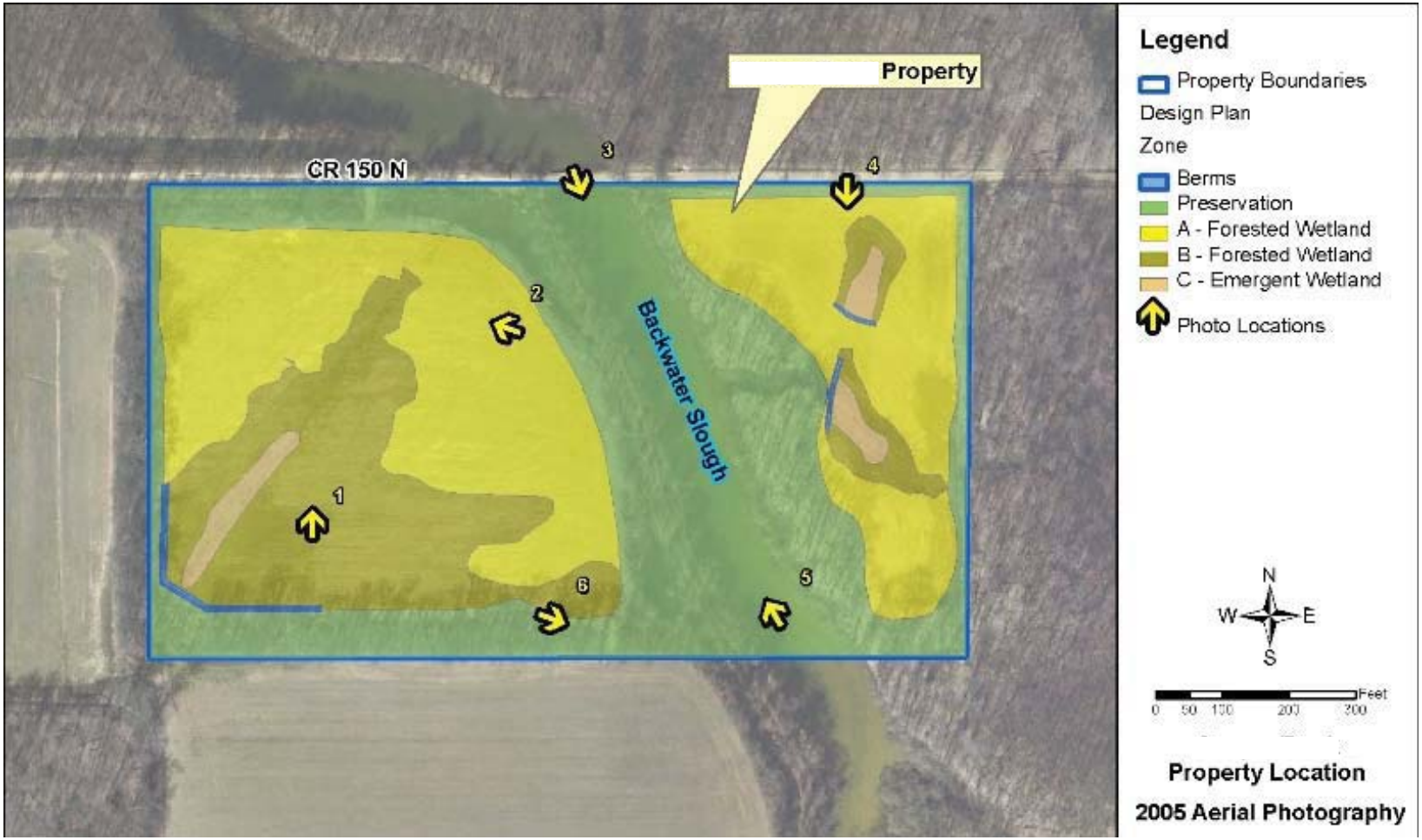


Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-006 **Tract Name**



Note: Planting Zones shown reflect final design plans for this site.

Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-006
Tract Name

Phase Pre-Construction
Year 2008

1

View of west field facing N - 5/22/08

2

View of west field facing NW - 5/22/08

3

View of backwater slough from CR 150 N, facing SE 5/22/08

4

View of east field facing S - 5/22/08

5

View of backwater slough facing N - 5/22/08

6

View of preservation area facing E - 8/4/07

Form WD-1
Rev. 7-1-07

WARRANTY DEED

Project: 0710902;
I-69 Wetland Mitigation
Code: 5135
Parcel: 1

THIS INDENTURE WITNESSETH, That
as equal tenants in common

the Grantor(s), of Gibson County, State of Indiana Convey(s) and Warrant(s) to the **STATE OF INDIANA**, the Grantee, for and in consideration of the sum of Fifty-five Thousand and NO/100 Dollars ($55,000.00) (of which said sum $55,000.00 represents land and improvements acquired and $ 0.00 represents damages) and other valuable consideration, the receipt of which is hereby acknowledged, certain Real Estate situated in the County of **Gibson**, State of Indiana, and being more particularly described in the legal description(s) attached hereto as Exhibit "A" which exhibit is incorporated herein by reference.

This conveyance is subject to any and all easements, conditions and restrictions of record.

The Grantor(s) hereby specifically acknowledge(s) and agree(s) that the Real Estate conveyed herein is conveyed in fee simple and that no reversionary rights whatsoever shall remain with the Grantor(s), or any successors in title to the abutting lands of the Grantor(s), notwithstanding any subsequent abandonment, vacation, disuse, nonuse, change of use, conveyance, lease and/or transfer by the Grantee or its successors in title, of a portion or all of the said Real Estate or any right of way, roadway or roadway appurtenances established thereupon. This acknowledgment and agreement is a covenant running with the land and shall be binding upon the Grantor(s) and all successors and assigns.

Interests in land acquired by the Indiana
Department of Transportation
Grantee mailing address:
100 North Senate Avenue
Indianapolis, IN 46204-2219
I.C. 8-23-7-31

This Instrument Prepared By _____
Attorney at Law

I affirm under the penalties of perjury, that I have taken reasonable care to redact each Social Security number in this document unless required by law.

Name (printed) Gina M. Hansen

Signature Gina M Hansen

Project: 0710902;
I-69 Wetland Mitigation
Code: 5135
Parcel: 1

IN WITNESS WHEREOF, the said Grantor(s) has executed this instrument this 20th day of October, 2008.

Signature

Printed Name

Signature

Printed Name

STATE OF Indiana :

COUNTY OF Gibson : **SS:**

Before me, a Notary Public in and for said State and County, personally appeared _____, the Grantor(s) in the above conveyance, and acknowledged the execution of the same on the date aforesaid to be their *(his, her, their)* voluntary act and deed and who, being duly sworn, stated that any representation contained therein are true.

Witness my hand and Notarial Seal this 20th day of October, 2008.

Gina M. Hansen
Signature

Gina M. Hansen
Printed Name

My Commission expires September 8, 2016

I am a resident of Marion County.

NOTARY PUBLIC SEAL STATE OF INDIANA

GINA M. HANSEN
Marion County
My Commission Expires
September 8, 2016

EXHIBIT "A"

Project 0710902
Code 5135
Parcel 1 Fee
Form WD-1

The North Half of the Northwest Quarter of the Northeast Quarter of Section 1, Township 2 South, Range 9 West, Gibson County, Indiana and containing 20 acres, more or less, in Columbia Township.

Mitigation and Monitoring Plan
for the
I-69 Sections 2 and 3 "Draft" Umbrella Mitigation Bank

Project# 0710902
Contract# IR-30354

Date:
June 3, 2009

Prepared For:

Government Building North, Room N848
100 North Senate Avenue
Indianapolis, Indiana 46204-2249

Prepared By:

BERNARDIN · LOCHMUELLER & ASSOCIATES, INC.
6200 Vogel Road · Evansville · Indiana 47715-4006
PHONE (812) 479-6200 · TOLL FREE (800) 423-7411 · FAX (812) 479-6262

Table of Contents

Section I Introduction 1

Section II Objectives 1

Section III Site Selection 3

Section IV Site Protection Instrument 4

Section V Baseline Information 4

Section VI Determination of Credits 5

Section VII Mitigation Work Plan 6

Section VIII Maintenance Plan 13

Section IX Performance Standards 13

Section X Monitoring Requirements 15

Section XI Long-Term Management Plan 17

Section XII Adaptive Management Plan 17

Section XIII Financial Assurances 17

Attachments

Attachment 1 USGS Map Showing Location of Compensatory Mitigation Site
Attachment 2 2005 Aerial Photograph Showing Location of Compensatory Mitigation Site
Attachment 3 Photographs of Existing Conditions at Compensatory Mitigation Site
Attachment 4 Compensatory Mitigation Site Design Plans
Attachment 5 Compensatory Mitigation Site Special Provisions

Site
Mitigation and Monitoring Plan

I. Introduction

The Mitigation Site is being developed as part of the I-69 Sections 2 and 3 Umbrella Mitigation Bank. This mitigation plan is being developed to offset a portion of the wetland and forest impacts caused by construction of Section 2 of the I-69 project. Additional mitigation sites will be developed to offset the remaining portion of impacts to wetlands, streams, and forests caused by Section 2.

II. Objectives

The mitigation concept for unavoidable impacts to wetlands, open water habitats, and streams determined to be "Waters of the U.S." involves emergent and forested wetland development within existing agricultural fields along and to the east and west of a backwater slough (old channel) of the Patoka River, south of CR 150 N in Gibson County. In addition, mitigation will include preservation of the backwater slough and the existing bottomland forest habitat located on the property. A habitat pole containing bat roosting opportunities will also be installed on the site. The mitigation plan will meet the needs of the Construction in a Floodway permit requirements through planting of bottomland forest species within the floodway, while at the same time address the Clean Water Act Section 404/401 permitting requirements through expansion of existing wetlands and preservation of existing wetland and bottomland forest habitats. The mitigation plan also addresses conditions resulting from Section 7 consultation through the preservation and development of forested habitat.

A. Functions and Values:

1. Impacted Water Resources

The wetlands impacted by I-69 Section 2 have varying levels of functions and values due to their variations in size, as well as wide ranges of animal habitat, botanical, and hydrologic quality measures. The largest wetland impact site is 5.10 acres in size and the smallest is 0.01 acre in size. Because of the varying size and quality of the wetland impact sites they all have different abilities to provide (1) storm/floodwater storage, (2) food and cover for wildlife, (3) hydrological support for adjacent communities, (4) peak floodwater reduction, (5) groundwater recharge, and/or (6) water purification.

The streams impacted by I-69 Section 2 are located within the Patoka, Lower White, and Lower East Fork White Watersheds. These watersheds have been severely impacted in the past due to agricultural practices and coal mining. Many of the streams impacted by this project have been channelized and the overbank riparian areas are often cultivated to the top of the banks and planted in row crops. These streams have a high potential for erosion and are susceptible to herbicide and pesticide runoff from adjacent farm fields. In general, the QHEI and HHEI scores for these streams were extremely low for the most part indicating a stressed condition.

2. Proposed Mitigation Site

The 7.49 acres of existing wetland, bottomland forest, and riparian habitats that occur on the Mitigation Site property currently perform functions such as flood storage, retention of sediment particles transported by the Patoka River, water purification, food and cover for wildlife, and groundwater recharge. The proposed functions for the Mitigation Site will essentially remain the same, but will be expanded in size (i.e., storm water detention via the water control structures) and enhanced in quality for wildlife habitat through diversified woody species plantings and habitat structure installation.

B. Functional Losses on Proposed Impact Site vs. Functional Gains on Proposed Mitigation Site:

The functional losses that will be incurred through the placement of fill within the wetlands and streams within the I-69 Section 2 project area are considered to be minimal in comparison to the functional gains that will be realized through the construction of the proposed Section 2 Mitigation Sites. The anticipated functional gains of the proposed Mitigation Site, namely flood/storm water storage, water purification, groundwater recharge and improved wildlife habitat, will exceed the functional losses identified at the impact sites in terms of quantity of resource. Over time, the functional loss of wildlife habitat will also be offset when the newly created mitigation site develops into a more mature bottomland forest. Table 1 compares the functions of the wetlands and streams being impacted by I-69 Section 2 compared to the functions that will be gained by the construction of the proposed mitigation sites.

Table 1. Comparison of Functions for Impact Sites and Mitigation Sites

Function	I-69 Section 2 Wetland and Stream Impact Areas	Mitigation Sites	
		Existing	Proposed
Storm / Flood Water Retention	minor	moderate	expanded capacity
Water Purification	minor	moderate	expanded capacity
Groundwater Recharge	minor	moderate	expanded capacity
Wildlife Food and Cover	minor	moderate	notably improved

C. Functional Replacement:

The Mitigation Site plan offers in-kind wetland replacement for a portion of the impacts resulting from the I-69 Section 2 roadway project. A 3:1 ratio was used for forested wetland mitigation at this mitigation site. A ratio of 2:1 for impacted palustrine emergent wetlands was used to compensate for emergent wetlands impacted by the project. Similarly, a ratio of 3:1 was used for impacted upland forest areas to compensate for the upland forests impacted by the project. The Mitigation Site will compensate for a portion of I-69 Section 2 forested and emergent wetland impacts through the development of additional wetland habitat and will compensate for a portion of the I-69 Section 2 upland forest impacts through preservation of the existing wetland and bottomland forested areas of the site. Scrub-shrub wetland and stream impacts will not be mitigated at the Mitigation Site, but will be compensated through scrub-shrub wetland development, stream channel development, and riparian habitat enhancement at other I-69 Section 2 mitigation sites. Mitigation for aquatic bed and open water impacts will be offered by way of out-of-kind replacement

through the development of additional emergent and forested wetland habitats, which will provide greater functional values than the impacted water resources.

Collectively, a total of 11.65 acres of forested wetland habitat will be developed, 0.40 acre of emergent wetlands will be developed, and 7.49 acres of existing forested and emergent wetland habitat will be preserved as a result of this mitigation plan. The remaining 0.46 acre of this 20.0 acre site is comprised of a public roadway easement for CR 150 N.

III. Site Selection

The Mitigation Site property is within the Patoka River USGS 8-digit watershed (05120209) and the entire site is located within the 100-year floodplain of the Patoka River. Existing elevations on the property range from approximately 408 feet at the lowest point in the bottom of the slough to approximately 418 feet to the top of a berm which runs parallel to the slough. However, the areas to receive wetland habitat development are generally flat, ranging from approximately 411 to 413 feet above mean sea level. The Mitigation Site is located in close proximity to a portion of the impacted wetlands within the I-69 Section 2 project corridor.

The majority of the 20.0 acre Mitigation Site property has been disturbed through land clearing and agricultural practices (See Photographs in Attachment 3). Land use adjacent to the mitigation site includes agricultural fields to the west and along a portion of the southern boundary of the site. The northern boundary of the site is CR 150 N, an unimproved road which receives little traffic. Existing forested and emergent wetlands adjoin the property to the east, along the remainder of the southern boundary, and also across CR 150 N to the north of the mitigation site. The entire property lies within the Acquisition Area of the Patoka River National Wildlife Refuge, which is managed by the United States Fish and Wildlife Service (USFWS). The nearest residential property lies more than 4,000 feet from the mitigation site. In addition, there are no airports located within 10,000 feet of the site.

Existing wetlands located on and in the vicinity of the Mitigation Site are primarily classified in the National Wetland Inventory (NWI) as palustrine forested wetlands (PFO), with inclusions of palustrine emergent (PEM) and palustrine scrub/shrub (PSS) wetland areas. The mitigation site is to be designed such that additional palustrine forested and palustrine emergent wetland habitat areas will be created.

Hydrology for the Mitigation Site will be provided primarily via Patoka River floodwaters. The channelized Patoka River runs within 800 feet of the property. A backwater slough of the Patoka River, formerly the Patoka River channel, runs directly through the site and provides a direct means for the Patoka River floodwaters to reach the mitigation site. Roadside ditches or swales are located along the north side of the property, south of CR 150 N. As water levels in the Patoka River rise, floodwater first flows into the backwater slough, then inundates the lowest areas of the site either directly or via the roadside channels. Under typical flood conditions associated with multiple annual rain events, floodwaters will inundate the entire mitigation site, with the exception of the berm located adjacent to the west edge of the slough. Communication with the land owners indicates that this area frequently is inundated by floodwaters from the Patoka River. As the floodwater recedes, water is retained in local depressions within the site and within the existing wetland habitat areas.

Data showing daily river gage heights were obtained for the previous 20-years from the Winslow and Princeton gages, which are the nearest Patoka River gages upstream and downstream from the mitigation site that record historic gage readings. Utilizing the daily water level elevation at each river

gage, an estimated daily water level elevation was computed for the mitigation site. It is estimated that all areas of the mitigation site at or below 412.25 feet above mean sea level were inundated by floodwaters for an average of 11.9% of the growing season (April 1 to September 30) over the past 20 years. This includes nearly all areas proposed for wetland mitigation at this site.

Currently, approximately 7.49 acres of the site consist of existing forest and wetland habitat. The existence of the forested wetland habitat areas located along the perimeter of the property and along the slough, at approximately the same elevations as the proposed wetland mitigation site, indicates that the Mitigation Site will have sufficient hydrology to support a wetland community. In addition, water retention berms will be constructed on the site to help ensure that adequate hydrology is achieved within the wetland development areas. The design plans found in Attachment 4 provide a site plan illustrating existing conditions.

The climate data for the Mitigation Site is based on the climate history in Oakland City, Indiana, which is the closest city to the mitigation site. Average high temperatures range from 39° F in January to 89° F in July. Average low temperatures range from 21° F in January to 67° F in July. May is generally the wettest month, receiving an average of 5.2 inches of precipitation. Average yearly precipitation is approximately 46.6 inches (Source: weather.com). The Mitigation Site is located within Plant Hardiness Zone 6a, where minimum temperatures are mild at -5 to -10 deg F.

IV. Site Protection Instrument

The current land owners of the mitigation site are and The property will be purchased by way of fee simple title from the current landowners for the construction of the Mitigation Site by the Indiana Department of Transportation (INDOT). INDOT will be responsible for the construction and post construction monitoring of this mitigation site for success. After 10 years of post construction monitoring have been completed on the mitigation site, INDOT or an approved consultant will conduct InWRAP assessments on the wetland mitigation areas to identify if this mitigation site has sufficiently replaced the functions and values of the impacted wetlands. Proof will be provided that a restrictive covenant for the 20.0 acre mitigation site (legal description boundary) has been recorded for the property. These assessments and documentation will be required prior to approval of the Mitigation Site as part of the I-69 Sections 2 and 3 Umbrella Mitigation Bank. Following approval, it is anticipated that ownership of the property will be assigned to the USFWS for management as part of the Patoka River National Wildlife Refuge.

V. Baseline Information

The responsible parties for the Mitigation Site are listed below:

Mitigation Site Developer/Owner:
Indiana Department of Transportation
Ecology and Waterway Permitting Section
Office of Environmental Services
Government Building North, Room N642
100 North Senate Avenue
Indianapolis, Indiana 46204-2249

Contact Person for Applicant:

INDOT Senior Environmental Manager – (317) 232-5206

Consultant Preparing Permit Application:
Bernardin, Lochmueller and Associates, Inc.
6200 Vogel Road
Evansville, Indiana 47715

Contact Person for Consultant:
Jeremy Kieffner – (800) 423-7411

Current Property Owner(s):
Tamara and Karla
1909 South Boulevard Place
Princeton, IN 47670

The Mitigation Site consists of approximately 20 acres. The location of the Mitigation Site is as follows: Indiana: Gibson County, Petersburg Quadrangle, Columbia Township, T2S, R9W, Northeast Quarter of Section 1. Attachments 1 and 2 show the proposed Mitigation Site on the USGS Topographic Map and 2005 Aerial Photograph respectively.

Soils/Substrate:
The majority of the soils at the Mitigation Site consist of Vincennes silt loam, Henshaw silt loam, Bonnie silt loam, and Steff silt loam soils, which have experienced tilling for agricultural row crop plantings for many years. Stendal silt loam, Petrolia silt loam, and Petrolia silty clay loam soils also comprise a portion of the property, but to lesser extents. Trenching and recompaction along both sides of the backwater slough and along the roadside swale to the west of the slough will be completed to disable any tiles that may be located in the mitigation site area. This plan does not involve the importation of soils from off-site to function as a seed bank. Flooding from the Patoka River does deposit silt on the surface of the Mitigation Site.

Detailed baseline information for the I-69 Section 2 impact sites will be provided as a part of the I-69 Section 2 and 3 permit applications.

VI. Determination of Credits

Through minor excavation and grading at the Mitigation Site, an additional area of 12.05 acres of jurisdictional wetland will be added to the existing 7.49 acres of wetland and bottomland forest habitats. At 12.05 acres of wetland development, the wetland areas to be gained satisfy a significant portion of the total I-69 Section 2 target mitigation. This plan will also preserve 7.49 acres of existing wetland and bottomland forest habitat to compensate for a portion of the upland forest impacts. The backwater slough of the Patoka River, which comprises approximately 1.71 acres of the mitigation site and currently functions as an emergent wetland, will be a part of the preservation. The existing roadway and roadway easement of CR 150 N comprises the remaining 0.46 acre of the property. The entire mitigation site is approximately 20.0 acres.

Table 2 shows the portion of the impacted resources in the I-69 Section 2 project and required mitigation for these impacts that will be mitigated at this Mitigation Site. Table 3 identifies the mitigation being offered at the Mitigation Site. Table 4 summarizes the total I-69 Section 2 impacts and required mitigation, as well as, the percentage of total I-69 Section 2 impacts being mitigated at this mitigation site.

Table 2. I-69 Section 2 Impact and Target Mitigation Summary (Site)		
Wetland Type	**I-69 Section 2 Impacts to be Mitigated at this Site**	**Mitigation Required**
Palustrine Forest	3.88 acres	11.65 acres
Palustrine Emergent	0.20 acres	0.40 acres
Upland Forest Habitat	2.50 acres	7.49 acres
Total	**6.58 acres**	**19.54 acres**

Table 3. Mitigation Site Offering Summary	
Mitigation Activity	**Mitigation Area (acres / linear feet)**
Increase Jurisdictional Forested Wetlands	11.65 acres
Increase Jurisdictional Emergent Wetlands	0.40 acres
Conservation/Protection of Existing Wetland/Forested Habitats*	7.49 acres
Existing Roadway	0.46 acres
Totals Mitigation Being Offered	**20 acres**

* This includes preservation of 1.71 acres of existing wetlands within the backwater slough and 5.78 acres of existing forested wetlands located throughout the site

Table 4. I-69 Section 2 Total Impact and Required Mitigation Summary					
Resource Type	**I-69 Section 2 Total Impacts**	**Req'd Ratio**	**Total Mitigation Required**	**Mitigation Offered**	**Percent of Mitigation Being Complete at This Mitigation Site**
Palustrine Forested	21.63 acres	3:1	64.89 acres	11.65 acres	18.0%
Palustrine Emergent	4.49 acres	2:1	8.98 acres	0.40 acres	4.5%
Palustrine Scrub-Shrub	0.55 acres	3:1	1.65 acres	----	0%
Palustrine Aquatic Bed	0.79 acres	2:1	1.58 acres	----	0%
Open Water	3.83 acres	1:1	3.83 acres	----	0%
Streams	69,471 feet	1:1	69,471 feet	----	0%
Upland Forest	234.2 acres	3:1	702.6 acres	5.78 acres	0.8%
Total	**265.5 acres 69,471 feet**		**783.5 acres 69,471 feet**	**17.83 acres 0 feet**	**2.3% 0%**

VII. Mitigation Work Plan

The following implementation plan addresses the mitigation commitments to take place on the Mitigation Site property.

A. Site Preparation:

1. Plans:

   a. Grading:
   Grading at the Mitigation Site property will involve only the construction of four (4) water retention berms. Material to be utilized for the construction of the berms will be taken from the designated borrow areas located on the property. Grading will only occur within existing agricultural fields, therefore, no trees will be removed as a result of the grading activities. Exploratory trenching will be performed along both sides of the backwater slough and along the roadside ditch in the western portion of the property to ensure that no existing drainage tiles remain on the site. The material will be placed back in the trenches and recompacted once exploration is complete.

   b. Hydrologic Changes:
   The construction of the water retention berms will allow for inundation/saturation of a greater area than that which is currently realized for wetland development. The berms will be placed in four (4) areas where natural swales currently drain runoff from the site. The site will continue to receive floodwater from the Patoka River under the same hydrologic conditions (i.e. bank overflow conditions) that currently fuel the existing wetland areas. However, this hydrology will be enhanced with the development of the Mitigation Site by retaining more water on the site for a longer duration following flood events, as well as following rain events that do not generate overbank flow. In addition, exploratory tile trenching, as outlined above, will ensure that no drainage tiles exist that could be detrimental to the hydrology of the site.

   c. Water Control Structures:
   Water retention berms will be placed on the downstream ends of the existing drainage swales which currently direct water off-site and into the backwater slough. The locations and specifications of these berms will be as identified in the design plans in Attachment 4. These water retention berms will be constructed as overflow structures, which will allow water to flow into the natural swales and depressions during high water events and prevent the water from flowing entirely out of the wetland development areas when the water recedes. These water control structures will also allow the wetland development areas to retain water for a longer duration following rain events and elevate the local groundwater levels to enhance the overall hydrology of the site.

   d. Erosion Control:
   Silt fence will be used to minimize erosion of disturbed soil surfaces and runoff into the backwater slough and roadside ditches/swales during construction. The water retention berms will be seeded and a coir fiber matting (coconut fiber) will be placed over the berms to prevent the seed from being washed out and prevent soil erosion until the seed is established.

   e. Equipment:
   Excavation and final grading will be accomplished using mechanized equipment (e.g., bulldozer, backhoe, dump truck, etc.). Seedbed preparation will utilize a tiller, harrow or other suitable machinery. A roller or cultipacker will be used to lightly compact seeded areas following seed application. All bare root tree seedlings shall be mechanically planted with a tree planting machine.

   All mechanized equipment will be pressure-washed at an off-site location to remove any dirt or soil that may be a potential seed source for invasive or non-native plant species prior to

entering the site. Any equipment that leaves the site will also be pressure-washed at an off-site location before returning to the site.

f. Site Access Control:
Access to the Mitigation Site on both the east and west side of the slough during and after construction will be via CR 150 N that is located adjacent to the north side of the property (Attachment 4). Construction entrances will be installed at both of these locations. Following construction, gates will be placed at both of these entrances, as well as across a third entrance which currently provides access to the existing berm running along the west side of the slough. These gates will help prevent public disturbance during the vegetation establishment and monitoring period.

2. Planting Plan:

The planting plan for the Mitigation Site has been developed in accordance with INDOT 2008 Standard Specifications Sections 621 (Seeding and Sodding) and 622 (Planting Trees, Shrubs, and Vines) and the unique special provisions in Attachment 5. The Mitigation Site includes 3 planting zones which collectively will consist of 10 canopy tree species, 4 woody shrub species, and 2 seed mixes. An additional seed mix will be applied to the water retention berms. Zone A includes two (2) forested wetland areas which are located in the higher elevations of the planting zones. Zone B includes three (3) more areas of forested wetlands, although at a slightly lower elevation than Zone A. Zone C includes three (3) emergent wetland areas, located within the lowest elevations of the Mitigation Site. Attachment 4 contains a plan showing the planting zone and water retention berm locations, as well as the contours. Strict adherence to planting the tree and seed mix species in the appropriate zones is required.

Seedbed Preparation:
Following final grading, seedbed preparation shall consist of multiple tilling as detailed in the Special Provisions (Attachment 5) to eliminate any existing vegetation prior to seeding and tree planting. An alternative tilling schedule may be approved, provided it adequately eliminates any undesirable plant material.

Herbicide:
Since much of the Mitigation Site will be cleared of vegetation by grading and tilling, the use of herbicides as a pre-planting treatment is not anticipated for the entire site.

Fertilizer:
All Planting Zones A through C will receive an application of 12-12-12 granular fertilizer in accordance with INDOT 2008 Standard Specification 914.03. Fertilizer will be uniformly spread over the mitigation area at a rate of 400 lb/acre prior to or during final tilling. A total of 2.41 tons of fertilizer will be required for the Mitigation Site.

Seeding and Planting:
All seeds and bare root plants should be obtained from nurseries within American National Standards Institute (ANSI) Plant Hardiness Zones 4, 5 or 6. Potential vendors include, but are not limited to:

Indiana
Indiana Department of Natural Resources

J.F. New Native Plant Nursery (Walkerton, IN)
Heartland Restoration Services, Inc. (Fort Wayne, IN)
Berg Warner Nursery (Lizton, IN)

Illinois
Lafayette Home Nursery, Inc. (Lafayette, IL)

Kentucky
Shooting Star Nursery (Georgetown, KY)

Ohio
Envirotech Consultants, Inc. (Somerset, OH)

Missouri
Forrest Keeling Nursery (Elsberry, MO)
Ripley County Farms (Doniphan, MO)

New York
Southern Tier Consulting, Inc. (West Clarksville, NY)

Virginia
Bobtown Nursery (Melfa, VA)

Seeding and planting shall take place between March 1 and July 1. If possible, seeding and planting shall take place immediately after the site has been prepared. In the event this is not possible, a temporary cover shall be established using Seed Mix T in accordance with INDOT Standard Specification 621.06(f) until such time as the permanent seeding and planting can take place. Alternative planting times must be approved by the INDOT Ecology Unit Senior Environmental Manager.

Herbaceous Cover:
All planting zones shall be planted with herbaceous ground cover to reduce weed competition and provide soil stabilization. The herbaceous cover for Zones A and B will consist of a wooded wetland establishment seed mix as indicated in Table 1 in Attachment 5, or a comparable wetland woods herbaceous cover mix consisting of at least twelve (12) native graminoid species and nine (9) native forb species. Zone C will consist of an emergent wetland seed mix as indicated in Table 2 in Attachment 5, or a comparable mix of at least seven (7) native graminoid species and thirteen (13) native forb species. The water retention berms will consist of a slope stabilization seed mix as indicated in Table 3 in Attachment 5, or a comparable mix of at least five (5) native graminoid species. Seeding shall be by broadcast spreading at a rate of 44.53 lbs/acre for the woodland wetland establishment seed mix, 34.78 lbs/acre for the emergent wetland seed mix, and 57.63 lbs/acre for the slope stabilization seed mix. Seeding rates are based on pure live seed (PLS). Seeding should take place immediately following seedbed preparation. A roller, cultipacker or light raking shall be used on all seeded areas to ensure adequate seed-to-soil contact. Seeds shall not be more than 1/8 (0.125) inch deep. The seeded areas are to be immediately followed by mulching (see below) and watering (see below), if necessary. Table 5 summarizes the seeding requirements for the project.

Table 5. Mitigation Site Herbaceous Cover Seeding Plan

Planting Zone	Seed Mix	Seeding Rate	Area	Quantity

A and B	Wooded Wetland Establishment	44.53 lbs/acre	11.65 ac.	518.8 lbs
C	Emergent Wetland Seed Mix	34.78 lbs/acre	0.40 ac.	13.9 lbs
Water Retention Berms	Slope Stabilization Seed Mix	57.63 lbs/acre	0.22 ac.	12.7 lbs

Trees:
Planting of the bare root tree and shrub seedlings is to be completed following seeding of the herbaceous cover. The seedlings will be transported, stored and handled in accordance with INDOT Specifications 914.08. All seedlings shall be kept moist during transportation. Storage of these plants shall be in a cool dark place until the date they are to be installed. The roots shall not be allowed to dry out before they are planted. Planting shall follow immediately after site preparation. Only that number of seedlings which can reasonably be planted during a single day may be removed from storage. Container Grown Seedling trees will be planted in accordance with sound horticultural practices with respect to moisture, root pruning, planting depth, planting hole size, soil compaction, etc. All bare root tree and shrub seedlings shall be mechanically planted. All 3-gallon container grown tree seedlings shall be manually planted. Seedlings shall be planted so the root collar is even with the ground surface.

A total of 5,075 tree seedlings shall be planted within Zones A and B. Of these seedlings, 3,800 shall be bare root and 1,275 shall be 3-gallon container grown tree seedlings. This will provide an approximate ratio of bare root to 3-gallon container grown seedlings of 3:1. A total of 1,260 shrub seedlings shall also be planted throughout Zones A and B. All shrub species shall be bare root seedlings.

Mechanical planting of the bare root tree seedlings shall be in a random manner with regard to species composition/distribution within Zones A and B to avoid clustering at approximately 10-foot spacing between seedlings and between planting rows. A 20-foot gap shall remain between every third mechanically-planted bare root tree seedling to allow space for manual planting of a 3-gallon container grown seedling with 10-foot spacing between the adjacent seedlings. The tree seedling density following the planting of the bare root and 3-gallon container grown seedlings will be approximately 435 stems/acre. Mechanical planting of the bare root shrub seedlings shall also be in a random manner with regard to species composition to avoid clustering with a density of approximately 108 stems per acre. Shrubs shall be planted midway between every third and fourth tree seedling and within each planting row. This will provide a 4:1 tree to shrub ratio and prevent an overly dense understory layer. Shrubs will be planted within the planting rows rather than between the rows to allow enough space between each row for future maintenance or mowing, if necessary. Tree and shrub planting specifications shall be as outlined in the Special Provisions located in Attachment 5. Table 6 indicates the tree species, wetland status, quantities, planted form (e.g., bare root), on-center spacing and grouping arrangements for each planting zone.

Table 6. Mitigation Site Tree and Shrub Planting Plan

Species	Indicator Status	Count	Form*	On-Center Spacing	Grouping
Zone A Forested Wetland Area Area: 7.75 acres					
Tree Species					
Carya laciniosa Shellbark Hickory	FACW	505	bare root	10' x 10'	Equal and random species distribution throughout the planting zone. Bare root seedlings to be mechanically planted with 10-foot spacing, with a 20-foot gap left between third seedling for the manual planting of a 3-gallon container grown seedling, also at 10-foot spacing from the adjacent seedlings.
		170	3-gallon cg		
Liquidambar styraciflua Sweetgum	FACW	505	bare root		
		170	3-gallon cg		
Quercus bicolor Swamp White Oak	FACW+	505	bare root		
		170	3-gallon cg		
Ulmus Americana American Elm	FACW-	505	bare root		
		170	3-gallon cg		
Quercus schumardii Schumard Oak	FACW-	505	bare root		
		170	3-gallon cg		
Shrub Species					
Cornus obliqua Pale Dogwood	FACW+	280	bare root	10' x 40'	Equal and random species distribution throughout the planting zone. Shrubs shall be planted midway between every fourth tree seedling within each planting row.
Lindera benzoin Common Spicebush	FACW-	280	bare root		
Sambucus canadensis Elderberry	FACW-	280	bare root		
Zone B Forested Wetland Area Area: 3.90 acres					
Tree Species					
Taxodium distichum Bald Cypress	OBL	255	bare root	10' x 10'	Equal and random species distribution throughout the planting zone. Bare root seedlings to be mechanically planted with 10-foot spacing, with a 20-foot gap left between third seedling for the manual planting of a 3-gallon container grown seedling, also at 10-foot spacing from the adjacent seedlings.
		85	3-gallon cg		
Quercus lyrata Overcup Oak	OBL	255	bare root		
		85	3-gallon cg		
Betula nigra River Birch	FACW	255	bare root		
		85	3-gallon cg		
Quercus palustris Pin Oak	FACW	255	bare root		
		85	3-gallon cg		
Quercus michauxii Swamp Chestnut Oak	FACW	255	bare root		
		85	3-gallon cg		
Shrub Species					
Cephalanthus occidentalis Common Buttonbush	OBL	140	bare root	10' x 40'	Equal and random species distribution throughout the planting zone. Shrubs shall be planted midway between every third tree within each planting row.
Lindera benzoin Common Spicebush	FACW-	140	bare root		
Sambucus canadensis Elderberry	FACW-	140	bare root		

*cg = container grown

Mulching:

Mulch material for Zones A, B, and C will conform to INDOT 2008 Standard Specifications 914.05(a). Material will be applied such that it covers the site at an average rate of 2 tons/acre. The mulch material shall be secured by crimping as per Specification 621.05(c) to hold the seed in place and prevent removal during periods of high water. Mulch shall be crimped into place immediately upon placement. Mulch will be applied in Planting Zones A, B, and C for a total of 24.1 tons. The water retention berms, located within Zone A, will receive a coconut fiber mat to

stabilize the slopes and prevent the seed from being washed off of the berms prior to establishment.

Watering:
The seeded and planted areas will be watered at a frequency and duration sufficient enough to ensure that 80% aerial coverage of herbaceous species are established 60 days after completion of seeding activities. If sufficient coverage of herbaceous ground cover is not established after 60 days, all deficient areas shall be reseeded and watered until 80% coverage is achieved. The special provisions in Attachment 5 provide a detailed specification outlining watering requirements for the Mitigation Site. If irrigation is required for watering of this site, it is anticipated that water will be extracted from the backwater slough of the Patoka River utilizing a temporary water pump that will be removed upon completion of watering.

Exotic and Undesirable Species Control:
While volunteer woody and herbaceous species will undoubtedly become established within this mitigation site, the potential for exotic and/or native invasive species of concern to the Indiana Department of Natural Resources (such as purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), reed grass (*Phragmites spp.*), garlic mustard (*Alliaria petiolata*), autumn olive (*Elaeagnus umbellata*), crown vetch (*Coronilla varia*) or cattails (*Typha sp.*)) is minimal. If a threatening infestation is identified during monitoring, an appropriate control method shall be recommended to remove the invading species and/or prevent further encroachment.

Given the current progression of succession evident throughout much of the Mitigation Site, it is reasonable to expect that creating similar hydrologic conditions adjacent to the existing forested wetland areas may promote additional high density colonization by voluntary tree species. The establishment of native volunteer woody species will be allowed within the Mitigation Site, provided their presence does not adversely affect the viability potential of the planted species to the extent that success criteria cannot be met. If it is foreseen that such native establishment poses a threat to the planted woody species, corrective measures in the form of mechanical clearing or herbicide application may be necessary.

Schedule:
This Mitigation Site is proposed for construction in the Spring of 2009 pending the approval of the I-69 Sections 2 and 3 Umbrella Mitigation Bank Agreement.

Construction Monitoring:
Monitoring of the construction activities associated with the Mitigation Site project (including grading, pre-seeding/planting site preparation, planting and post-planting treatments) are to be conducted by personnel contracted by INDOT. Construction monitoring will include on-site management of all activities associated with construction including maintenance of records (i.e., bill of lading for seed and planting materials, fertilizer, herbicides, etc.), documentation of dates of completed activities and documented approval of decisions concerning deviations from the proposed design plan.

B. As-Built Conditions:

1. Post-construction Documentation:

Within six weeks of completion of site preparation and planting, a report documenting the as-built conditions of the site will be submitted to the United States Army Corps of Engineers (USACE) and the Interagency Review Team (IRT). The IRT is comprised of representatives from the Indiana Department of Environmental Management (IDEM), the United States Fish and Wildlife Service (USFWS), the Indiana Department of Natural Resources (IDNR), the United States Environmental Protection Agency (USEPA), and the Natural Resources Conservation Service (NRCS). The report should provide evidence through a bill of lading or invoice that the proper mitigation plant species were delivered in the correct numbers and were viable at the time of planting. If it was necessary to retain the delivered plants in storage for a period of time prior to planting, a sufficient description of the duration, conditions under which they were stored and nursery attention provided to ensure viability should be included. A brief description of the methods used to plant the bare root plants including verification of grouping and spacing should be provided. The report will document any and all notable deviations from the plan and reasons for such deviations. The report will also include documentation that the required erosion control measures were implemented and maintained.

Photo documentation of the tree plantings and post planting mulch application should also be submitted. At this time, permanent photographic stations that document each of the planting zones should be established. The station location should be identified on a set of plans, including the direction in which the photos were taken. These stations will become the reference sites for future monitoring report photographs.

2. As-built Plans:

A set of as-built plans will be submitted with the post-construction documentation to either confirm that the site was graded and planted according to plan, or to document any deviations that took place.

VIII. Maintenance Plan

No maintenance is planned for the Mitigation Site. Should it be determined through monitoring and consultation with the USACE and the IRT that maintenance is required, INDOT will be responsible for implementing maintenance or remedial activities. These activities may include but are not limited to herbicide treatment to eliminate invasive species, mowing, reseeding, or replanting.

IX. Performance Standards

A. Minimum Success Criteria:

1. Wetlands:

Wetland Delineation Report:
Prior to final approval of the Mitigation Site as part of the Umbrella Mitigation Bank, a wetland delineation report must be completed on the mitigation site and submitted to the USACE for approval. This report must include a survey of the wetland delineation boundary. The final credited acres of the mitigation area shall be adjusted based on the delineated boundary.

The wetland delineation shall follow the most recently adopted USACE Wetland Delineation Manual.

Vegetation:
Through monitoring report documentation, it should be demonstrated that at the end of the 10-year monitoring period, the following vegetative success criteria are met.

a. At least 240 stems/acre must be maintained (Zones A and B). Volunteer tree and shrub species may be counted if they appear to be generally similar in age and condition to the planted seedlings. Volunteer tree species must either be one of the planted species or be included in the following list: Shellbark Hickory (*Carya laciniosa*), Bitternut Hickory (*Carya cordiformis*), Silver Maple (*Acer saccharinum*), Green Ash (*Fraxinus pennsylvanica*), Eastern Cottonwood (*Populus deltoides*), Slippery Elm (*Ulmus rubra*), or American Elm (*Ulmus Americana*).
b. Greater than 50% (percent of aerial cover) of the dominant vegetation species for Zones A, B, and C are hydrophytic, thus meeting the current federal criteria for vegetation.
c. No single species within the wetland mitigation planted zones (Zones A, B, and C) should constitute more than 25% of the surviving species. This criteria does not apply to the existing wetland, bottomland forest, and riparian areas.
d. The combined surface area coverage of reed canary grass (*Phalaris arundinacea*) and cattail (*Typha spp.*) shall not cover more than 15% of the mitigation wetland.
e. The mitigation wetland is free of the following exotic species: purple loosestrife (*Lythrum salicara*) and common reed (*Phragmites australis*).
f. Native vegetation excluding cattails (*Typha spp.*) must cover at least 70% of the Zones A, B, and C.
g. No more than 10% of the surface area coverage of the mitigation wetland may be open water, bare ground or a combination of the two.

Hydrology:
Through monitoring report documentation, it should be demonstrated that at the end of the 10-year monitoring period, the following hydrology success criteria are met.

a. The hydrology of the site should match the proposed hydrology described in Section III of this monitoring and mitigation plan with regards to source, frequency and duration. At a minimum, the wetland should be inundated and/or saturated within the upper 12" of the soil for a duration greater than or equal to 5% of the growing season under normal conditions. Since the mitigation plan is essentially an extension of existing wetland areas at essentially the same elevations, the newly constructed wetland areas will experience the same hydrologic flooding cycle as the existing wetland areas.

b. The site hydrology should be self-sustaining. The long term hydrologic requirements of the site do not require seasonal or episodic manipulations of water levels to ensure success. The frequency and duration of flooding from the Patoka River is sufficient to maintain minimum hydrologic conditions.

B. Project Specific Success Criteria:

1. Function and Value Measurements:

The targeted function of providing wetland and woodland wildlife habitat within the Patoka River floodplain is directly associated with the continual growth and survival of the planted tree and shrub species. Monitoring of the survival and growth of the planted species on an annual basis

will be the primary means of measuring the functional success of the Mitigation Site. The target wildlife habitat functions are to be considered successful if the minimum success criteria outlined above have been met and show signs of sustainability at the end of the ten (10) year monitoring period. The ability of the Mitigation Site to temporarily store surface water when the Patoka River floods will be assessed through direct observation of this mitigation site during monitoring following flood events.

2. Achievability:

The target functions of the Mitigation Site are considered to be achievable over time. The establishment of additional habitat within the Patoka River floodplain will be realized in a short period of time once the additional wetland acreage is exposed to a frequent and sufficiently long hydroperiod. Achieving the goal of a mature wetland/floodplain forest capable of providing shelter and food for wildlife will not begin to be fully realized for 10 or more years until the planted trees have grown substantially. In the intervening time period, this site will provide successional habitat for a variety of species dependent upon such habitat.

X. Monitoring Requirements

A. Monitoring Reports:

Annual monitoring reports will be prepared for the Mitigation Site until it has been approved as part of the I-69 Sections 2 and 3 Umbrella Mitigation Bank. A tracking system will be developed using GIS to track the success of this mitigation site.

1. Timing:

Annual inspections will be completed each year at any time during the 1st, 2nd, 3rd, 5th, 7th, and 10th growing seasons following planting. In any year planting was conducted, monitoring shall take place no sooner than the end of the growing season following planting. Wetland delineations shall be conducted during the 3rd, 5th, 7th, and 10th growing seasons to determine the actual boundaries of established and restored wetlands within the mitigation site. The monitoring reports will be submitted to the USACE and the IRT by December 31 of each year in which monitoring was conducted for the 10 year monitoring period.

2. Methods:

a. Data collection points:
Each assessment period shall include randomly established data collection points within the planted portions of the mitigation area designated as Zones A, B, and C. Each data collection point should measure 0.25 acre in size and include a count of planted alive and dead tree species for the purposes of determining overall survival rates. The number of volunteer tree species should also be documented within each of the data collection points. Each of the data points established within the wetland portion of the Mitigation Site (Zones A, B, and C) should also be documented using the routine wetland determination data forms from the most recently adopted USACE Wetland Delineation Manual.

b. Photography:
A single photograph should be taken at each data collection point to visually record the conditions at the time of data collection. Photographs should also be taken from the permanent stations establish as part of the post-construction documentation.

3. Documentation:

   a. Each mitigation report should include a copy of the mitigation plan sheet with any annotations that spatially illustrate conditions observed (e.g., areas of high plant mortality, areas of volunteer dominance, exotic encroachment, unique wildlife habitat usage).
   b. A brief description of the following features of the mitigation area should be provided.
      (1) Indicate which areas within the wetland mitigation area (Zones A, B, and C) show soil conditions that are inundated, saturated or not subject to hydric conditions under normal circumstances.
      (2) Determine and document whether the vegetation within the entire Mitigation Site (Zones A, B, and C) meets both the minimum criteria and performance standards established in Section IX. Include survival rates of planted species, composition and extent of volunteer species, presence of any exotic/undesirable species, and overall percent cover based on information from the data collection points.
   c. Provide a brief description of any remedial measures taken to ensure the site meets the minimum criteria, performance standards, and overall goals and objectives of the mitigation project (i.e., invasive species removal, replanting, additional measures to protect against specific wildlife damage).

4. Responsible Parties:

   INDOT or a designated agent will be responsible for submitting the required annual monitoring reports.

B. Assessment of Function/Value Replacement:

Functional assessments should be documented based on qualitative observations related to the sites ability to store flood waters and provide habitat for wildlife.

C. Release From Monitoring:

1. The site will be monitored for a minimum of ten (10) years as outlined above. In order to be approved as part of the Umbrella Mitigation Bank, it must be demonstrated that the success criteria for the mitigation site have been met at the end of the ten (10) year period. A final monitoring report should be submitted to the USACE and the IRT requesting the site be approved. If the appropriate agencies confirm that the success criteria have been met, then the credits for the entire Mitigation Site may be released.

   If the appropriate agencies determine that the success criteria have not been met at the end of this ten (10) year monitoring period, the credits will be suspended until remedial actions have been developed and implemented to correct the problems. A monitoring report shall be required for each consecutive year until two (2) sequential reports indicate that all success criteria have been met. Following the approval of the Mitigation Site, coordination with the USFWS and the IRT will be conducted to establish continual management practices. It is anticipated that ownership of the site will be granted to the USFWS for management as part of the Patoka River National Wildlife Refuge following approval.

2. The proposed final monitoring report should include the required documentation from the previous years monitoring effort, as well as a formal wetland delineation for the wetland

mitigation areas (Zones A, B, and C) of the site. This report should also provide evidence that the goals of mitigation have been met and that the site generally represents a self-sustaining ecosystem. Results of InWRAP assessments performed on the wetland mitigation areas during the final monitoring should be included in the report to identify if this mitigation site has sufficiently replaced the functions and values of the impacted wetlands. If requested, INDOT, or their designated agent, will meet with the USACE and IRT members to confirm the mitigation plan has been executed and is successful.

3. Provide proof that a restricted covenant for the 20.0 acre mitigation site (legal description boundary) has been recorded for the property.

XI. Long-Term Management Plan

A short-term management and maintenance plan will be submitted to the USACE and the IRT following construction and planting of the site if it is deemed necessary to implement such measures to assure woody plant survival and control of exotics and invasive species. It is anticipated that ownership of the Mitigation Site will be assigned to the USFWS as part of the Patoka River National Wildlife Refuge following release of the site from monitoring; therefore, long-term management and maintenance of the Mitigation Site will be performed by the USFWS.

XII. Adaptive Management Plan

The primary challenge anticipated with the Mitigation Site will be the control of volunteer grass and weed species and prevention of such species competing with the planted tree seedlings. The other challenge anticipated with this mitigation site is the amount of flooding that may occur on the site after planting has been completed causing the seed mixes and tree seedlings to be washed away. There are no other identified challenges with the use of this site as mitigation for the I-69 Section 2 project.

A. Reporting Protocol:

If a success criteria stated above is not met for all or any portion of the Mitigation Site in any year, INDOT, or their designated agent, shall prepare an analysis of the cause(s) of failure and, if determined necessary by the USACE and the IRT, propose remedial action for pre-approval.

B. Response to Unsuccessful Remediation:

In the event that the USACE and the IRT determine the mitigation cannot be successfully achieved at the intended site, INDOT will coordinate with these agencies to discuss an alternative mitigation strategy on-site, or investigate the need to propose suitable mitigation at other eligible sites.

XIII. Financial Assurances

A. Construction:

All property within the Mitigation Site will be owned by the State of Indiana prior to construction. INDOT will be responsible for securing the necessary funding through state and/or federal sources to purchase the property and construct the Mitigation Site according to plan.

B. Monitoring:

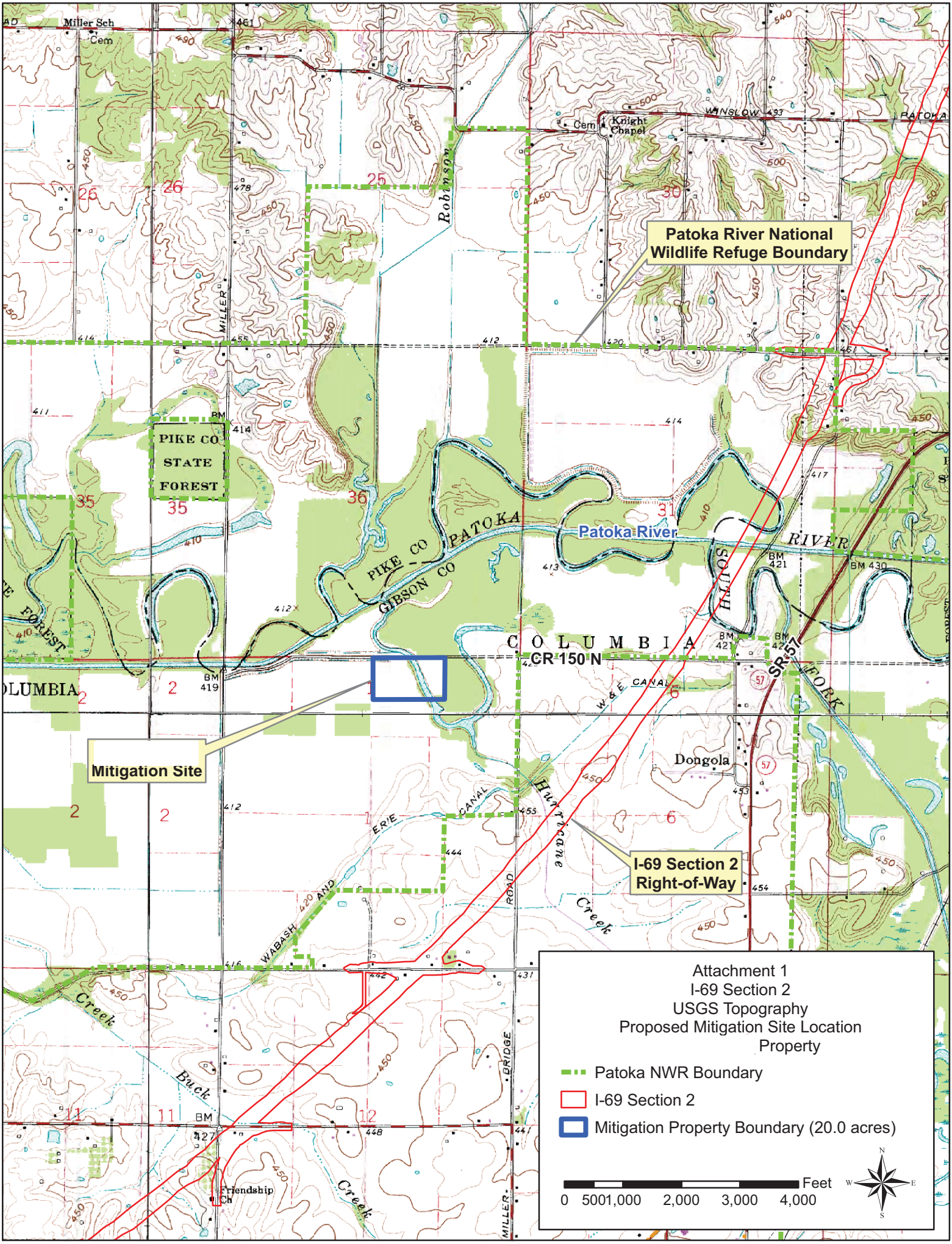
INDOT will be responsible for securing the necessary funding to conduct post-construction monitoring activities including preparation and filing of the required annual monitoring report.

C. Contingency:

The contractor will be responsible for guaranteeing the establishment of the planted seed mixes and the survival of the planted tree and shrub species for a period of two years following completion of the planting as warranted in the special provision (Attachment 5). In the event that replanting is required or mowing and/or herbicide treatment is needed to control invasive species, the contractor will be responsible for such activities for a period of two years following completion of the planting. The contractor will be held to a two year warranty period and will be required to post a Warranty Bond in favor of INDOT for a minimum of 150% of the total cost of the warranted items. The warranty bond shall be provided within 14 days of acceptance of the Mitigation Site.

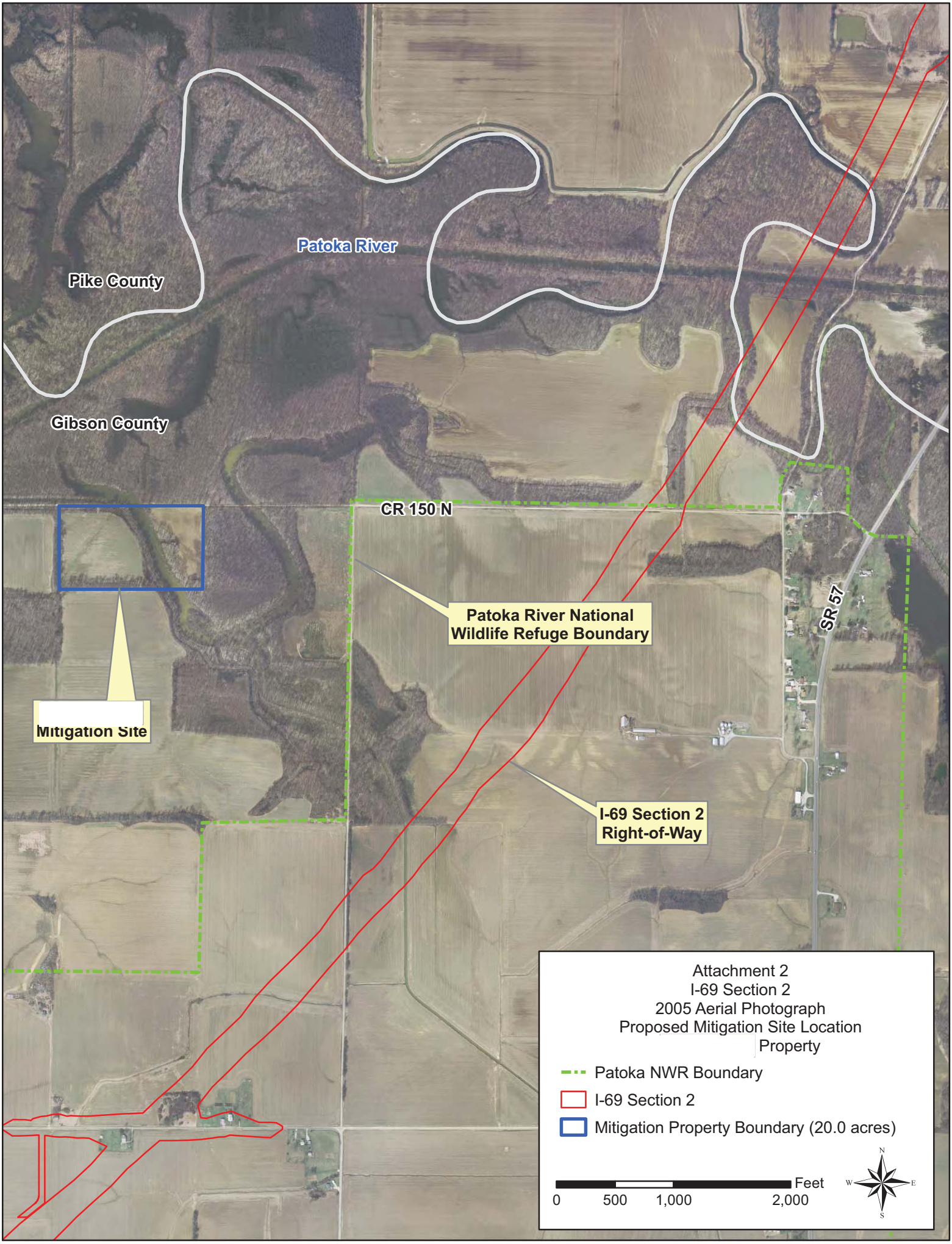
Attachment 1

I-69 Section 2
USGS Map Showing the Mitigation Site Location


Patoka River National Wildlife Refuge Boundary
Mitigation Site
I-69 Section 2 Right-of-Way
Patoka River
CR 150 N
SR 57
Dongola
COLUMBIA
PIKE CO STATE FOREST
PIKE CO
GIBSON CO
Attachment 1
I-69 Section 2
USGS Topography
Proposed Mitigation Site Location
Property
Patoka NWR Boundary
I-69 Section 2
Mitigation Property Boundary (20.0 acres)
Feet
0 500 1,000 2,000 3,000 4,000
N
S
E
W

Attachment 2

I-69 Section 2
2005 Aerial Photograph showing
the Mitigation Site Location


Patoka River
Pike County
Gibson County
CR 150 N
Patoka River National
Wildlife Refuge Boundary
SR 57
Mitigation Site
I-69 Section 2
Right-of-Way
Attachment 2
I-69 Section 2
2005 Aerial Photograph
Proposed Mitigation Site Location
Property
Patoka NWR Boundary
I-69 Section 2
Mitigation Property Boundary (20.0 acres)
0
500
1,000
2,000
Feet
N
W
E
S

Attachment 3

I-69 Section 2
Mitigation Site Photographs

/ Property Photos

Photo 1: Looking northeast at forested area inside mitigation site

Photo 2: Looking northwest at forested area inside mitigation site

Photo 3: Looking north at forested area inside mitigation site

Photo 4: Standing in the east field of mitigation site looking south

Photo 5: Standing in the east field of mitigation site looking south

Photo 6: Standing in the east field of mitigation site looking west

/ Property Photos (continued)

Photo 7: Standing in the west field of site looking southwest

Photo 8: Standing in the west field of mitigation site looking north

Photo 9: Standing in Slough inside mitigation site looking north

Photo 10: Standing on CR 150 N looking south at Slough inside mitigation site

Photo 11: Standing on CR 150 N looking south at Slough inside mitigation site

Attachment 4

I-69 Section 2
Mitigation Site
Design Plans

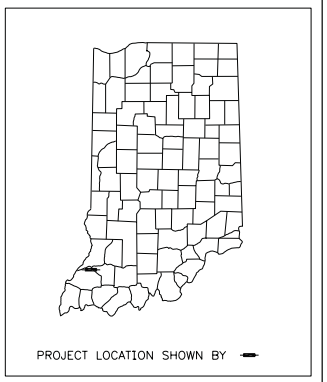
PROJECT	DESIGNATION
CN 0710902	0710902
CONTRACT	
IR-30354	

INDIANA DEPARTMENT OF TRANSPORTATION

MITIGATION PLANS

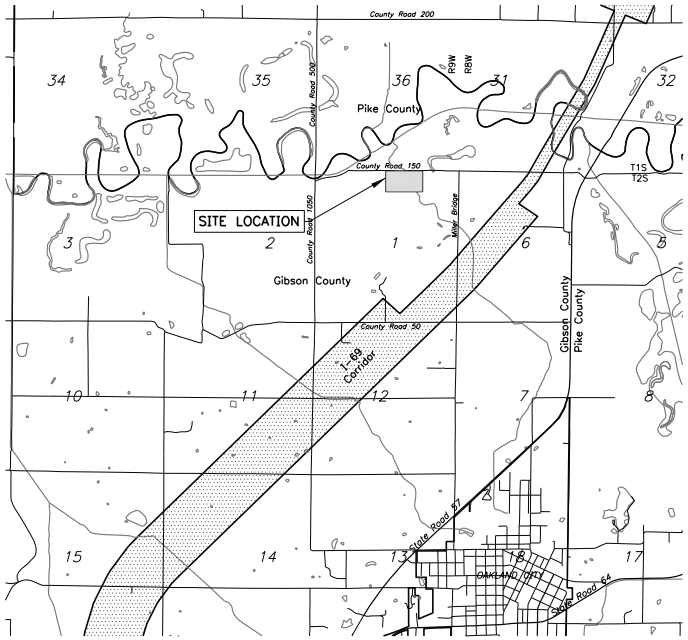
PROJECT NO. 0710902 P.E.
PROJECT NO. 0710902 R/W
PROJECT NO. CN 0710902 CONST.

TRAFFIC DATA	
A.A.D.T. (2002)	V.P.D.
A.A.D.T. (2022)	V.P.D.
D.H.V. (2022)	V.P.H.
DIRECTIONAL DISTRIBUTION	%
TRUCKS	% A.A.D.T.
	% D.H.V.
DESIGN DATA	
DESIGN SPEED	mph
PROJECT DESIGN CRITERIA	
FUNCTIONAL CLASSIFICATION	
RURAL/URBAN	
TERRAIN	
ACCESS CONTROL	

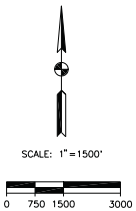


INDEX

ITEM NO.	DESIGNATION	PLAN SHEET NO.
A1	PLAN INDEX	1
A2	PLAT	3-4
A3	PROJECT NARRATIVE	8
A4	VICINITY MAP	1
A5	PROJECT SITE LEGAL DESCRIPTION	8
A6	LOT LOCATIONS & SITE IMPROVEMENTS	5
A7	HYDROLOGIC UNIT CODE	8
A8	WATER QUALITY PERMITS	8
A9	STORM WATER DISCHARGE POINTS	4-5
A10	ADJACENT WETLANDS, LAKES AND WATER COURSES	3, 8
A11	RECEIVING WATERS	8
A12	GROUNDWATER DISCHARGES	8
A13	FLOODPLAIN, FLOODWAYS, AND FLOODWAY FRINGES	3, 8
A14	PEAK DISCHARGE	Attached Separately
A15	ADJACENT LANDUSE	8
A16	LOCATIONS OF DISTURBED AREAS	5
A17	EXISTING VEGETATIVE COVER	6
A18	SOIL MAPS	3
A19	PROPOSED STORM WATER SYSTEM	8
A20	OFF-SITE CONSTRUCTION ACTIVITIES	8
A21	SOIL STOCKPILES, BORROW AND/OR DISPOSAL AREAS	5, 8-9
A22	EXISTING SITE TOPOGRAPHY	4
A23	PROPOSED FINAL TOPOGRAPHY	5
B1-B15	CONSTRUCTION COMPONENT	8
C1-C5	POST-CONSTRUCTION COMPONENT	8



LOCATION MAP
SEC. 1, T2S, R9W



NOTE: THESE PLANS ARE PREPARED USING ENGLISH DIMENSIONS

[INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS DATED 2008 TO BE USED WITH THESE PLANS]

BERNARDIN · LOCHMUELLER & ASSOC., INC.
6200 Vogel Road Evansville, Indiana 47715
(812)479-6200 / fax: (812)479-6262

PLANS PREPARED BY: BERNARDIN LOCHMUELLER & ASSOC. (812)479-6200
6200 Vogel Road, Evansville, IN 47715 PHONE NUMBER

CERTIFIED BY: Jason A DuPont 12/03/08
DATE

APPROVED FOR LETTING:
CHIEF, DIVISION OF DESIGN DATE

JASON A DUPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

HORIZONTAL SCALE	BRIDGE FILE
AS SHOWN	
VERTICAL SCALE	DESIGNATION
---	0710902
SURVEY BOOK	SHEETS
	1 of 9
CONTRACT	PROJECT
IR-30354	CN 0710902

S:\Surveys\103-0001\2008_Wetlands\Cooper_Buck\MIT_DWGS\title_sheet.dwg 12/03/08 10:20 rap

UTILITIES

NO UTILITIES IN PROJECT LIMITS

GENERAL NOTES

	All earth shoulders, median areas, and cut and fill slopes shall be plain or mulch seeded except where sodding is specified.
	The final cross section of the grading contract will be the original cross sections of the paving contract. However, partial or complete cross sections shall be taken if necessary to determine the actual excavation quantities.
	The paper relocation will be cross sectioned by the Engineer before construction.
	Existing asphalt pavement located outside the construction limits, between Sta. ___ and Sta. ___, shall be removed as directed.
	The quantity of peat excavation shown of the plans has been estimated on the basis of theoretical cross sections by using treatment of existing fills, treatment by removal, or treatment by displacement, where each treatment applies.
	Sheet Signs and Posts shall not be ordered until the exact number of signs and length of each post has been determined upon field investigation.
	All Signs shall be marked for identification. The Marking Material shall be either Scotch Lite, Seibulite, Reflexite or approved equal. The identifying message shall consist of INDOT and the Month and Year the sign is installed. The Message Copy shall consist of White or Black Lettering (of a minimum of 25mm in height) on Black or White Background respectively. The Marking for Sheet Signs shall be placed on the lower corner closest to the center-line of the road. The Marking for Panel Signs shall be placed on the bottom panel on the end closest to the centerline of the roadway. The Marking shall not be covered by the Sign's support after installation of the sign.
	Existing Exit Direction Signs and Stop Signs shall not be removed until the new ones are at the job site and ready to install. These two signs shall be seen by traveling motorists at all times. At least one Advance Guide Sign is required in advance of the Exit Point.
	All design shall be in accordance with the Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Latest Edition.
	The Contractor will have an Option of Either Using our Standard Installation or Transpo's Break-Safe Type A and Type B Couplings for Sign Supports (Wide Flange)

** REPRESENTS GENERAL NOTES REQUIRED

INDEX

SHEET NO.	DESIGNATION
1	TITLE SHEET
2	INDEX & GENERAL NOTES
3	OVERALL SITE LAYOUT SOILS & WETLANDS
4	EXISTING SITE LAYOUT
5	PLANTING PLAN LAYOUT
6	MISC. DETAILS
7	HABITAT POLE DETAILS
8	INFORMATION SHEET
9	EROSION CONTROL LAYOUT & DETAILS

REVISIONS

SHEET NO.	DATE	REVISED
5	2/09/09	Added Str. No. 11 Information
7	2/23/09	Remove Raptor Platform & Add Raptor Exclusion Cone

JASON A. DuPONT
REGISTERED
No. PE10303058
STATE OF INDIANA
PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL
DESIGN ENGINEER — DATE 12/03/08

DESIGNED: JAD
DRAWN: RAP
CHECKED: DJR
CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

INDEX & GENERAL NOTES

HORIZONTAL SCALE	BRIDGE FILE
VERTICAL SCALE	DESIGNATION 0710902
SURVEY BOOK	SHEETS 2 of 9
CONTRACT	PROJECT
IR-30354	CN 0710902

S:\Surveys\151-0001\2008_Wetlands\Cooper_Rock Mill_DWG\Index.dwg 02/24/09 09:06 rap

USDA SOIL SURVEY CHARACTERISTICS

Bo—Bonnie silt loam, frequently flooded

The Bonnie component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on backswamps. The parent material consists of acid fine-silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria.

Map Unit: HhA—Henshaw silt loam, 0 to 2 percent slopes, frequently flooded

The Henshaw component makes up 97 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood-plain steps. The parent material consists of fine-silty lacustrine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, March. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map Unit: Pp—Petrolia silt loam, frequently flooded

The Petrolia component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on backswamps. The parent material consists of fine-silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria.

Map Unit: Py—Petrolia silty clay loam, frequently flooded, very long duration

The Petrolia component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on backswamps. The parent material consists of fine-silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria.

Map Unit: St—Steff silt loam, frequently flooded

The Steff component makes up 97 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains. The parent material consists of Acid, fine-silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during January, February, March. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map Unit: Sr—Stendal silt loam, frequently flooded

The Stendal component makes up 97 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains. The parent material consists of Acid, fine-silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map Unit: Vo—Vincennes silt loam, frequently flooded

The Vincennes component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on flood-plain steps. The parent material consists of fine-loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 2 inches during January, February, March, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2w. This soil meets hydric criteria.

LEGEND

Denotes NWI Mapped Wetlands

XX NRCS Soil Type

NOTE
Entire Projects Is Located Within the DNR mapped Floodplain of the Patoka River

JASON A. DeFORD REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

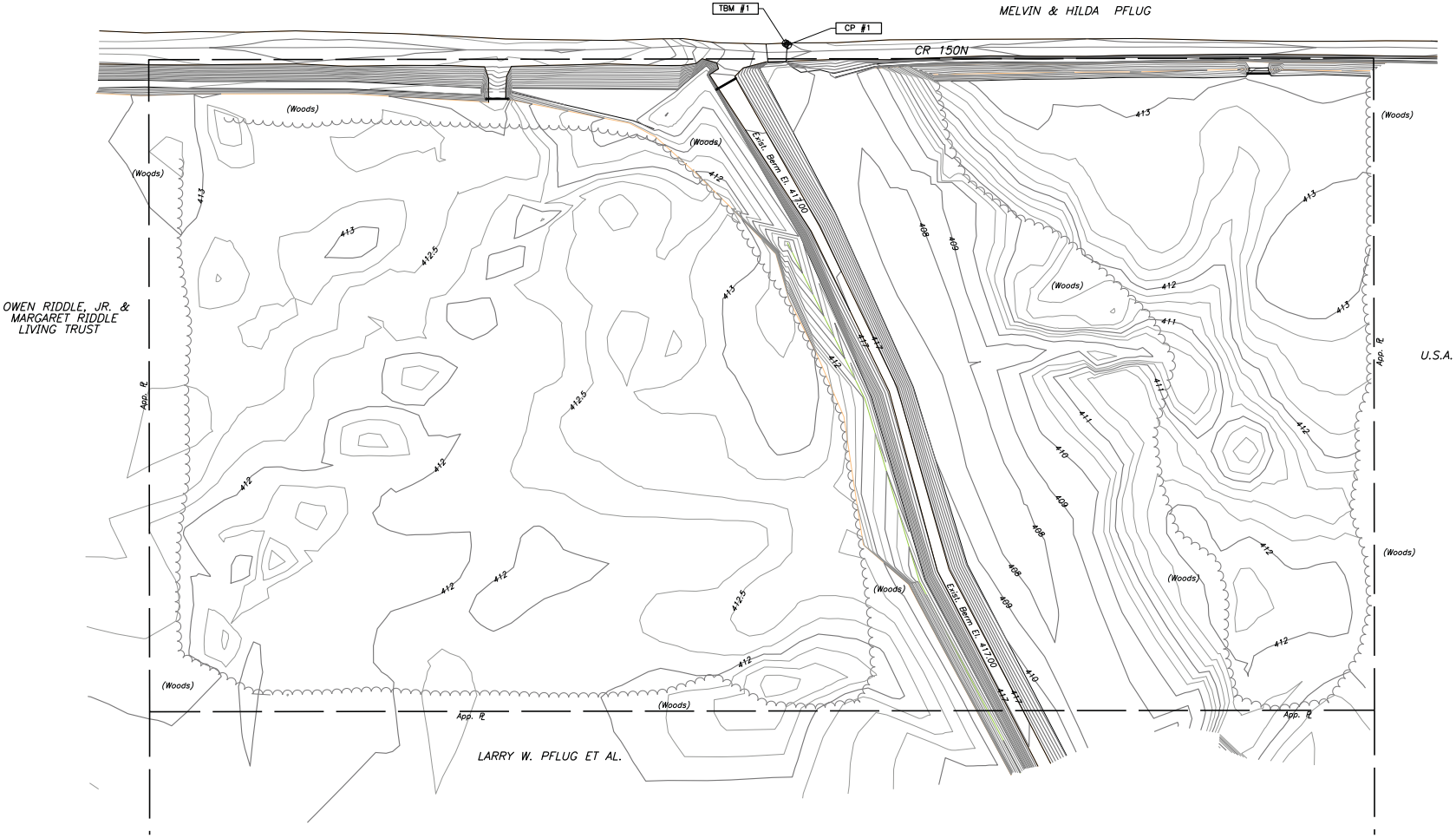
RECOMMENDED FOR APPROVAL Jason A DeFord 12/03/09
DESIGN ENGINEER DATE

DESIGNED: JAD DRAWN: RAP
CHECKED: DJR CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

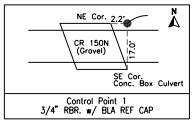
OVERALL SITE LAYOUT
SOILS & WETLANDS

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	
VERTICAL SCALE	DESIGNATION
---	0710902
SURVEY BOOK	SHEETS
	3 of 9
CONTRACT	PROJECT
IR-30354	CN 0710902

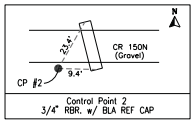


CONTROL POINT TABLE			
C.P. #	DESCRIPTION	NORTHING	EASTING
1	3/4" Rebar w/ BLA Reference Cap	243359.09	611857.87
2	3/4" Rebar w/ BLA Reference Cap	243346.23	612826.64

	BENCHMARK TABLE	
TBM #	DESCRIPTION	ELEV.
TBM #1	Chiseled "Square In N.E. Corner Of Bridge Over Slough On 150N	424.42



Control Point 1
3/4" RBR. w/ BLA REF CAP



Control Point 2
3/4" RBR. w/ BLA REF CAP

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/03/08 DATE

DESIGNED: JAD | DRAWN: RAP

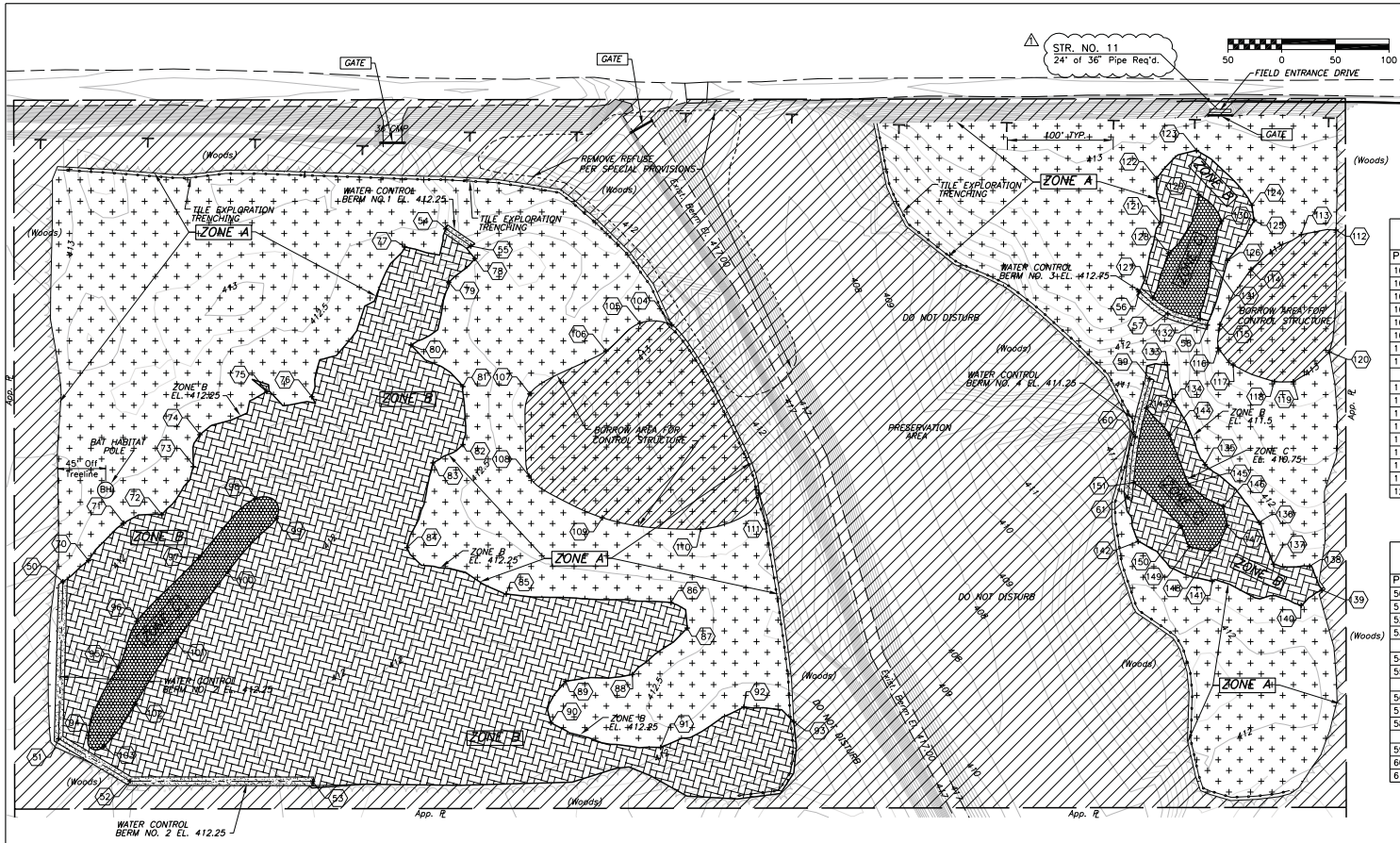
CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

EXISTING SITE LAYOUT

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	
VERTICAL SCALE	DESIGNATION
---	0710902
SURVEY BOOK	SHEETS
	4 of 9
CONTRACT	PROJECT
IR-30354	CN 0710902

S:\Surveys\103-0001\2008_Mitchell\Crosser_Bus\VAT_2#BGS\EXISTING_SITE.dwg 12/01/08 15:03 rap



PLANTING ZONE CONTROL POINTS

Point #	Northing	Easting
70	242915.4866	611280.1552
71	242950.3183	611312.9746
72	242958.1921	611348.5107
73	243002.9725	611377.6451
74	243032.7190	611383.9517
75	243072.9533	611446.2287
76	243068.0295	611488.1691
77	243207.4204	611574.8513
78	243196.5759	611640.1027
79	243174.5283	611615.7751
80	243116.1006	611580.5857
81	243077.5127	611628.8092
82	243023.4334	611628.8828
83	243006.4997	611601.0194
84	242927.5465	611576.8236
85	242884.3199	611669.1438
86	242876.3434	611822.6779
87	242852.6457	611837.8649
88	242809.3927	611786.7564
89	242803.1298	611724.6376
90	242764.3000	611710.9062
91	242741.4695	611813.0562
92	242779.1490	611890.5920
93	242765.3330	611937.0525
94	242752.6168	611280.0260
95	242815.9272	611307.8024
96	242858.8765	611325.2896
97	242918.1183	611382.8006
98	242973.0614	611435.4333
99	242954.8457	611454.9596
100	242905.0981	611409.9859
101	242840.2350	611361.7934
102	242782.1115	611323.8737
103	242742.7932	611294.5943
121	243229.9865	612278.3485
122	243271.2290	612275.0412
123	243297.3528	612312.2205
124	243246.3112	612363.7092
125	243232.4805	612366.0556
126	243194.9143	612341.1839
127	243160.0120	612271.4505
128	243201.3386	612286.0917
129	243256.2058	612314.4366
130	243231.6839	612335.3109
131	243193.8550	612325.4586
132	243140.5063	612315.5357
133	243097.8079	612285.0622
134	243064.6616	612290.1731
135	243004.8066	612320.0249
136	242950.9535	612370.3900
137	242912.0570	612383.7045
138	242910.2326	612417.5641
139	242887.9557	612429.0165
140	242873.7721	612409.6228
141	242896.1152	612326.8206
142	242933.2506	612257.8442
143	243057.5261	612265.4204
144	243032.4991	612287.1328
145	242986.8521	612304.4186
146	242966.0080	612337.0502
147	242948.2566	612340.7572
148	242924.5770	612325.0804
149	242928.4509	612305.5060
150	242947.7564	612297.7531
151	242988.1160	612253.5982

BORROW AREA CONTROL POINTS

Point #	Northing	Easting
104	243134.9161	611823.4369
105	243136.6064	611793.7703
106	243110.5973	611762.0389
107	243070.7761	611691.2294
108	242994.1585	611690.5331
109	242955.3104	611758.7711
110	242944.8945	611850.3853
111	242978.2338	611904.7225
112	243223.2920	612442.1102
113	243219.0564	612409.7078
114	243186.6783	612362.9054
115	243135.4273	612334.0426
116	243113.3220	612332.2927
117	243097.6030	612346.2718
118	243082.1604	612384.6156
119	243081.9415	612402.3120
120	243109.6708	612435.9265

BERM ℄ CONTROL POINTS

Point #	Northing	Easting
50	242895.7685	611256.3528
51	242749.6540	611252.3085
52	242710.0593	611318.9406
53	242709.8853	611488.9131
54	243224.3647	611612.8463
55	243208.3686	611636.2238
56	243165.7225	612258.6501
57	243145.4827	612285.3670
58	243134.8094	612322.2215
59	243084.5890	612268.6516
60	243030.6905	612255.0016
61	242974.4524	612248.1983

WATER CONTROL BERM EARTHWORK SUMMARY (CYS)

AREA	FILL	FILL+10%	CUT
BERM 1 & 2	42	46	
WEST BORROW			46
BERM 3 & 4	18	20	
EAST BORROW			20

NOTE:
BORROW QUANTITY SHALL BE ADJUSTED IF NECESSARY PER SPECIAL PROVISION TO BALANCE EXCAVATION ON SITE

NOTE

FOR DETAIL OF WATER CONTROL BERM SEE SHEET 6
FOR GATE DETAIL SEE SHEET 6

⚠ STR. NO. 11
Type 3, Circular, 36", Corrugated Aluminum Alloy Pipe, 3"x1" Corrugation Profile, 0.060" Thickness

LEGEND

- DENOTES ZONE "A" (7.75 AC)
- DENOTES ZONE "B" (3.90 AC)
- DENOTES ZONE "C" (0.40 AC)
- DO NOT MOW SIGN (100' SPACING)
- PRESERVATION AREA (DO NOT DISTURB)
- (BH) BAT HABITAT POLE

ZONE A PLANT LIST – MITIGATION PLANTING

	COMMON NAME	BOTANICAL NAME	BARE ROOT	3-GALLON CONTAINER GROWN
Trees	Shellbark Hickory	Carya laciniosa	505	170
	Sweetgum	Liquidambar styraciflua	505	170
	Swamp White Oak	Quercus bicolor	505	170
	American Elm	Ulmus americana	505	170
	Schumard Oak	Quercus schumardii	505	170
Shrubs	Silky Dogwood	Cornus Amomum	280	0
	Common Spicebush	Lindera benzoin	280	0
	Elderberry	Sambucus canadensis	280	0
		TOTAL ZONE A	3365	850

ZONE B PLANT LIST – MITIGATION PLANTING

	COMMON NAME	BOTANICAL NAME	BARE ROOT	3-GALLON CONTAINER GROWN
Trees	Bald Cypress	Taxodium distichum	255	85
	Overcup Oak	Quercus lyrata	255	85
	River Birch	Betula nigra	255	85
	Pin Oak	Quercus palustris	255	85
	Swamp Chestnut Oak	Quercus michauxii	255	85
Shrubs	Buttonbush	Cephalanthus occidentalis	140	0
	Common Spicebush	Lindera benzoin	140	0
	Elderberry	Sambucus canadensis	140	0
		TOTAL ZONE B	1695	425

MITIGATION QUANTITIES

Seedling, Bare Root Trees and Shrubs– Zones A & B	5060 Plants
Seedling, Bare Root – Zones A & B	1275 Plants
Seed Mixture, Woodland Wetland Establishment–Zones A & B	518.8 LBS
Seed Mixture, Emergent Wetland – Zone C	13.9 LBS
Seed Mixture, Slope Stabilization – Berms	12.7 LBS
Mulching	24.1 TONS
Fertilizer	4820 LBS
Sign, Do Not Mow or Spray	13 EACH
Temporary Silt Fence	1350 LFT
Stone, No. 2, For Construction Entrances	50 TON
Pipe, 36" CPP/CSP	24 LFT
Exploratory Tile Trenching	1970 LFT
Coir Fiber Matting	1080 SY
Gate	3 EACH

REVISION	DATE	DESCRIPTION
⚠	2/09/09	Added Str. No. 11 Information

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — DATE 12/03/08

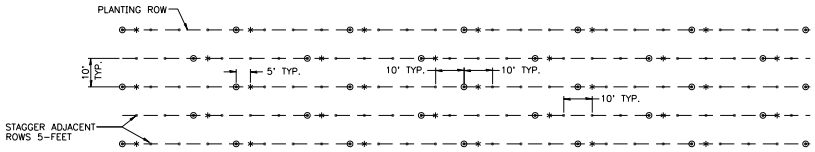
DESIGNED: JAD DRAWN: RAP
CHECKED: DJR CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

PLANTING PLAN LAYOUT

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	
VERTICAL SCALE	DESIGNATION
---	0710902
SURVEY BOOK	SHEETS
	5 of 9
CONTRACT	PROJECT
IR-30354	CN 0710902

S:\Surveys\103-0001\2008_Mitigation\Crosser_Bush\MIT_PLANS\LAYOUT.dwg 02/09/09 09:29 rno

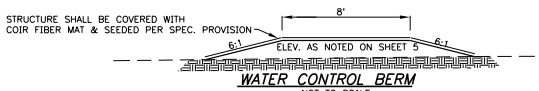


PLANTING TREE & SHRUB LAYOUT

NOT TO SCALE

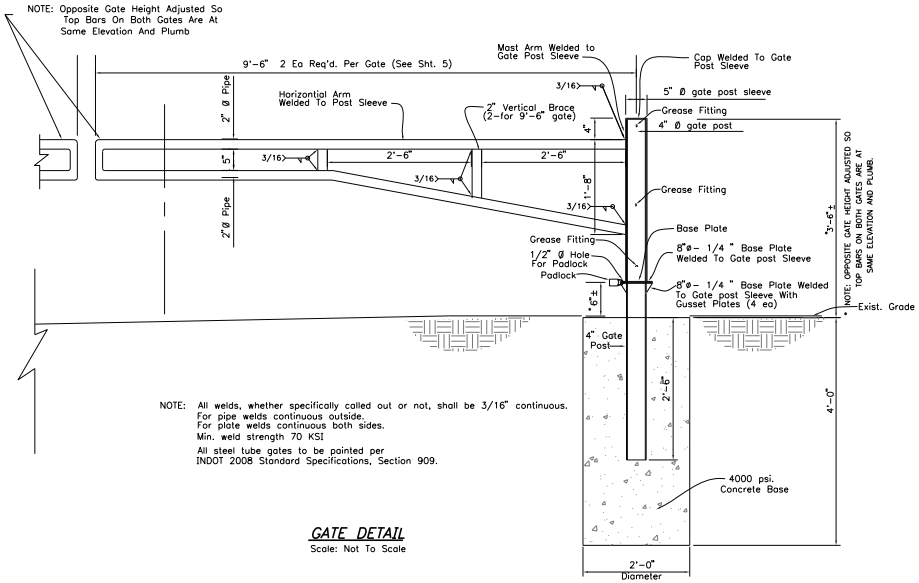
LEGEND

- ◎ 3-GALLON CONTAINER GROWN TREE SEEDLING
- • BARE ROOT TREE SEEDLING
- * BARE ROOT SHRUB SEEDLING



WATER CONTROL BERM

NOT TO SCALE



NOTE: All welds, whether specifically called out or not, shall be 3/16" continuous.
For pipe welds continuous outside.
For plate welds continuous both sides.
Min. weld strength 70 KSI

All steel tube gates to be painted per INDOT 2008 Standard Specifications, Section 909.

GATE DETAIL

Scale: Not To Scale

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/03/08 DATE

DESIGNED: JAD | DRAWN: RAP

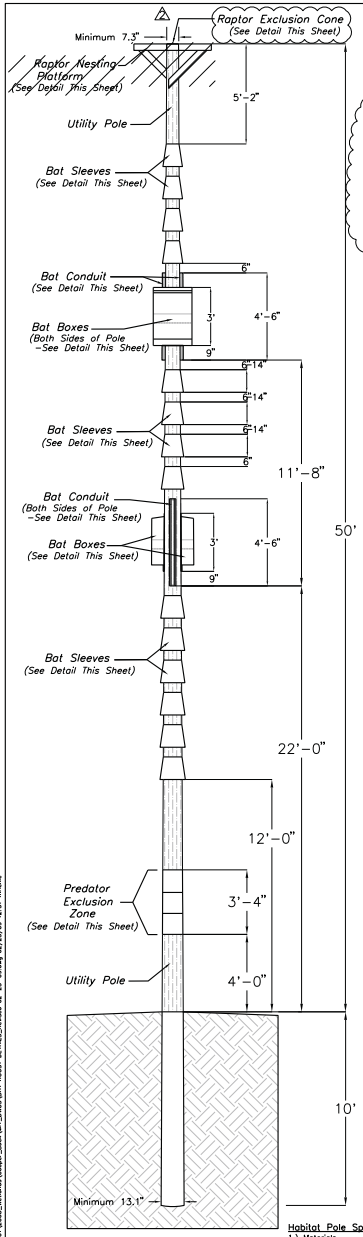
CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

MISC. DETAILS

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	
VERTICAL SCALE	DESIGNATION
---	0710902
SURVEY BOOK	SHEETS
	6 of 9
CONTRACT	PROJECT
IR-30354	CN 0710902

S:\Surveys\103-0001\2008_Mishawaka\Cooper_Buck\MT_2#6C3\MISC_DETAILS.dwg 12/03/08 10:25 rap

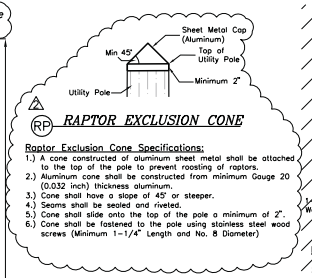


HP HABITAT POLE

Habitat Pole Specifications:

1.) Materials
- Wood Class 3 (or larger) Utility Pole, 60 feet tall
  Note: Utility pole must meet minimum ANSI requirements for Class 3 poles

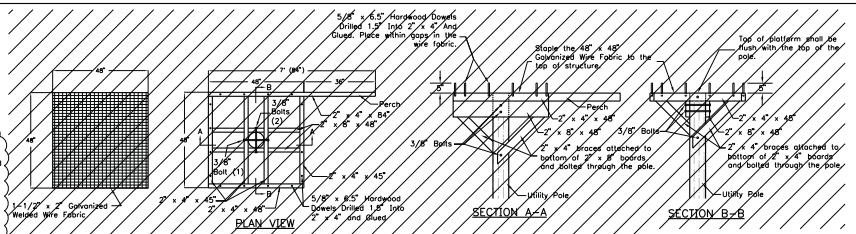
2.) Method
- Attach all habitat roost structures to the utility pole (see details this sheet)
- Install the utility pole 10 feet below ground level with 50 feet above ground level



RP RAPTOR EXCLUSION CONE

Raptor Exclusion Cone Specifications:

1.) A cone constructed of aluminum sheet metal shall be attached to the top of the pole to prevent roosting of raptors.
2.) Aluminum cone shall be constructed from minimum Gauge 20 (0.032 inch) thickness aluminum.
3.) Cone shall have a slope of 45° or steeper.
4.) Seams shall be sealed and riveted.
5.) Cone shall slide onto the top of the pole a minimum of 2".
6.) Cone shall be fastened to the pole using stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)



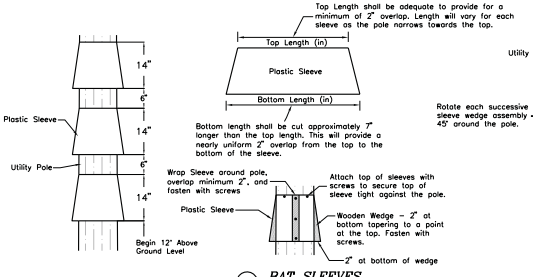
RP RAPTOR NESTING PLATFORM

Raptor Nesting Platform Specifications:

1.) All wood materials shall be treated lumber per INDOT 2008 Standard Specification 911.02.
2.) References to 2" x 4" and 2" x 8" lumber are nominal sizes
- Actual dimensions are 1-1/2" x 3-1/2" and 1-1/2" x 7-1/4", respectively.

3.) All bolts, screws, and staples utilized shall be stainless steel to prevent corrosion.
4.) Galvanized wire fabric shall be stapled to the platform assembly with a minimum of 1" long staples

Source: USFWS & APLIC, Aviation Protection Plan (APP), April 2008. This design is modified from Figure 14 of this plan. (http://training.fws.gov/bannchallies/CSP/)

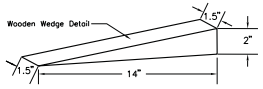


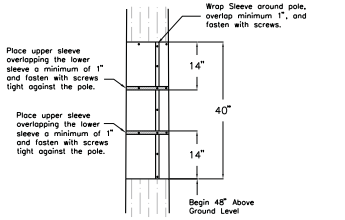
BS BAT SLEEVES

Bat Sleeve Specifications:

1.) Materials
- Heavy grade black polyethylene animal guard (supplied in 14" x 16' roll)
- Polyethylene material shall be a minimum of 0.035" thick
- Vendors may include but are not limited to:
  - Reed City Power Line Supply (Mooresville, IN)
  - Osmose Utility Services (http://osmoseutilities.com/cms/repository/media/2008_Products_Catalog.pdf)
- Stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)
  - Longer screws of varying lengths shall be used for attachment of wooden wedges to allow for a minimum of 1" penetration into the utility pole (Minimum No. 8 Diameter)
- Treated 2" x 4" lumber (for wedges) per INDOT 2008 Standard Specification 911.02.
- References to 2" x 4" lumber are nominal sizes, actual dimensions are 1-1/2" x 3-1/2"

2.) Method
- Cut wooden wedges out of 2" x 4" treated boards
  - Wedges shall be 2" tall at base, tapering to a point at the top, per detail this sheet
- Attach wedges on opposite sides of the pole using screws
- Cut plastic sleeve to length to allow for a minimum 2" overlap at the top and bottom (see calculations above)
- Wrap the plastic sleeve around the pole and wedges
- Fasten the sleeve to the pole with the top of the sleeve tight around the entire pole
- Install screws into the overlapped portion of the sleeve
- Bottom of lowest bat sleeve shall be approximately 12' above ground level



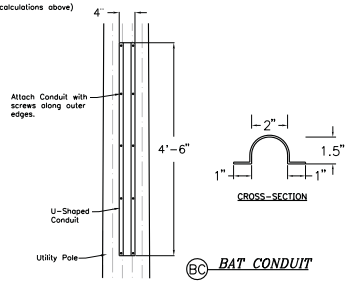


PE PREDATOR EXCLUSION ZONE

Predator Exclustion Zone Specifications:

1.) Materials
- Heavy grade black polyethylene animal guard (supplied in 14" x 16' roll)
- Polyethylene material shall be a minimum of 0.035" thick
- Stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)

2.) Method
- Cut plastic sleeve to length to allow for a minimum 1" overlap
- Wrap the lowest plastic sleeve tight around the pole with the bottom approximately 48" above ground level
- Fasten the sleeve to the pole with screws along the overlap
- Wrap the subsequent sleeves with 1" overlapping the lower sleeve and fasten along the top and within the overlap of each sleeve

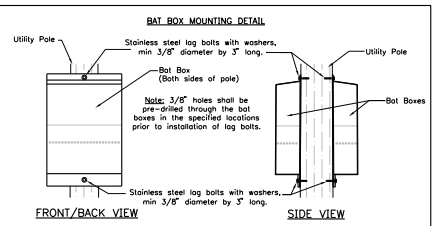


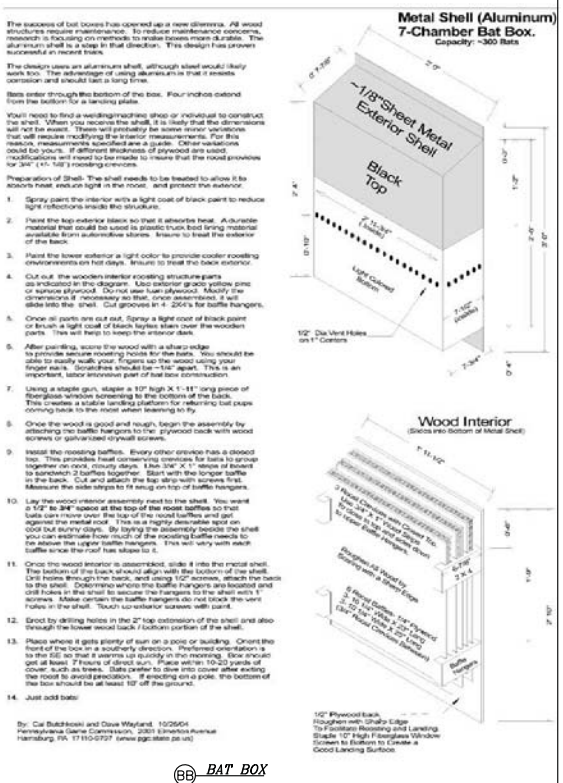
BC BAT CONDUIT

Bat Conduit Specifications:

1.) Materials
- Plastic U-shaped conduit
- Stainless steel wood screws (Minimum 2" Length and No. 8 Diameter)

2.) Method
- Cut 4 pieces of conduit to 4.5 feet in length
- Attach 2 conduit strips, one on each side of the pole, with the bottom elevation at 22 feet above ground level
- Attach the remaining 2 conduit strips at 90° angle from the first set of conduit, with a bottom elevation of 33 feet-8 inches above ground level
- Conduit shall be attached with screws along each edge





BB BAT BOX

Bat Box Specifications:

1.) A total of 4 Bat Boxes shall be assembled and installed per these plans with aluminum exterior shells.
2.) Aluminum exterior shells shall be constructed from the following minimum gauge (thickness) aluminum:
- Back of Bat Box Shell: Gauge 3 (0.2294 inch)
- Front, Sides, and Top of Bat Box Shells: Gauge 8 (0.1285 inch)

2.) Attach 2 bat boxes, one on each side of the pole per the detail above, with a bottom elevation of 22'-9" above ground level.
3.) Attach the remaining 2 bat boxes per the detail above, 90° from the first set of boxes at a bottom elevation of 33'-5" above ground level.

Vendor:
- Vendors of the constructed bat boxes may include but are not limited to this vendor:
  Environmental Solutions and Innovations, Inc., 781 Neeb Rd.,Cincinnati, OH 45233

Source:
- This bat box design was created by:
  Cal Butchkoski and Dave Wayland, Pennsylvania Game Commission, 2001 Elmerton Avenue, Harrisburg, PA 17110-9797 (www.pgc.state.pa.us)

REVISION	DATE	DESCRIPTION
1	2/23/09	Remove Raptor Platform & Add Raptor Exclusion Cone

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL: Jason A. DuPont 12/03/08
DESIGN ENGINEER — DATE

DESIGNED: JAD — DRAWN: RAP
CHECKED: DJR — CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

HABITAT POLE DETAILS

HORIZONTAL SCALE	BRIDGE FILE
AS SHOWN	
VERTICAL SCALE	DESIGNATION
---	0710902
SURVEY BOOK	SHEETS
	7 of 9
CONTRACT	PROJECT
IR-30354	CN 0710902

S:\Savana\101-0001\006_Wetland\Cooper_Run\MP_DWGS\BAT ROOST DETAILS_Revised 02-23-09.dwg 02/23/09 12:57 mahne

NATURE & PURPOSE OF CONSTRUCTION ACTIVITY

A-1 Index showing locations of required Plan Elements.
Sheet 1 (Index Sheet)

A-2 11x17 inch plat showing building lot numbers/boundaries and road layout/names.
24x36 plat found in plans on Sheet 3-4.

A-3 Narrative describing the nature and purpose of the project.
This 20-acre wetland mitigation site, known as the Cooper/Buck property, has been purchased by the Indiana Department of Transportation (INDOT) to compensate for a portion of the water resource impacts caused by the construction of Section 2 of the I-69 Project from Evansville to Indianapolis. Construction on this site will include creation of water retention berms, seedbed preparation, and planting of wetland vegetation and trees throughout the site.

A-4 Vicinity map showing project location.
Sheet 1 (Title Sheet)

A-5 Legal Description of the Project Site
This project is located in: Indiana, Gibson County, Petersburg Quadrangle, Columbia Township;
T-2-S, R-9-W, Section 1 – NE Quarter;
Latitude: 38° 22' 36" North
Longitude: 87° 21' 34" West

A-6 Location of all lots and proposed site improvements.
Grading and Planting Plan on sheet 5.

A-7 Hydrologic unit code (14 digit)
05120209080010 (Patoka River-Robinson/Big Creeks)

A-8 Notation of any State or Federal water quality permits.
This mitigation site is being constructed to meet the requirements of the IDNR Construction in a Floodway Permit, IDEM Section 401 Water Quality Certification, and USACE Section 404 Permit for I-69 Section 2. This mitigation site is also a result of commitments made in the Tier 1 Environmental Impact Statement for the I-69 project.

A-9 Specific points where stormwater discharge will leave the site.
Stormwater will likely leave the site via roadside ditches located on the north end of the property or via the backwater slough that flows through the site. Other stormwater may leave the site as sheetflow in various locations. The purpose of this project is to minimize runoff and retain water on the site to serve as wetland mitigation. See Sheet 4 and 5 for the existing and proposed contours.

A-10 Location and name of all wetlands, lakes and water courses on and adjacent to the site.
A review of the National Wetland Inventory (NWI) Map indicated that the majority of the property is classified as existing palustrine forested (PFO), palustrine emergent (PEM), or palustrine unconsolidated bottom (PUB) wetlands. An oxbow of the former Patoka River channel, which now serves as a backwater slough of the Patoka River, traverses the property. This project serves to enhance and preserve these existing wetland features. See Sheet 3.

A-11 Identification of all receiving waters.
The runoff from the site will likely migrate north to the Patoka River via the backwater slough.

A-12 Identification of potential discharges to ground water.
There are no known areas within the project site where stormwater will be discharged to groundwater.

A-13 100 year floodplains, floodways, and floodway fringes.
The entire project area lies within the 100-year floodplain of the Patoka River, special flood hazard area Zone "A" per FEMA F.I.R.M. floodplain maps, Panel Number 180434 0005 A, effective April 28, 1978. See Sheet 3.

A-14 Pre-construction and post construction estimate of Peak Discharge (100 year storm event)
This project is designed to reduce the peak discharge and retain water on-site for an extended period of time to serve as a wetland mitigation site. See Attached Hydraulic Calculations.

A-15 Adjacent landuse
County Road 150 N borders the north side of the property. The remainder of the adjacent land use includes bottomland forests, agricultural fields, and backwater sloughs of the Patoka River.

A-16 Locations and approximate boundaries of all disturbed areas.
The Grading and Planting Plan can be found on Sheet 5. The berms shown on the plans are the only areas of the site to receive grading. Tile exploratory trenching and the designated borrow areas may involve ground disturbance. The various planting zones will receive only seedbed preparation.

A-17 Identification of existing vegetative cover.
The majority of the site is agricultural fields which were not planted during the 2008 growing season and have established voluntary herbaceous ground cover. Other land use includes strips of bottomland woods around the perimeter of the property and bordering the backwater slough.

A-18 Soils map including soil descriptions and limitations.
See Sheet 3.

A-19 Locations, size and dimensions of proposed stormwater systems.
The water retention berms are the only stormwater systems proposed for the site. The location of these berms can be found on Sheet 5.

A-20 Plans for any off-site construction activities associated with this project.
No off-site construction activities are anticipated with this project.

A-21 Locations of proposed soil stockpiles and/or borrow/disposal areas.
Two potential borrow areas are proposed on the site for the construction of the water retention berms. Sheet 5.

A-22 Existing site topography.
Existing Site Layout on Sheet 4 (shown as shaded linework).

A-23 Proposed final topography.
Planting Plan on Sheet 5 (shown as bold linework)

Assessment of Stormwater Pollution Prevention Plan
Construction Component (Section B)

B-1 Description of potential pollutant sources associated with the construction activities:
Potential pollutant sources associated with the construction activity include those normally associated with construction equipment, such as: oils, fuels, hydraulic fluids, transmission fluids, brake fluid, antifreeze, greases, brake dust, etc.. All heavy equipment shall be parked on site at a location, when not in use; leakage from the equipment will be captured by the surrounding terrain, and not be provided a direct path to the surrounding waterways. Additionally, sediment generated from the construction activity and equipment is a potential pollutant.

Assessment of Stormwater Pollution Prevention Plan (Cont'd)
Construction Component (Section B)

B-2 Initial Setup:

Upon completion of the initial site inspection, and before any vegetation is removed from the site, this erosion control plan shall be implemented. Any good erosion control plan must be dynamic and ever changing as the project develops. Continual maintenance and updating of the plan is of utmost importance. Below is the sequencing of events for this erosion control plan:

1. Identify and protect all existing vegetation designated to remain; flag all areas of avoidance.
2. Call for an underground locate to verify location of existing utilities.
3. Establish areas for storage of potential pollutants (e.g. fuel storage, oils, hydraulic fluids, etc.)
4. Notify the Soil and Water Conservation District (SWCD) and IDEM agents 48 hours in advance of beginning work.
5. Install construction entrances (permanent entrances) to keep sediment off public roadway. Eastern construction entrance will also require installation of a culvert in the roadside ditch. Remove any sediment tracked on roadway, (DO NOT flush).
6. Install silt fence as shown on plans
7. Begin grading:
   A. Construct the water retention berms as specified on the plans. Material needed for construction of water retention berms shall be obtained from the borrow areas designated on the plans. Following final grading; seed, fertilized, and stabilize the water retention berms with erosion control blankets. If permanent seedbed preparation and final seeding/planting cannot occur immediately following final grading, all disturbed areas shall be seeded with a temporary seed mixture T per INDOT 2008 Standard Specification 621.06 (f).
   B. Prepare the seedbed. Permanently seed, fertilize, and mulch the entire site per the Special Provisions. Following seeding, plant the specified tree species in the designated planting zones as shown on the plans and detailed in the Special Provisions.
8. Submit the completed Notice of Termination (N.O.T.) form to the SWCD, IDEM, or other Entity Designated by the Department as the reviewing agency. The N.O.T. will be reviewed for concurrence and either returned to the Project Site Owner or forwarded to IDEM.

B-3 Construction Entrance:
The Contractor shall provide 2 stable entrances/exits to keep mud and sediment off public roads. The eastern construction entrance will also require the installation of a culvert within the roadside ditch. See Sheet 7 for locations and details.

B-4 Sediment control measures for sheet flow areas:
Temporary Silt Fence (SF): A silt fence is a fabric barrier used to retain sediment from small, sloping, disturbed areas by reducing the velocity of sheet flow. Silt fence shall be installed in the areas where there is potential for stormwater carrying solids to leave the site or runoff a foreslope into an unprotected ditch as sheet runoff, prior to any work being performed in that area. See Sheet 9.

B-5 Sediment control measures for concentrated flow areas:
Erosion Control Blanket (ECB): A biodegradable, organic or synthetic mulch incorporated with a biodegradable, photodegradable or permanent propylene, natural fiber or similar netting. It is an alternative to mulch and normally used on slopes and in concentrated flow channels. Erosion control blankets shall be installed to prevent erosion of the water retention berms.

B-6 Storm sewer inlet protection measure locations and specifications:
Not Applicable

B-7 Runoff control measures:
Water Retention Berms: Water retention berms shall be installed to minimize runoff from leaving the site and retain water for an extended period of time for the purpose of maintaining adequate hydrology to support a wetland habitat community. Installation of the water retention berms shall be as shown on the plans.

B-8 Stormwater outlet protection specifications:
Rock Splashpad (RS): A rock splashpad shall be installed at the outlet location of the culvert to reduce the runoff velocity and prevent scour. The culvert will be installed within the existing roadside ditch in the location of the eastern construction entrance.

B-9 Grade stabilization structure locations and specifications:
Not Applicable

B-10 Locations, dimensions, specifications and construction details of each stormwater quality measure:
The location, dimensions, and details of all stormwater quality measures are as shown on Sheet 9.

B-11 Temporary surface stabilization methods appropriate for each season:
Temporary surface stabilization shall be accomplished by the use of a temporary seeding mixture along with temporary mulching. The temporary seed mixture shall be used to establish a temporary cover for disturbed soil during the construction operations. Temporary cover mixes shall be placed on disturbed areas that are expected to undisturbed for over 14 days. Temporary seed mixes shall consist of seed mixture T as outlined in the INDOT 2008 Standard Specifications 621.06 (f).

Fertilizer shall be applies at a rate of 400 lbs/acre of 12-12-12 analysis, or equivalent.
Mulching Material (clean grain straw or hay) shall be applied at a rate of 2 ton/acre, 75% coverage of the disturbed area should be obtained.

B-12 Permanent surface stabilization specifications:
Permanent surface stabilization shall be achieved by the use of a seeding mixture, along with mulching material and fertilizer. The mulching rate will be critical to get optimal seed germination due to the time of the project. The mulching material will provide optimal moisture condition, therefore reduce the need for reseeding of the project site. Permanent seeding will take place in areas after final construction.

Seed mixtures will vary throughout the site with respect to the different planting zones. Seeding specifications and seed mixture requirements can found in the Special Provisions for this wetland mitigation site. A portion of the site will also receive tree seedling plantings as outlined in the Special Provisions. The location of each of the planting zones to receive the special plantings can be found on Sheet 5.

Fertilizer shall be applied at a rate of 400 lbs/acre of 12-12-12 analysis, or equivalent.
Mulching Material (clean grain straw or hay) shall be applied at a rate of 2 tons/acre, 75% coverage of the disturbed area should be obtained. Erosion control blankets shall be installed on the water retention berms to provide further protection from erosion.

Assessment of Stormwater Pollution Prevention Plan (Cont'd)
Construction Component (Section B)

B-13 Material handling and spill prevention plan:
Any onsite storage of hazardous materials/potential pollutants, such as diesel fuel, shall be stored onsite surrounded by an earthen dike or other secondary containment system having a storage volume equal to 150% of tank capacity, to contain potential pollutants. Any additional means of containing releases should be accessible to a petroleum storage area; this would include various absorbent materials. In the event of a release, a licensed environmental consulting company, should be contacted for spill cleanup assistance. Furthermore, all equipment, when not in use, shall be parked onsite in an area that, should potential pollutants leak, they will be contained within the immediate area and will not be inadvertently conveyed to drainage swales and away from the project. Any leakage of pollutants from storage vessels or equipment shall be cleaned up and disposed of offsite in a legal manner.

B-14 Monitoring and maintenance guidelines for each proposed pollution prevention measure:
Temporary erosion and sediment control measures shall be inspected by the Erosion Control Supervisor, or a qualified representative, once every seven days and within 24 hours after a 1/2 inch rainfall. The inspection completed after a rain event can be considered the weekly inspection. Inspections shall be documented and records shall be maintained by the Erosion Control Supervisor, to be made available for review upon request. Records shall include, at a minimum, the date, the inspector's name, the maintenance and corrections needed based on this inspection, and the status of previously identified deficiencies. The temporary protection measures shall be returned to good working condition within 48 hours after inspection or as directed.

For maintenance requirements see the Erosion & Sediment Control Measure Details on Sheet 9 for the measures listed below:

1) Construction Entrance (CE)
2) Silt Fence (SF)

The Erosion Control Supervisor, or qualified representative, shall routinely inspect the overall performance of erosion and sediment control facilities and areas downstream of the project site. If eroded material/sediment is apparent downstream from the facilities, some failure has occurred, and the Supervisor shall notify the Contractor. The Contractor will remove the accumulated sediment downstream and add additional erosion control measures to address the issues as necessary. The Contractor shall implement all recommended solutions to the problem areas as recommended by the Supervisor.

At the proper time, with approval from the owner or their contracted representative, the contractor shall submit a Rule 5 Notice of Termination (N.O.T.) to the SWCD agent/reviewing authority for approval. Upon approval, the contractor shall dismantle the remaining erosion control elements. The contractor shall remove any unsuitable material from the site left from the erosion control measures.

B-15 Erosion and sediment control specifications for individual building lots:
Not applicable, this project does not consist of the construction of, or on, multiple building lots.

Stormwater Pollution Prevention Plan
Post Construction Component (Section C)

C-1 Description of pollutants and their sources associated with the proposed land use:
Additional pollutant sources will be from trash (both organic and inorganic), lawn chemicals, grass clippings, grit brought in from the existing surrounding roads from various vehicles (fuel, antifreeze, oil, grease, brake dust, brake fluid, transmission fluid, other hydrocarbons, etc..), pet and other animal waste, etc..

C-2 Sequence describing stormwater quality measure implementation:
Upon completion of site grading, all disturbed areas of the site will be permanently seeded as outlined in the Special Provisions (along with fertilizer and mulching material) to reduce the amount of sediment leaving the site. Tree seedlings shall be planted as specified in the Special Provisions, which will assist in permanent surface stabilization. Additionally, the water retention berms will remain as a permanent structures to reduce and slow runoff from the site. Finally, all existing vegetation outside of the project limits will not be disturbed, and this vegetation will continue to filter out pollutants from the stormwater prior to it leaving the site, and entering into the surrounding water resources.

C-3 Description of proposed post construction stormwater quality measures:
The above referenced measures will serve as filtering and erosion control measures, to reduce the amount of pollutants and sediment contained within the stormwater before entering the surrounding water resources. The water retention berms and special plantings to be installed on this site will help to retain water, allow for filtration of sediment and pollutants, and reduce runoff from the site. In addition, these measures will return this property back into a functional emergent and forested wetland which if expected to improve the overall water quality of the Patoka River Watershed.

C-4 Location, dimensions, specifications and construction details of each stormwater quality measure:
The entire project site will be seeded and planted in accordance with the Special Provisions for this mitigation site. The installation of the water retention berms shall be as shown on the plans. Details of the individual structure, including silt fence, construction entrances, etc. are shown on Sheet 9 of these plans.

C-5 Description of maintenance guidelines for proposed post-construction water quality measures:
Erosion and sediment control: Repair and revegetate eroded areas in the project site. These measures will be implemented, as needed, based on regular inspections by the appropriate government agency. After the permanent seeding has reached 100% coverage and 70% density the project site will not need revisited unless future ground disturbance occurs.

Nuisance control: Address odor, insects, and overgrowth issues associated with stagnant or standing water in the roadside ditches. This will be handled as necessary per inspection by the appropriate government agency or following complaints adjacent property owners.

Sediment removal: Remove accumulated sediment from all areas of the project site, especially within the water retention berms.

JASON A. DuPONT — REGISTERED — No. PE10303058 — STATE OF INDIANA — PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — DATE 12/03/08

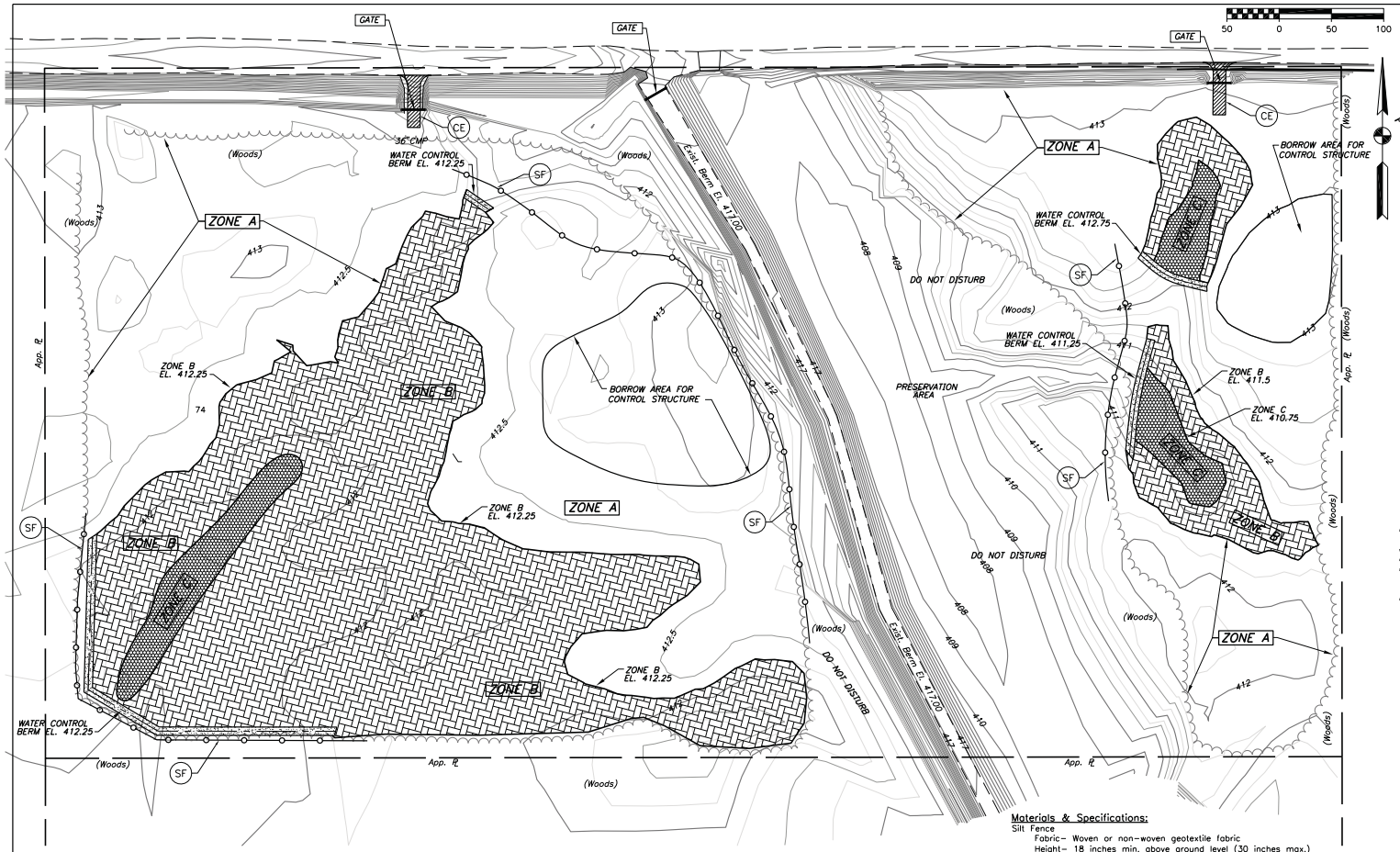
DESIGNED: JAD | DRAWN: RAP | CHECKED: DJR | CHECKED: DJR

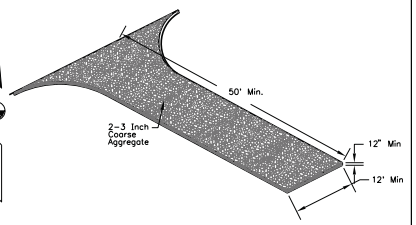
INDIANA DEPARTMENT OF TRANSPORTATION

INFORMATION SHEET

HORIZONTAL SCALE	BRIDGE FILE
VERTICAL SCALE	DESIGNATION 0710902
SURVEY BOOK	SHEETS 8 of 9
CONTRACT	PROJECT IR-30354 / CN 0710902

S:\Surveys\103-2001\2008_Mitigation\Cooper_Buck\MT_SHEETS\Info_Sheet.dwg 12/01/08 16:30 rap





(CE) TEMPORARY CONSTRUCTION ENTRANCE

INSTALLATION

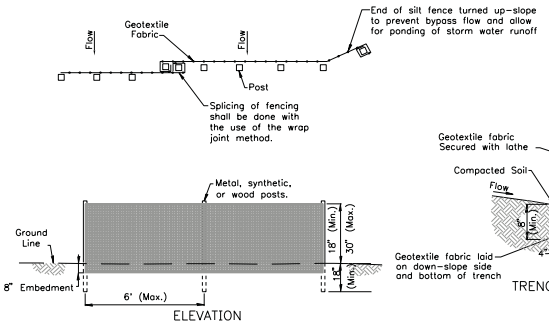
1. Avoid locating on steep slopes or at curves in public roads.
2. Remove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.
3. If slope towards the road exceedes 2%, construct a 6–8 inch high water bar (ridge) with 3:1 side slopes across the foundation area about 15 feet from the entrance to divert runoff away from the road (practice 3.24)
4. Install pipe under the pad if needed to maintain proper public road drainage.
5. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.
6. Place stone to dimensions and grade shown in the erosion/sediment control plan leaving the surface smooth and sloped for draingoe
7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin

MAINTENANCE

- Inspect entrance pad and sediment disposal area weekly and after storm events or heavy use.
- Reshape pad as needed for drainage and runoff control.
- Topdress with clean stone as needed.
- Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping; flushing should only be used if the water is conveyed into a sediment trap or basin.
- Repair any broken road pavement immediately.

LEGEND

- DENOTES ZONE "B"
- DENOTES ZONE "C"
- DENOTES COIR FIBER MAT
- (CE) Construction Entrance
- (SF) Silt Fence



(SF) SILT FENCE

Installation:

1. Lay out the location of the fence so that it is parallel to the contour of the slope; providing for a sediment storage area. Turn the ends of the fence up slope to prevent bypass.
2. Excavate an 8 inch deep by 4 inch wide trench along the entire length of the fence line. An alternate to trenching is to use mechanical equipment to plow in the silt fence.
3. Install the silt fence with the filter fabric located on the up-slope side of the excavated trench and the supprt posts on the down-slope side of the trench.
4. Drive the posts at least 18 inches into the ground, tightly stretching the fabric between the posts as each is driven into the soil. A minimum of 12 inches of filter fabric should extend into the trench. (If splicing is required, see detail above)
5. Lay the lower four inches of filter fabric on the bottom of the trench and extend it toward the up-slope of the trench.
6. Backfill the trench with soil material and compact it in place.

Materials & Specifications:

Silt Fence
Fabric– Woven or non-woven geotextile fabric
Height– 18 inches min. above ground level (30 inches max.)
Reinforcement–Fabric securely fastened to posts with wood lathe

Support Posts
Material– 2x2 inch hardwood posts (Steel fence posts are an acceptable substitute providing they have projections for fastening the fabric).

Spacing: 1) 6 feet max. for extra strength fabric without wire backing.
2) 8 feet max. if fence is supported by wire mesh fencing.

Maintenance:

- Inspect the silt fence within 24 hours of a rain event and at least seven calender days.
- If the fabric tears, starts to decompose, or in any way becomes ineffective, replace the affected portion immediately. (All repairs should mee specifications as outlined above.
- Remove deposited sediment when it reaches half the height of the fence at its, lowest point or is causing the fabric to bulge.Take care to avoid undermining the fence during clean out.
- After the contributing drainage area has been stabilized, remove the fence and sediment deposits, bring the disturbed area to grade, and stabilize.

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — DATE 12/03/08

DESIGNED: JAD | DRAWN: RAP

CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

EROSION CONTROL LAYOUT & DETAILS

HORIZONTAL SCALE	BRIDGE FILE
1" =50'	
VERTICAL SCALE	DESIGNATION
---	0710902
SURVEY BOOK	SHEETS
	9 of 9
CONTRACT	PROJECT
IR-30354	CN 0710902

S:\Surveys\V30-0001\2008_Wetlands\Cooper_Bush\MT_DWGS\ER_LAYOUT.dwg 12/01/08 16:21 rap

Attachment 5

I-69 Section 2
Mitigation Site
Special Provisions

SPECIAL PROVISION

WETLAND AND FOREST HABITAT MITIGATION

This mitigation site, known as the Mitigation Site, is being developed as part of the I-69 Sections rella Mitigation Bank. This mitigation plan is offered in compensation for a portion of the impacts of Section 2 of the I-69 Evansville to Indianapolis Project in Gibson, Pike, and Daviess Counties, Indiana to fulfill commitments identified in the Tier 1 and Tier 2 Environmental Impact Statements addressing impacts to forest and wetland habitats. This mitigation addresses conditions of Section 7 consultation, Section 404/401 Permits and Construction in a Floodway Permits for Section 2 of I-69 from SR 64 to US 50. This mitigation site meets the criteria for the Wetland Restoration Exemption to the Construction in a Floodway Permit, per 312 IAC 10-5-1. The design plans show the location of the mitigation and the grading details for the site. Also shown on the plans are the locations of the various zones that will receive special plantings that are covered in this special provision. The provisions of Section 621 and 622 of the INDOT Standard Specifications (2008), where not in conflict with these special provisions, shall be applicable to the special planting requirements of the mitigation plan.

Mitigation site construction shall begin immediately upon receipt of notice to proceed on the contract. Final planting shall take place between March 1, 2009 and July 1, 2009. If site preparation concludes, such that planting cannot occur immediately following site preparation, a temporary cover shall be planted using Seed Mix T in accordance with INDOT Standard Specification 621.06(f) and the erosion control plan.

The CONTRACTOR shall submit his schedule of activities to the ENGINEER for approval. The CONTRACTOR shall provide a written notification to the INDOT Ecology Unit Senior Environmental Manager upon initiation of construction activities on the project as well as upon completion of planting of the site. The written notification shall be sent to the Senior Environmental Manager, Indiana Department of Transportation, Ecology Unit, Office of Environmental Services, Government Building North, Room N642, 100 North Senate Avenue, Indianapolis, Indiana 46204-2249. As soon as approved, and as directed by the ENGINEER, the CONTRACTOR shall prepare the site, and plant the species as per this special provision.

A. SITE PREPARATION

Prior to mobilization of equipment to the mitigation site, all mechanical equipment (e.g. trucks, bulldozers, backhoes, etc.) shall be pressure-washed at an off-site location to remove any dirt or soil that may be a potential seed source for invasive or non-native species. Any equipment that leaves the site shall also be pressure-washed at an off-site location prior to returning to the site. All equipment shall be inspected for cleanliness by the ENGINEER before entering the site.

Erosion control measures, including silt fences and construction entrances, shall be installed per INDOT 2008 Standard Specification 205.03, and as shown on the plans, to minimize erosion of disturbed soil, prevent runoff from leaving the site during construction, and prevent the tracking of sediment onto the public roadway. Temporary erosion control features, as well as permanent water control structures, shall be constructed prior to any excavation or land disturbance on the site. Bank stabilization on the water control berms, as identified on the plans, shall include revegetation and application of erosion control matting.

Tile exploration trenching shall be completed on both sides of the backwater slough and south of the roadside ditch on the western portion of the property to disable any drain tiles that may be located in the mitigation site, as shown on the plans. The total estimated length of tile exploration trenching shall be approximately 1,970 linear feet. The trench shall be at a minimum depth of the bottom elevation of the adjacent

waterway or up to a maximum of six (6) feet deep with a minimum width of one (1) foot to allow for visual observation of any tiles. If a visual observation indicates the presence of a tile, a minimum of 50 feet of the tile shall be removed upstream from the trench and the tile shall be plugged on the downstream end with a concrete plug. All trenches shall be backfilled with excavated material and compacted upon completion of the tile exploration. No trenching shall occur in the preservation areas shown on the plans. Trenching shall not occur beneath the canopy of existing trees to avoid damage to roots.

Refuse shall be removed from the area identified on the design plans. Any refuse removed from the mitigation site property shall be disposed of in an appropriately permitted landfill. Removal of the refuse in this area should be completed with as little disturbance to the surrounding landscape as possible. Any ground disturbance caused by mechanical equipment used to remove refuse shall be regraded to existing contours to minimize any impacts to the designated preservation area.

Water control berms shall be placed on the downstream ends of four (4) natural swales located on the site. The locations and grading of the water control berms shall be as shown on the plans. Material required for the construction of the berms shall be obtained from the designated borrow areas as shown on the plans. Material shall be removed from the borrow areas by stripping the surface so that the surface following excavation is level or contains only shallow depressions of less than four (4) inches below the surrounding contours. The water control berms and the designated borrow areas are the only areas on the site to receive excavation or grading. Excavation and grading shall be followed by seedbed preparation as specified below.

Site preparation for the Planting Zones A and B (the forested wetland areas) and Zone C (the emergent wetland areas) will not require excavation, except for the construction of the water retention berms. The existing contours shall be preserved and only seedbed preparation shall be performed.

Seedbed preparation shall consist of multiple tillings to eliminate any existing seed source of undesirable volunteer species. Till or plow no more than 6 inches on the first pass. After two weeks, till or disc no more than the upper 3 inches of soil at least two (2) times at two (2) week intervals. This shallow tilling shall be performed when young developing weeds show. After final tilling, harrow the upper 3 inches and seed immediately. Alternative tilling schedules may be approved by the INDOT Ecology Unit Senior Environmental Manager to adequately eliminate any undesirable seed source.

Areas outside the designated Planting Zones, comprised of a variety of existing wetlands and bottomland forests, shall be preserved in place and not disturbed during mitigation activities. These preservation areas total 7.49 acres of the 20.0 acre property. Other areas within the property boundary that will not be disturbed include the county roadway easement containing the roadside ditch and a portion of the existing roadway (CR 150 N). The only exception shall be for the installation of a culvert pipe within the roadside ditch, as described below. The county roadway easement comprises a total of 0.46 acre.

No equipment shall cross and no excavation shall occur within the forested areas of the site or within the backwater slough wetland preservation area. To prevent the crossing of these areas, a minimum of two (2) construction entrances shall be installed, both off of CR 150 N, with one (1) accessing the western portion of the site, and one (1) accessing the eastern portion of the site. The eastern construction entrance will require the installation of a culvert pipe within the roadside ditch per Gibson County specifications and as shown on the plans. Construction entrances are to be constructed as shown on the plans at any access point

onto a public road. Both construction entrances shall remain in place following construction to provide permanent access to the site. Following construction, gates shall be installed at both construction entrances off of CR 150 N, as well as across a third entrance which currently provides access to the existing berm located along the west side of the slough. Gate locations and construction details shall be as shown on the plans.

If water levels in the mitigation site are too deep for seeding, planting, proper germination, or establishment, the CONTRACTOR shall be responsible for removal of water to allow for proper seeding, planting, germination, and establishment. If removal of water from the site is deemed necessary, water shall be removed in a manner as to prevent the discharge of sediment off-site in accordance with the approved erosion control plan.

B. PLANTING PLAN

The provisions of Section 621 and 622 of INDOT Standard Specifications (2008), where not in conflict with the special provisions for this site, shall be applicable to the special planting requirements of the mitigation plan. The mitigation plan includes three (3) distinct planting zones (Zones A, B, and C) totaling 12.05 acres. An additional 0.22 acres of the site, comprised of water retention berms, are included in this acreage and shall also receive planting. The remaining 7.95 acres of the 20.0 acre property shall not be planted. Collectively, 3,800 bare root tree seedlings, 1,275 3-gallon container grown tree seedlings, 1,260 bare root shrub seedlings, and 545.4 lbs of herbaceous ground cover seed mix are called for in the planting plan.

Prior to the planting of tree seedlings, the seedbed shall be prepared, as specified above, to allow for seeding of the various herbaceous cover seed mixes proposed. All planting shall occur between March 1 and July 1. Planting outside of this specified time window shall only be authorized in writing by the INDOT Ecology Unit Senior Environmental Manager. If site preparation concludes, such that planting cannot occur during these dates, a temporary cover shall be planted using Seed Mix T in accordance with INDOT Standard Specification 621.06(f).

Where herbaceous ground cover is specified, the seed mixes shall be seeded at the rates specified below. All seeding rates identified in this specification are based on pure live seed (PLS). All seed to be used on the site shall be properly tagged to identify PLS percentage.

Seed Mixes for the Mitigation Planting Plan shall be the following:

Planting Zone	**Seed Mix Name**	**Seeding Rate**	**Amount**
A and B	Woodled Wetland Establishment	44.53 lbs/acre	518.8 lbs
C	Emergent Wetland Seed Mix	34.78 lbs/acre	13.9 lbs
Berms	Slope Stabilization Seed Mix	57.63 lbs/acre	12.7 lbs
	Total		**545.4 lbs**

The Wooded Wetland Establishment Seed Mix shall be as listed in Table 1, or a comparable wetland woods herbaceous cover mix consisting of at least twelve (12) native graminoid species and nine (9) native forb species. If not all species listed in Table 1 are used, each species used must all be at a rate equal to or greater than that listed in Table 1. This mix shall be planted at a rate of 44.53 lbs/acre PLS within planting zones A and B.

The Emergent Wetland Seed Mix shall be as listed in Table 2, or shall include at least seven (7) native graminoid species and thirteen (13) native forb species listed in Table 2. If not all species listed in Table 2 are used, each species used must all be at a rate equal to or greater than that listed in Table 2. This mix shall be planted at a rate of 34.78 lbs/acre PLS within planting zone C.

The Slope Stabilization Seed Mix shall be as listed in Table 3, or shall include at least five (5) of the native graminoid species listed in Table 3. If not all species listed in Table 3 are used, each species used must all be at a rate equal to or greater than that listed in Table 3. This mix shall be planted at a rate of 57.63 lbs/acre on the water retention berms.

Seeding of all zones shall be by broadcast spreading, followed by mulching and watering. Seeding shall follow immediately after seedbed preparation.

A roller, cultipacker or light raking shall be used on all seeded areas to ensure adequate seed-to-soil contact. Seeds shall not be covered by more than 1/8 (0.125) inch of soil. The seeded areas shall be immediately followed by mulching (see below) and watering (see below).

Planting of the bare root and 3-gallon container grown seedlings shall occur following the seeding and mulching of the herbaceous ground cover. Bare root tree and shrub seedlings shall be 1 ½ - 2 feet tall. Seedlings shall have a minimum root collar caliper equal to or greater than 1/4 inch and shall have a well developed fibrous root system. The 3-gallon container grown tree seedlings shall be 3 - 6 feet tall and shall have a minimum root collar diameter equal to or greater than 3/4 inch. The 3-gallon container grown seedlings shall have a fibrous root mass sufficient enough to retain its shape and hold together when removed from the container. Seedlings shall be transported, stored, and handled in accordance with 914.08. Storage of these plants shall be in a cool dark place until the date they are to be installed. Only that number of seedlings which can reasonably be planted during a single day may be removed from storage. They shall be kept moist at all times. Seedling trees will be planted in accordance with sound horticultural practices with respect to moisture, root pruning, planting depth, planting hole size, soil compaction, etc. All bare root tree and shrub seedlings shall be mechanically planted. All 3-gallon container grown seedlings shall be manually planted. Seedlings shall be planted so the root collar is even with the ground surface. Roots shall not be forced into an improper planting hole, which would restrict their ability to grow and support the seedling to permit survival.

Tree Species for the Mitigation Planting Plan shall be the following:
Zone A – Forested Wetland Area

Common name	**Scientific Name**	**Bare Root #**	**Container Grown #**
Tree Species			
Shellbark Hickory	*Carya laciniosa*	505	170
Sweetgum	*Liquidambar styraciflua*	505	170
Swamp White Oak	*Quercus bicolor*	505	170
American Elm	*Ulmus americana*	505	170
Schumard Oak	*Quercus schumardii*	505	170
Shrub Species			
Pale Dogwood	*Cornus obliqua*	280	---
Common Spicebush	*Lindera benzoin*	280	---
Elderberry	*Sambucus canadensis*	280	---
Total		**3,365**	**850**

Zone B – Forested Wetland Area

Common name	**Scientific Name**	**Bare Root #**	**Container Grown #**
Tree Species			
Bald Cypress	*Taxodium distichum*	255	85
Overcup Oak	*Quercus lyrata*	255	85
River Birch	*Betula nigra*	255	85
Pin Oak	*Quercus palustris*	255	85
Swamp Chestnut Oak	*Quercus michauxii*	255	85

Shrub Species			
Common Buttonbush	*Cephalanthus occidentalis*	140	---
Common Spicebush	*Lindera benzoin*	140	---
Elderberry	*Sambucus canadensis*	140	---
Total		**1,695**	**425**

Planting of the tree and shrub species shall be in a two-phase process as described below and as shown on the plans. First, mechanical planting of the bare root tree and shrub seedlings shall be in a random manner with regard to species composition within each zone to avoid clustering. Bare root tree seedlings shall be planted with 10-foot spacing between seedlings and between planting rows. A 20-foot gap shall be left between every third and fourth tree seedling to allow a space for the manual planting of a 3-gallon container grown seedling with 10-foot spacing between the adjacent seedlings. During the mechanical seedling planting, a bare root shrub seedling shall be placed within each planting row every 40 feet, and 5 feet from the nearest planted tree seedling. Following the mechanical planting of the bare root tree and shrub seedlings, a 3-gallon container grown seedling shall be manually planted within each of the 20-foot gaps midway between the nearest bare root tree seedlings, and within the planting rows. Planting of the 3-gallon container grown seedlings shall also be in a random manner with regard to species composition within each zone. The planting pattern of the tree and shrub seedlings shall be as shown on the plans.

The ratio of bare root to container grown tree seedlings shall be approximately 3:1 with a combined density of approximately 435 stems/acre within Zones A and B. The bare root shrub species shall be planted with a density of approximately 108 stems/acre, with one (1) shrub to be planted between every fourth and fifth tree. The beginning point of adjacent rows shall be staggered by approximately 5 feet to avoid a uniform grid pattern. Each planting row shall be marked by placing a wood lath spaced approximately 150 feet apart within each row, immediately adjacent to the stem of the nearest seedling. The wood laths shall be painted fluorescent orange, shall be a minimum of 4 feet long, and shall be placed with a minimum of 3 feet above the ground elevation. The wood lath shall identify seedling locations for the purpose of future monitoring and potential maintenance.

The design plans show the locations of planting zones. Species shall be planted within these zone locations with the quantities shown below. Strict adherence to planting species in the appropriate zone is required. Any substitution of species or seed mix shall be approved by the ENGINEER. The seeding rate for any substituted species or seed mix shall be sufficient to provide a seed count equivalent to that of the specified seed mix.

All seeds and bare root plants should be obtained from nurseries within the American National Standards Institute (ANSI) Plant Hardiness Zones 4, 5 or 6. Potential vendors include, but are not limited to:

Indiana
- Indiana Department of Natural Resources
- J.F. New Native Plant Nursery (Walkerton, IN)
- Heartland Restoration Services, Inc. (Fort Wayne, IN)
- Berg Warner Nursery (Lizton, IN)

Illinois
- Lafayette Home Nursery, Inc. (Lafayette, IL)

Kentucky
- Shooting Star Nursery (Georgetown, KY)

Ohio
- Envirotech Consultants, Inc. (Somerset, OH)

Missouri
- Forrest Keeling Nursery (Elsberry, MO)
- Ripley County Farms (Doniphan, MO)

New York
Southern Tier Consulting, Inc. (West Clarksville, NY)
Virginia
Bobtown Nursery (Melfa, VA)

Plant Species and Quantities per Zone

Zone A Forested Wetland	**Area:**	7.75 acres		
	Elevation:	No excavation anticipated		
	Trees:	Shellbark Hickory Sweetgum Swamp White Oak American Elm Schumard Oak	**Number:**	505 BR 170 CG 505 BR 170 CG 505 BR 170 CG 505 BR 170 CG 505 BR 170 CG
	Shrubs:	Pale Dogwood Common Spicebush Elderberry	**Number:**	280 BR 280 BR 280 BR
	Ground Cover:	Wooded Wetland Establishment Seed Mix	**Amount:**	345.1 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast spreading at a rate of 44.53 lbs/acre followed by mulching and watering. Bare root seedlings are to be mechanically planted with 10-foot spacing with manual planting of container grown seedlings to occur between every 3rd and 4th bare root seedling, also with 10-foot spacing. Bare root shrubs seedlings shall be planted with 5-foot spacing between every 4th and 5th tree seedling. All tree and shrub seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.		
Zone B Forested Wetland	**Area:**	3.90 acres		
	Elevation:	No excavation anticipated		
	Trees:	Bald Cypress Overcup Oak River Birch Pin Oak Swamp Chestnut Oak	**Number:**	255 BR 85 CG 255 BR 85 CG 255 BR 85 CG 255 BR 85 CG 255 BR 85 CG
	Shrubs:	Common Buttonbush Common Spicebush Elderberry	**Number:**	140 BR 140 BR 140 BR
	Ground Cover:	Wooded Wetland Establishment Seed Mix	**Amount:**	173.7 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast spreading at a rate of 44.53 lbs/acre followed by mulching and watering. Bare root seedlings are to be mechanically planted with 10-foot spacing with manual planting of container grown seedlings to occur between every 3rd and 4th bare root seedling, also with 10-foot spacing. Bare root shrubs seedlings shall be planted with 5-foot spacing between every 4th and 5th tree seedling. All tree and shrub seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.		
Zone C	**Area:**	0.40 acres		

Emergent Wetland	**Elevation:**	No excavation anticipated	
	Ground Cover:	Emergent Wetland Seed Mix	**Amount:** 13.9 lbs
	Planting Guidelines:	Planting of the Emergent Wetland Seed Mix shall be by broadcast spreading at a rate of 34.78 lbs/acre or followed by mulching and watering.	
Water Retention Berms	**Area:**	0.22 acres	
	Elevation:	411.25 to 412.75 at top of berms	
	Ground Cover:	Slope Stabilization Seed Mix	**Amount:** 12.7 lbs
	Planting Guidelines:	Planting of the Slope Stabilization Seed Mix shall be by broadcast spreading at a rate of 57.63 lbs/acre, followed by application of coconut fiber matting.	

C. FERTILIZERS

Planting Zones A, B, and C will receive an application of 12-12-12 granular fertilizer in accordance with INDOT 2008 Standard Specification 914.03. Fertilizer will be uniformly spread over the mitigation area in Planting Zones A, B, and C at a rate of 400 lbs/acre prior to or during final tilling. A total of 2.41 tons will be required for the mitigation site.

D. HERBICIDES

Since much of the mitigation site will be cleared of vegetation by grading and tilling, the use of herbicides as a pre-planting treatment is not anticipated for the site. Any herbicide utilized, if necessary, shall be per manufacturer’s recommendations.

E. MULCHING

Mulch material for Zones A, B, and C will conform to INDOT 2008 Standard Specifications 914.05(a). Material will be applied such that it covers the site at an average rate of 2 tons/acre. The mulch material shall be secured by crimping as per Specification 621.05(c) to hold the seed in place and prevent removal during periods of high water. Mulch shall be crimped into place immediately upon placement. Mulch will be applied in Planting Zones A, B, and C for a total of 24.1 tons.

F. COIR FIBER MATTING

Coir Fiber Matting shall cover the water control berms to be constructed on the site. Coir Fiber Matting shall be a 100% coconut fiber (coir) twine woven into a high strength matrix which complies with the following specifications:

Thickness – 0.30 inch minimum (7.6 mm)
Tensile Strength – 1348 x 626 lb/ft minimum (1650.5 x 766.5 kg/m)
Elongation – 34% x 38% maximum
Flexibility (mg-cm) – 6503 x 29590
Flow Velocity Allowable – 11 ft/sec (3.35 m/s)
Weight – 20 oz/SY minimum (678 g/SM)
Open Area (measured) – 50%

Staples used to secure the matting shall be new steel wire of 0.125 inch diameter formed into a “U” shape not less than 12 inches in length with a throat of not less than 1 inch in width.

Coir Fiber Matting shall be installed immediately after the final grading and seeding of the water control berms. Prior to installation, the soil

surface shall be smooth and free from stones, clods, or debris that will prevent contact of the matting with the soil. Matting shall be applied without stretching such that it will lie smoothly but loosely on the soil surface. At the end of each roll and where edges are joined, the overlap shall be a minimum of 1 foot with the upslope roll placed over the downslope roll. The matting shall be secured using staples spaced according to manufacturer's specifications.

G. WATERING

1. The Contractor shall conduct watering of the seeded areas (replace "seeded areas" so as to read "reseeded areas" if being conducted under the auspices of G2 of this provision) within the mitigation site at a frequency and duration such as to insure that 60 days after completion of the seeding activities (replace "seeding activities" so as to read "reseeding activities" if being conducted under the auspices of G2 of this provision) that for every square meter of ground there is 80% areal cover by herbaceous species. At the end of the 60 days should the INDOT ENGINEER, the INDOT Environmental Manager and the INDOT Landscape Architect determine that there is less than 80% areal cover they will determine whether or not the herbaceous species mortality is at least partially a result of inadequate watering.
2. Should the ENGINEER/Environmental Manager and Landscape Architect determine that the mortality is at least partially a result of inadequate watering the Contractor shall be responsible for reseeding the deficient area(s) in accordance with the relevant sections of the planting plans and provisions for the Zone(s) in question. The Contactor shall conduct watering of the reseeded area(s) in accordance with the measures detailed in G1 of this specification and continue with reseeding of any deficient area(s) until this specification is satisfied. If irrigation is required for watering of this site, it is anticipated that water will be extracted from the backwater slough of the Patoka River utilizing a temporary water pump, provided an adequate water supply exists within the slough at the time of watering. The pump and all associated attachments/equipment shall be removed from the site immediately upon completion of watering activities.

H. SIGNAGE

"Do Not Mow or Spray" signs fashioned in accordance with INDOT 2008 Standard Specification 621.06(h) as per Specification 622.20, will be placed every 100 feet along the northern edge of the parcel and facing the roadway (CR 150 N). The plans show the location of these signs. A total of 13 signs shall be placed along the northern property boundary of this mitigation site.

I. HABITAT POLE

A utility pole containing bat roosting structures shall be installed at the mitigation site. Prior to installation of the pole, the habitat structures shall be constructed and attached to the pole. The specifications of the habitat pole, details of the individual habitat structures, and location of the pole shall be as shown on the plans.

J. AS-BUILT PLANS

The CONTRACTOR shall prepare drawings showing the as-built conditions of the mitigation site, noting any deviation from the originally proposed plan and any previously unidentified features, including the locations of any tiles located and plugged during the construction. These drawings shall be certified by a registered Professional Land Surveyor or Professional Engineer assuring that the information contained on the plans is true and accurate. An electronic CAD version of these plans in Indiana

State Plane Coordinates, West Zone shall be furnished to the INDOT Ecology Unit Senior Environmental Manager in addition to the original hard copies.

The CONTRACTOR shall provide reports of final as-built quantities in Estimator format complete with item codes. The final as-built quantities shall conform to applicable methods of measurement, pay items, and pay units in accordance with INDOT Standard Specifications.

K. WARRANTY OF WORK

The CONTRACTOR shall guarantee the survival of, and replant if necessary, the plantings within the mitigation site for a period of two (2) years upon completion and acceptance of the mitigation site. The CONTRACTOR shall guarantee 100% ground cover resulting from the planted seed mixes within all planting zones and an overall survival rate of 85% for all planted tree and shrub species at the end of this two (2) year period. In addition, the CONTRACTOR shall provide any means necessary (e.g. herbicide treatment), as approved by the INDOT Ecology Unit Senior Environmental Manager, to remove any invasive species that may grow within the mitigation site for a period of two (2) years upon completion and acceptance of the mitigation site. Invasive species are defined as any vegetation detrimental to the establishment of desired species planted in the mitigation site.

The determination to implement invasive species control or replanting/reseeding, if necessary, shall be at the discretion of INDOT or their designated representative. Replacement seed and/or plantings used for over-seeding/replanting shall be the same variety and species installed, unless directed otherwise by INDOT or their designated representative. This work shall be completed in accordance with the INDOT Standard Specifications, 2008 and this special provision, by the CONTRACTOR, at no additional cost.

The warranty period shall be initiated by the acceptance of the mitigation site. The warranty period shall extend two (2) years from the date of the acceptance. A Warranty Bond shall be required for this two (2) year period and shall be posted by the CONTRACTOR in favor of INDOT. The minimum amount for this warranty bond shall be for 150% of the total cost of the warranted items. The warranty bond shall be provided within 14 days of the acceptance of the mitigation site.

L. BASIS OF PAYMENT

The cost associated with constructing the water control berms will be paid for at the contract unit price per cubic yard of common excavation. The cost associated with installing the construction entrances shall not be paid for directly, but will be included in the cost of common excavation. The cost associated with furnishing and installing the stone needed for the construction entrances will not be paid for directly but will be included in the cost of common excavation. The cost associated with tilling the mitigation site per this special provision will not be paid for directly, but will be included in the cost of common excavation. The cost associated with temporary seeding if necessary will not be paid for directly, but will be included in the cost of common excavation.

Payment will be made under:

Common Excavation..... CYS

The cost of furnishing and seeding the mixtures listed below (and as specified above) for permanent ground cover will be paid for as "Seed Mixture, Type" at the contract unit price per pound based on pure live seed. The cost of any watering necessary to ensure adequate ground cover, as specified above, shall not be paid for directly but will be included in the cost of the seed mixtures. The cost associated with the posting of the

warranty bond, as specified above, will not be paid for directly but will be included in the cost of the seed mixtures.

Payment will be made under:

Seed Mixture, Wooded Wetland Establishment..... LBS
Seed Mixture, Emergent Wetland..... LBS
Seed Mixture, Slope Stabilization..... LBS

The cost of furnishing and seeding annual ryegrass for temporary erosion control, if necessary, will not be paid for directly, but will be included in the cost of common excavation.

The cost of furnishing and planting the bare root tree and shrub seedling species and the 3-gallon container grown tree species listed below will be paid for at the contract unit price per each seedling. The cost of fertilizer, and mulching material needed for the seedlings will not be paid directly but will be included in the cost of the seedlings. The cost of any watering necessary to ensure adequate survival rates, as specified above, shall not be paid for directly but will be included in the cost of the tree and shrub seedlings. The cost associated with the posting of the warranty bond, as specified above, will not be paid for directly but will be included in the cost of the tree and shrub seedlings.

Tree, Shellbark Hickory
Tree, Sweetgum
Tree, Swamp White Oak
Tree, American Elm
Tree, Schumard Oak
Tree, Bald Cypress
Tree, Overcup Oak
Tree, River Birch
Tree, Pin Oak
Tree, Swamp Chestnut Oak
Shrub, Pale Dogwood
Shrub, Common Spicebush
Shrub, Elderberry
Shrub, Common Buttonbush

Payment will be made under:

Seedling, Bare Root..... EACH
Seedling, Container Grown..... EACH

The cost of providing and applying the fertilizer to the seeded areas in Zone C as specified above will be paid for at the contract unit price per pound of Fertilizer.

The cost of providing and applying the mulching material as specified above shall be paid for at the contract unit price per ton of Mulching Material.

Payment will be under:

Fertilizer..... LBS
Mulching Material..... TON

The cost of providing the specified “Do Not Mow or Spray” signs shall be paid for at the contract unit price per each sign.

Payment will be made under:

Sign, Do Not Mow or Spray..... EACH

The cost of providing the specified gates, along with all required posts

and hardware shall be paid for at the contract unit price per each gate.

Payment will be made under:

Gate, Access Control..... EACH

The cost of performing the tile exploration trenching and the disabling of any tiles that are located shall be paid for at the contract unit price per linear foot of trenching.

Payment will be made under:

Tile Intercept Trench Excavation and Location..... LFT

The cost of furnishing and installing the coir fiber matting for erosion control on the water retention berms shall be paid for at the contract unit price per square yard of material.

The cost of furnishing and installing the silt fence for sediment runoff control shall be paid for at the contract unit price per linear feet of silt fence.

Payment will be made under:

Coir Fiber Matting (100% Coconut Fiber)..... SY
Silt Fence..... LFT

The cost of removing the refuse and appropriate disposal as specified above shall be paid for at the contracted lump sum amount.

Payment will be made under:

Refuse Removal..... LS

The cost of constructing and installing the habitat pole as shown in the plans shall be paid for at the contracted unit price per each pole.

Payment will be made under:

Habitat Pole..... EACH

The cost of furnishing and installing the culvert pipe shall be paid for at the contract unit price per linear foot of pipe.

Payment will be made under:

Pipe, Type 3, Circular, 36”..... LFT

The cost of providing the As-Built Plans as specified above shall be included in the cost of the Construction Engineering for the site and paid for at the contracted lump sum amount.

Payment will be made under:

Construction Engineering..... LS

The cost associated with the pressure-washing of equipment prior to use on the site, as specified above, shall be included in the cost of Mobilization and Demobilization.

Payment will be made under:

Mobilization and Demobilization..... LS

Table 1: Wooded Wetland Establishment Seed Mix (Zones A and B) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Calamagrostis Canadensis	bluejoint grass	OBL	1.00
Carex crinita	fringed sedge	FACW+	2.00
Carex lupulina	common hop sedge	OBL	4.00
Carex lurida	bottlebrush sedge	OBL	1.50
Carex squarrosa	narrow-leaved cattail sedge	OBL	2.00
Carex sparganioides	rough-clustered sedge	FAC	1.50
Carex typhina	common cattail sedge	OBL	2.00
Carex vulpinoidea	brown fox sedge	OBL	4.00
Elymus virginicus	Virginia wild rye	FACW-	20.00
Glyceria striata	fowl manna grass	OBL	2.00
Leersia oryzoides	rice cut grass	OBL	2.00
Scirpus atrovirens	dark green rush	OBL	2.00
Spartina pectinata	prairie cord grass	FACW+	1.00
Temporary Cover			
Avena sativa	common oat	*NL	537.00
Lolium multiflorum	annual rye	FACU	112.00
Forbs			
Alisma spp.	water plantain (various mix)	NL	3.00
Angelica altropurpurea	great alngelica	OBL	1.00
Aster puniceus	bristly aster	OBL	0.75
Aster umbellatus	flat-top aster	FACW	0.25
Bidens cernua	nodding bur marigold	OBL	2.50
Campanula americanus	tall bellflower	NL	0.25
Cephalanthus occidentalis	buttonbush	OBL	0.50
Helenium autumnale	sneezeweed	FACW+	2.00
Heracleum lanatum	cow parsnip	NL	0.75
Hibiscus moscheutos	swamp rose mallow	OBL	2.00
Lobelia siphilitica	great blue lobelia	FACW+	1.50
Mimulus ringens	monkey flower	OBL	1.25
Rudbeckia laciniata	wild golden glow	FACW+	0.75
Verbesina alternifolia	wingstem	FACW	2.00
Total			**712.50 oz/acre 44.53 lbs/acre**

Table 2: Emergent Wetland Seed Mix (Zone C) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Carex comosa	bristly sedge	OBL	2.50
Carex lacustris	common lake sedge	OBL	0.25
Carex lurida	bottlebrush sedge	OBL	4.00
Carex vulpinoidea	brown fox sedge	OBL	6.00
Eleocharis ovata	blunt spike rush	OBL	1.00
Juncus effusus	common rush	OBL	1.00
Leersia orzyoides	rice cut grass	OBL	3.00
Scirpus acutus	hard-stemmed bulrush	OBL	2.50
Scirpus pungens	chairmaker's rush	NO	4.00
Scirpus validus	great bulrush	OBL	6.00
Temporary Cover			
Avena sativa	common oat	*NL	360.00
Lolium multiflorum	annual rye	FACU	104.00
Forbs			
Acorus calamus	sweet flag	OBL	1.00
Asclepias incarnata	swamp milkweed	OBL	1.50
Alisma spp.	water plantain (various mix)	NL	2.00
Cephalanthus occidentalis	buttonbush	OBL	1.00
Decodon verticillatus	swamp loosestrife	OBL	1.25
Eupatorium maculatum	spotted joe-pye weed	OBL	0.50
Hibiscus spp.	rosemallow (various mix)	*NL	3.00
Iris virginica	blue-flag iris	OBL	6.00
Lobelia cardinalis	cardinal flower	OBL	0.25
Lobelia siphilitica	great blue lobelia	FACW+	1.50
Ludwigia alternifolia	seedbox	OBL	0.25
Mimulus ringens	monkey flower	OBL	1.00
Peltandra virginica	arrow arum	OBL	16.00
Pontederia cordata	pickerel weed	OBL	10.00
Sagittaria latifolia	broad-leaved arrowhead	OBL	2.00
Sparganium americanum	American bur reed	OBL	2.00
Sparganium eurycarpum	common bur reed	OBL	4.00
Verbena hastata	blue vervain	FACW+	1.00
Zizania aquatica	wild rice	OBL	8.00
Total			**556.50 oz/acre 34.78 lbs/acre**

Table 3: Slope Stabilization Seed Mix (Berms) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Andropogon gerardii	Big Bluestem	FAC-	48.00
Bouteloua curtipendula	Side-Oats Gramma	*NL	32.00
Carex sparganioides v. cephaloidea	Rough-Clustered Sedge	FAC	4.00
Elymus canadensis	Canada Wild Rye	FAC-	32.00
Panicum virgatum	Switch Grass	FAC+	8.00
Schizachyrium scoparium	Little Bluestem	FACU-	32.00
Sorghastrum nutans	Indian Grass	FACU+	32.00
Temporary Cover			
Avena sativa	common oat	*NL	512.00
Lolium multiflorum	annual rye	FACU	222.00
Total			**734.00 oz/acre 57.63 lbs/acre**

Appendix K

Mitigation Site Documentation

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-017

Tract Name 1

Tract Name 2 N/A

Owner USFWS (Patoka River NWR)

Manager USFWS (Patoka River NWR)

Property Location

County	Section	Township	Range	Indiana Bat Maternity Colony
Gibson				
Political Township Columbia	31	1S	8W	Flat Creek

Mitigation Summary

Total Property Acres 17.2

Wetlands

Anticipated Credits	0	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	15.6	Acres
Approved Credits	15.6	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	**0**	**Acres**
Preserved	**15.6**	**Acres**

Streams

Anticipated Credits	0	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	0	0	0	Acres
Forested	0	0	0	Acres
Scrub-Shrub	0	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White **8-Digit HUC** 05120209 **14-Digit HUC** 05120209070050

Current Status

Project Phase Released **Purchased** Yes **Purchase Type** Fee Simple **Constructed** N/A **Begin Construction Date** N/A

Designed N/A **End Construction Date** N/A

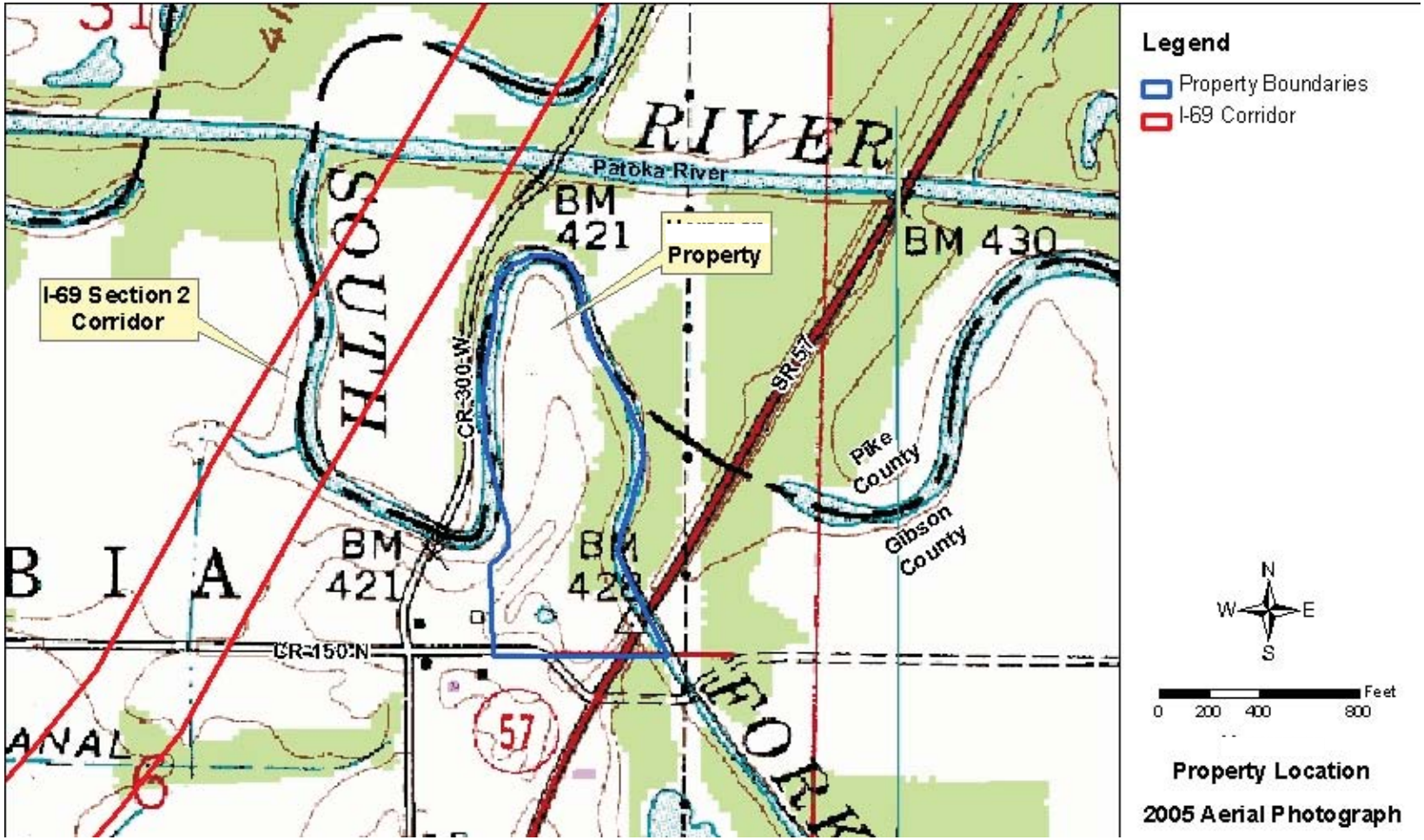
Comments The USFWS has indicated in a letter dated 4/13/09 that INDOT will be granted 15.6 acres of forested mitigation credit for their contribution in purchasing the property for the Patoka River NWR.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-017 **Tract Name**



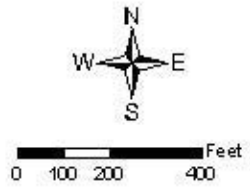
Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-017 **Tract Name**

Property Detail Map has been removed for confidentiality reasons related to the federally endangered Indiana bat (*Myotis sodalis*)



Property Location

2005 Aerial Photograph

Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-017
Tract Name

Phase Final State-No Construction
Year 2009

1

South Fork of the Patoka River - 10/31/09

2

South Fork of the Patoka River - 10/31/09

3

Bottomland Forest with Standing Water - 10/31/09

4

Bottomland Forest - 10/31/09

5

South Fork of the Patoka River - 10/31/09

6

Potential Bat Roost Tree, Unknown Location - 04/01/09

103-0001-IPC

United States Department of the Interior
Fish and Wildlife Service

Bloomington Field Office (ES)
620 South Walker Street
Bloomington, IN 47403-2121
Phone: (812) 334-4261 Fax: (812) 334-4273

April 13, 2009

RECEIVED
APR 20 2009
BLA - EVANSVILLE

Mr. Tom Seeman, P.E.
Project Manager – Indiana Department of Transportation
Indiana Governement Center North, Room N642
100 North Senate Avenue
Indianapolis, Indiana 46204

Re: INDOT's Additional Assistance in Purchasing the Property in Gibson County

Dear Mr. Seeman:

The INDOT has indicated that they are willing to provide **additional** assistance to the USFWS (Division of Refuges, Patoka River National Wildlife Refuge) with the purchase of the Al property in the Patoka River Bottoms. The original financial contribution from INDOT was $7894.73. Recently, the INDOT has agreed to pay an additional $22,000 in return for additional mitigation credit. This contribution will allow the USFWS to have the sufficient funds to purchase this property and further enhance the other refuge holdings in the area.

The portion of the Property currently being acquired is 15.2 acres. An additional 2 acres is proposed for inclusion in the purchase, once the appropriate title acquisition process has been completed. The property is located in Township 1 South, Range 8 West as part of the southeast 1/4 of Section 31, Columbia Township, Gibson County, Indiana. At this time Mr. Bill McCoy, manager of the Patoka River National Wildlife Refuge, is handling this transaction. We recommend the INDOT (Division of Right-of-Way and Acquisition) contact him at the following address and telephone number for further information and assistance: 510 ½ West Morton, Box 217, Oakland City, Indiana 47660, 812-749-3199.

We consider the acquisition of this initial 15.2 acres of property as an I-69 conservation measure and it is our intention to provide a total of 13.8 acres (3.6 acres of mitigation credit was originally approved and an additional 10.2 acres will be credited for the additional payment, i.e. acreage in proportion with INDOT's overall financial contribution towards the total purchase price) of mitigation credit for INDOT's financial contribution towards the purchase of this parcel. When the additional title work has been finalized for the other two acres of property, another

estimated 1.8 acres of mitigation credit will be applied. All acreage will be put towards the mitigation acres required for the proposed construction of 1-69.

If you should have any questions, please contact Ms. Robin McWilliams Munson at 812-334-4261 ext. 1207.

Sincerely,

Scott E. Pruitt
Field Supervisor

cc: Michelle Allen, INDOT
Janice Osadzcuk, FHWA
Jason DuPont, BLA
Bill McCoy, FWS, Patoka River NWR

200900003303
Filed for Record in
GIBSON COUNTY, INDIANA
DEBBIE S WETHINGTON
07-02-2009 At 08:25:19 AM.
WARRANTY 19.00

115 Hoffmeier

200900003303
LEON STONE
226 W BROADWAY
PRINCETON IN 47670

Instrument PG 1 OF
200900003303

WARRANTY DEED

THIS INDENTURE, Made this 29th day of June, 2009, between and husband and wife, of 720 Bryan Road, Evansville, Indiana, grantor, and the UNITED STATES OF AMERICA and its assigns, Washington, D.C., grantee,

WITNESSETH, That the grantor, for and in consideration of the sum of Three Thousand, and No/100 Dollars ($3,000.00) to them in hand paid by the grantee, the receipt whereof is hereby acknowledged, do by these presents Grant, Bargain, Sell, and Convey unto the grantee and its assigns, forever, all that tract or parcel of land lying and being in the County of Gibson and State of Indiana described as follows, to-wit:

All that part of the Southeast Quarter of the Southeast Quarter of Section thirty-one (31), township one (1) south, range eight (8) west, being and lying in Gibson County, Indiana; SUBJECT to the right-of-way of Indiana State Highway No. 57.
ALSO:
A south part of the NE 1/4 of the SE 1/4 of Section 31, Township One (1) South, Range eight (8) West lying south of the Patoka River in Gibson County, Indiana, containing approximately two (2) acres, more or less.

The above-described lands are acquired for administration by the Secretary of the Interior through the United States Fish and Wildlife Service under authority of the Emergency Wetlands Resources Act of 1986, Public Law 99-645 (100 Stat. 3582).

TO HAVE AND TO HOLD THE SAME, Together with all the hereditaments and appurtenances thereunto belonging or in anywise appertaining, to the grantee and its assigns, FOREVER. And the said grantors, for themselves, their heirs, executors and administrators, do covenant with the grantee and its assigns, that they are well seised in fee of the lands and premises aforesaid and have good right to sell and convey the same in manner and form aforesaid, and that the same are free from all encumbrances whatsoever,

SUBJECT, However, to the rights of the United States and third persons, if any, as provided for by the Patent of record.

And the above bargained and granted lands and premises in the quiet and peaceable possession of the grantee and its assigns against all persons lawfully claiming or to claim the whole or any part thereof, the grantors will WARRANT AND DEFEND.

The grantors certify that the grantors do not know of any wells on the above-described real property.

DULY ENTERED FOR TAXATION
Subject to final acceptance for transfer
2 day of July 2009
Mary B Kay Auditor
Gibson County
Parcel #26-07-31-400-000.397-006

Instrument PG 2 OF
200900003305

IN WITNESS WHEREOF, the grantors hereunto sets their hands the day and year first above written.

ACKNOWLEDGMENT

STATE OF INDIANA)
) SS
COUNTY OF GIBSON)

On this 29th day of June, in the year 2009, before me personally appeared Aloysius Horsman and Colleen K. Horsman, husband and wife, known to me to be the persons who are described in and who executed the within instrument, acknowledged to me that they executed the same.

(SEAL)

Notary Public, State of Indiana
PATRICIA A KOLB
My commission expires: 12-11-2015

Grantee Address and Mail Taxes to: United States Fish & Wildlife Service
Bishop Henry Whipple Federal Building
1 Federal Drive
Fort Snelling, MN 55111

This instrument was drafted by Stephen G. Muyskens, United States Fish and Wildlife Service, Bishop Henry Whipple Federal Building, 1 Federal Drive, Fort Snelling, Minnesota 55111-4056. I affirm, under the penalties for perjury, that I have taken reasonable care to redact each Social Security number in this document, unless required by law.

Stephen G. Muyskens

Appendix L

Mitigation Site Documentation

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-010

Tract Name 1

Tract Name 2 N/A

Owner INDOT (Future Patoka River NWR)

Manager INDOT (Future Patoka River NWR)

Property Location

County	Section	Township	Range	Indiana Bat Maternity Colony
Pike				
Political Township Patoka	28	1S	8W	Flat Creek

Mitigation Summary

Total Property Acres 224.5

Wetlands

Anticipated Credits	0	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	224.5	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	**0**	**Acres**
Preserved	**224.5**	**Acres**

Streams

Anticipated Credits	0	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	0	0	0	Acres
Forested	0	0	0	Acres
Scrub-Shrub	0	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White **8-Digit HUC** 05120209 **14-Digit HUC** 05120209060090

Current Status

Project Phase Acquired **Purchased** Yes **Purchase Type** Fee Simple **Constructed** N/A **Begin Construction Date** N/A

Designed N/A **End Construction Date** N/A

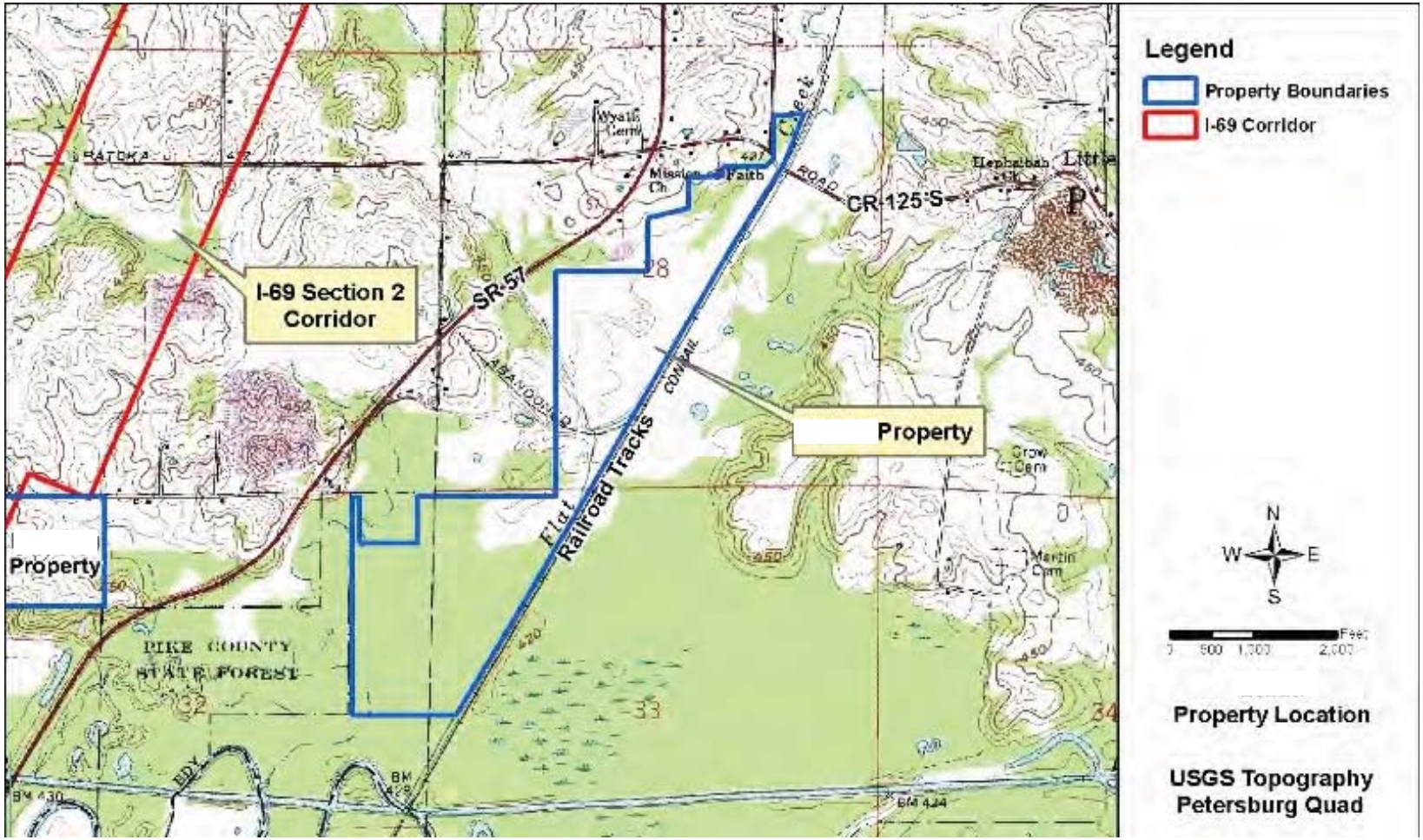
Comments Site has been purchased by INDOT for forested preservation credits. Investigating possibility of stream mitigation on site.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-010 **Tract Name**



Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-010 **Tract Name**

Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-010
Tract Name

Phase Final State-No Construction
Year 2008

1

Access Path through Bottomland Forest - 1/30/08

2

Bottomland Forest - 1/30/08

3

Bottomland Forest - 1/30/08

4

Backwater Slough - 1/30/08

5

Bottomland Forest - 1/30/08

6

Stream Channel with Beaver Dam - 1/30/08

Form WD-1
8/98

WARRANTY DEED

Project: 0710897
Code: 5130
Parcel: 1
Page: 1 of 2

THIS INDENTURE WITNESSETH, That _____

the Grantor(s), of Pike County, State of Indiana Convey(s) and Warrant(s) to the STATE OF INDIANA, the Grantee, for and in consideration of the sum of Four Hundred Twenty-six Thousand and NO/100 Dollars ($426.000.00) (of which said sum $426.000.00 represents land and improvements acquired and $ 0.00 represents damages) and other valuable consideration, the receipt of which is hereby acknowledged, certain Real Estate situated in the County of **PIKE**, State of Indiana, and being more particularly described in the legal description attached hereto as Exhibit "A" and depicted upon the Right of Way Parcel Plat attached hereto as Exhibit "B", both of which exhibits are incorporated herein by reference.

This conveyance is subject to any and all easements, conditions and restrictions of record.

The Grantor(s) hereby specifically acknowledge(s) and agree(s) that the Real Estate conveyed herein is conveyed in fee simple and that no reversionary rights whatsoever shall remain with the Grantor(s), or any successors in title to the abutting lands of the Grantor(s), notwithstanding any subsequent abandonment, vacation, disuse, nonuse, change of use, conveyance, lease and/or transfer by the Grantee or its successors in title, of a portion or all of the said Real Estate or any right of way, roadway or roadway appurtenances established thereupon. This acknowledgment and agreement is a covenant running with the land and shall be binding upon the Grantor(s) and all successors and assigns.

Interests in land acquired by the Indiana
Department of Transportation
Grantee mailing address:
100 North Senate Avenue
Indianapolis, IN 46204-2219
I.C. 8-23-7-31

This Instrument Prepared By _____
Attorney at Law

I affirm, under the penalties for perjury, that I have taken reasonable care to redact each Social Security number in this document, unless required by law, _____ Attorney

IN WITNESS WHEREOF, the said Grantor(s) have executed this instrument this 9th day of December, 2008.

_____(Seal)
Signature

_____
Printed Name

_____(Seal)
Signature

_____
Printed Name

STATE OF INDIANA :
COUNTY OF DUBOIS : **SS:**

Before me, a Notary Public in and for said State and County, personally appeared Michael K. Braun and Maureen B. Braun, husband and wife,
the Grantor(s) in the above conveyance, and acknowledged the execution of the same on the date aforesaid to be their voluntary act and deed and who, being duly sworn, stated that any representation contained therein are true.

Witness my hand and Notarial Seal this 9th day of DECEMBER, 2008.

Cheryl Ziegler
Signature

CHERYL ZIEGLER
Printed Name

My Commission expires 10-19-2012

I am a resident of DUBOIS County.

EXHIBIT "A"

Project 0710897
Code 5130
Parcel 1 Fee
Form WD-1

A part of Section 33 and Section 28, Township 1 South, Range 8 West, Patoka Civil Township, Pike County, Indiana, and a part of Section 32, Township 1 South, Range 8 West, Logan Civil Township, Pike County, Indiana, an being more completely described as follows: Beginning at the northwest corner of the Northeast Quarter of the Southwest Quarter of said Section 28; thence North 88 degrees 03 minutes 57 seconds East 1065.86 feet along the north line of said quarter-quarter section; thence North 00 degrees 11 minutes 45 seconds East 446.43 feet; thence North 83 degrees 00 minutes 19 seconds East 46.44 feet; thence North 72 degrees 09 minutes 56 seconds East 92.00 feet; thence North 74 degrees 21 minutes 03 seconds East 94.59 feet; thence North 75 degrees 55 minutes 25 seconds East 91.43 feet; thence North 76 degrees 50 minutes 10 seconds East 128.59 feet; thence North 00 degrees 01 minute 52 seconds East 530.33 feet; thence North 82 degrees 02 minutes 23 seconds East 529.68 feet; thence North 02 degrees 59 minutes 35 seconds West 130.86 feet; thence South 88 degrees 22 minutes 54 seconds East 602.00 feet; thence North 01 degree 35 minutes 54 seconds East 71.50 feet; thence North 01 degree 12 minutes 42 seconds East 421.64 feet; thence South 88 degrees 14 minutes 46 seconds East 383.48 feet to the west right of way line of the Evansville and Indianapolis Railroad Company, as recorded in Deed Book 38, Page 524 of the Pike County Recorder's Office; thence southwesterly along said right of way line the following 13 courses; 1.) South 22 degrees 11 minutes 18 seconds West 21.55 feet; 2.) South 23 degrees 10 minutes 36 seconds West 84.61 feet; 3.) South 24 degrees 02 minutes 47 seconds West 125.22 feet; 4.) South 24 degrees 57 minutes 56 seconds West 113.77 feet; 5.) South 25 degrees 47 minutes 58 seconds West 114.13 feet; 6.) South 26 degrees 45 minutes 30 seconds West 118.47 feet; 7.) South 27 degrees 43 minutes 20 seconds West 118.31 feet; 8.) South 28 degrees 48 minutes 16 seconds West 101.75 feet; 9.) South 29 degrees 31 minutes 36 seconds West 126.89 feet; 10.) South 30 degrees 05 minutes 14 seconds West 113.84 feet; 11.) South 30 degrees 21 minutes 03 seconds West 939.88 feet; 12.) South 30 degrees 21 minutes 03 seconds West 3058.59 feet; 13.) South 30 degrees 20 minutes 48 seconds West 3227.53 feet to the south line of the Northwest Quarter of Section 33,

EXHIBIT "A"

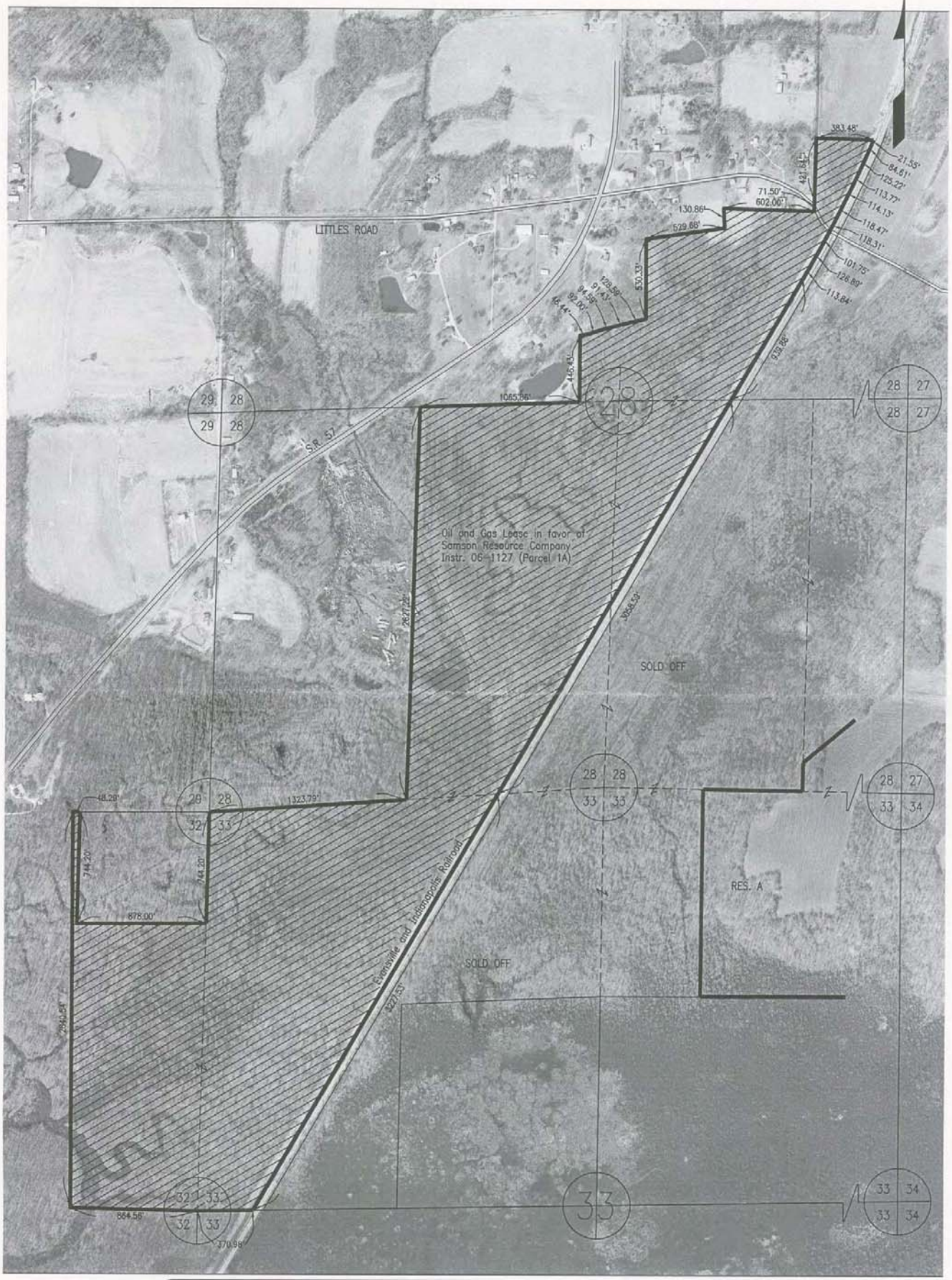
Project 0710897
Code 5130
Parcel 1 Fee
Form WD-1

Township 1 South, Range 8 West; thence South 89 degrees 04 minutes 18 seconds West 370.98 feet along said south line to the southwest corner of said quarter section; thence North 88 degrees 45 minutes 59 seconds West 864.56 feet; thence North 00 degrees 08 minutes 22 seconds East 2640.54 feet to the north line of the Northeast Quarter of said Section 32; thence North 89 degrees 47 minutes 09 seconds East 48.29 feet along said north line; thence South 01 degree 28 minutes 14 seocnds West 744.20 feet; thence North 89 degrees 47 minutes 09 seconds East 878.00 feet; thence North 01 degree 28 minutes 14 seconds East 744.20 feet to the south line of the Southwest Quarter of said Section 28; thence North 86 degrees 11 minutes 27 seconds East 1323.79 feet; thence North 01 degree 45 minutes 14 seconds East 2627.22 feet to the point of beginning of the hereinto described tract, containing 224.45 acres, more or less, 39.51 acres being situated in Section 32 (Logan Civil Township), 70.73 acres being situated in Section 33 (Patoka Civil Township), and 114.21 acres being situated in Section 28 (Patoka Civil Township).

RIGHT–OF–WAY PARCEL PLAT

Prepared for Indiana Department of Transportation
by Bernardin Lochmueller & Associates, Inc. (Job No. 207–0014–ZES/5130)

0 150' 300' 600'
SCALE 1" = 600ft.



PARCEL:	1	OWNER:	
CODE:	5130		
PROJECT:	0710897		
ROAD:	I–69		
COUNTY:	Pike		
SECTION:	28, 32, 33		
TOWNSHIP:	1 S.		
RANGE:	8 W.		

HATCHED AREA IS THE APPROXIMATE TAKING

DRAWN BY: K. L. Myers 07/28/2008
CHECKED BY: K. M. Johnson 07/31/2008

INSTRUMENT NO.: 05–242 DATED 1/15/2005
INSTRUMENT NO.: 06–453 DATED 2/17/2006

Appendix M

Mitigation Site Documentation

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-005

Tract Name 1

Tract Name 2 N/A

Owner USFWS (Patoka River NWR)

Manager USFWS (Patoka River NWR)

Property Location

County Pike

Political Township Patoka

Section	Township	Range
3	2S	8W

Indiana Bat Maternity Colony

None (Near Flat Creek)

Mitigation Summary

Total Property Acres 24

Wetlands

Anticipated Credits	0	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	4.2	Acres
Approved Credits	4.2	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	0	Acres
Preserved	4.2	Acres

Streams

Anticipated Credits	0	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	0	0	0	Acres
Forested	0	0	0	Acres
Scrub-Shrub	0	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White

8-Digit HUC 05120209

14-Digit HUC 05120209060080

Current Status

Project Phase Released

Purchased Yes

Purchase Type Fee Simple

Constructed N/A

Begin Construction Date N/A

Designed N/A

End Construction Date N/A

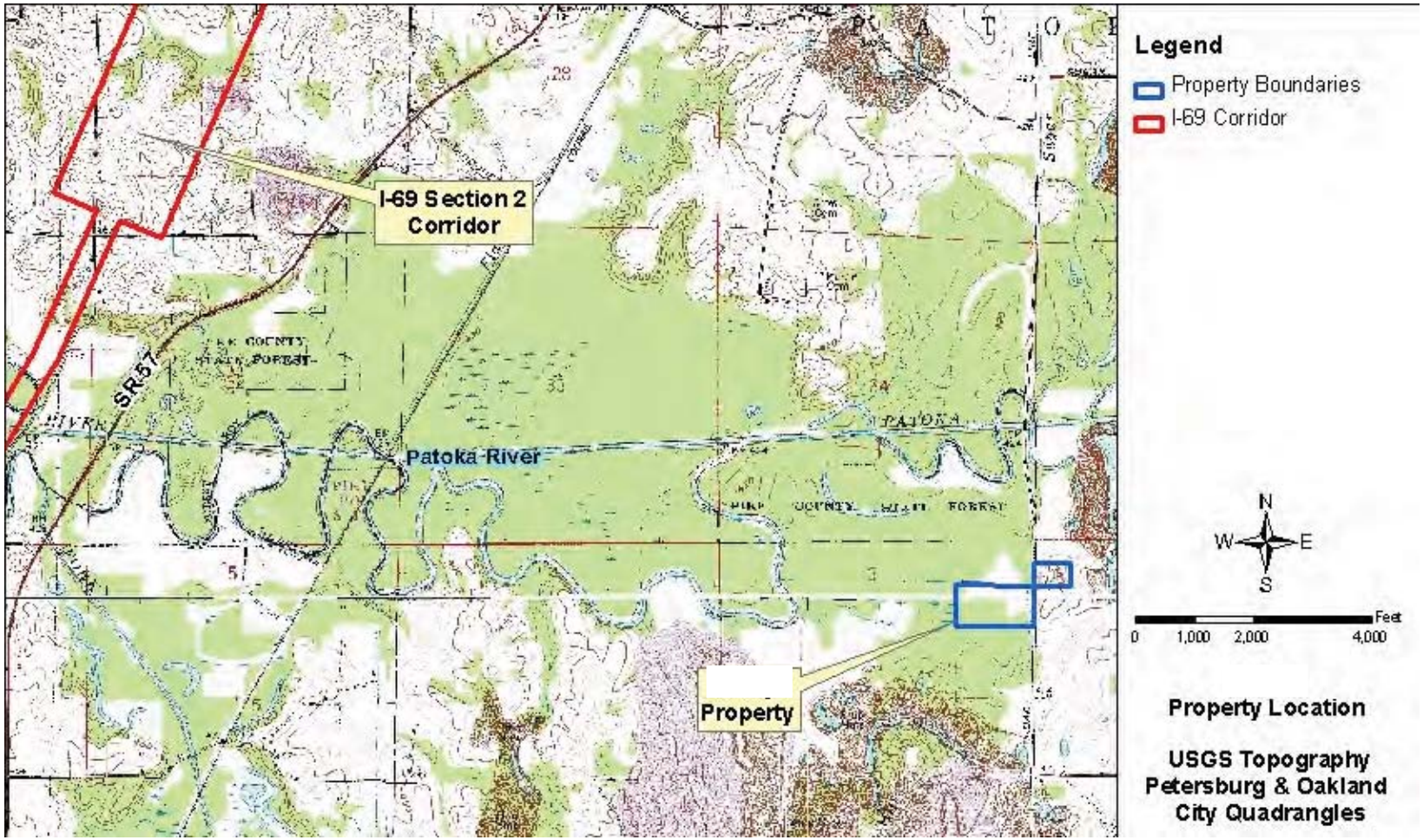
Comments Comprised of 2 tracts (Patoka NWR Tracts 168 & 168a), smaller tract located in 2-2S-8W. INDOT assisted USFWS to purchase the properties in exchange for 4.2 acres of forest preservation mitigation credits per letter dated June 26, 2008.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-005 **Tract Name**

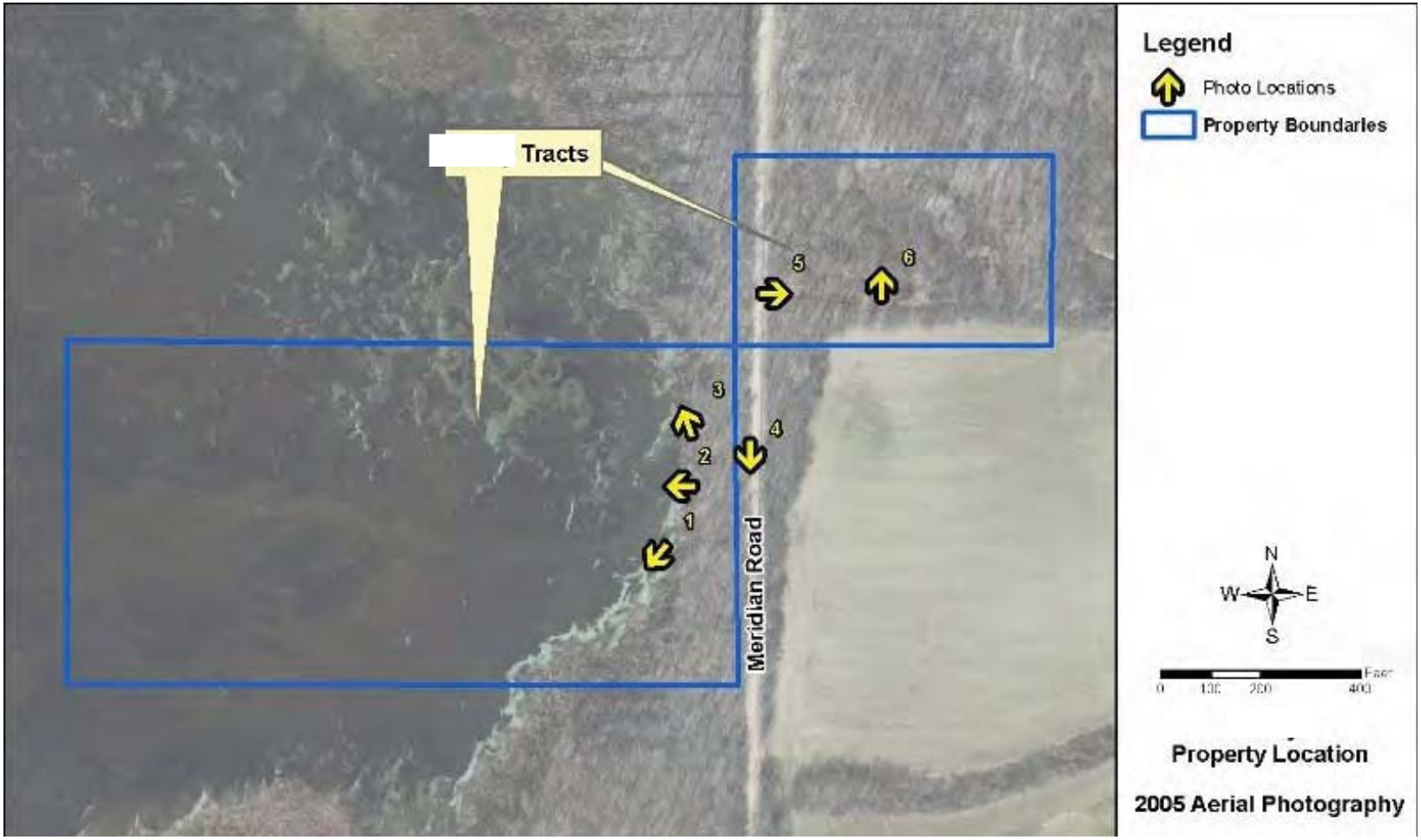


Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-005 **Tract Name**



Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-005
Tract Name

Phase Final State-No Construction
Year 2008

1

View of swamp in western parcel, facing SW - 8/22/08

2

View of swamp in western parcel, facing W - 8/22/08

3

View of swamp in western parcel, facing NW - 8/22/0

4

View of gravel road spliting the 2 parcels, facing S - 8/22/08

5

View of access to eastern parcel, facing E - 8/22/08

6

View of forested eastern parcel facing N - 8/22/08

103-0001-1PC

United States Department of the Interior
Fish and Wildlife Service

Bloomington Field Office (ES)
620 South Walker Street
Bloomington, IN 47403-2121
Phone: (812) 334-4261 Fax: (812) 334-4273

RECEIVED
JUN 30 2008
BLA - EVANSVILLE

26 June 2008

Mr. Tom Seeman, P.E.
Project Manager - Indiana Department of Transportation
Indiana Government Center North, Room N642
100 North Senate Avenue
Indianapolis, Indiana 46204

Re: INDOT's Assistance in Purchasing the Tracts in Pike County

Dear Mr. Seeman,

It has come to our attention that INDOT is willing to assist the USFWS (Division of Refuges, Patoka River National Wildlife Refuge) in the purchasing of the _____, Tracts 168 and 168a in the Patoka River Bottoms. The financial contribution from INDOT would be $5,200 (17.3%) and the USFWS would be paying $24,800 (82.7%) for a combined total of $30,000. INDOT's donation will allow USFWS to have the sufficient funds to purchase this property and further enhance the other refuge holdings in the area.

The Tract 168 is 20 acres in size and consists of both wooded habitat and swamp. The Tract 168a is 4 acres in size and almost completely wooded. Its location is south of the Patoka River along Meridian Road with Tract 168 lying west of Meridian Road and Tract 168a lying east of Meridian Road approximately ½ mile south of the bridge over the Patoka River in Pike County. At this time, Mr. Bill McCoy, manager of the Patoka River National Wildlife Refuge, is handling this transaction. We recommend that the INDOT (Division of Right-of-Way and Acquisition) contact him at the following address and telephone number for further information and assistance: 510 ½ West Morton, Box 217, Oakland City, Indiana 47660 at 812-749-3199.

The value of this 24 acre property is exceptional with its natural habitat and suitable summer roosting and foraging habitat for the Indiana bat. The property is located in prime summer habitat for this species, and approximately 3 miles east of the proposed I-69. The purchasing of this property and its incorporation into the Patoka River NWR would be a valuable contribution to the species.

We appreciate INDOT's sensitivity and receptivity in being pro-active and partnering with

USFWS in the purchasing of this property. We consider the acquisition of this property an I-69 conservation measure and it is our intention to provide 4.2 acres of mitigation (i.e., acreage in proportion with INDOT's financial contribution towards the total purchase price – 17.3% x 24 ac. = 4.2 ac.) credit for INDOT's financial contribution towards the purchase of these two parcels. Such acres may be applied towards the mitigation acreage required for the proposed construction of I-69.

If you should have any questions, please contact Mr. Andy King at 812-334-4261 ext. 216.

Sincerely,

Scott E. Pruitt
Field Supervisor

cc: Michelle Allen, INDOT
Tony DeSimone, FHWA
Jason DuPont, BLA
Bill McCoy, FWS, Patoka River NWR

Appendix N

Mitigation Site Documentation

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-007

Tract Name 1

Tract Name 2 N/A

Owner INDOT

Manager INDOT

Property Location

County	Section	Township	Range	Indiana Bat Maternity Colony
Pike				
Political Township Jefferson	4	1N	7W	East Fork White River

Mitigation Summary

Total Property Acres 170.9*

Wetlands

Anticipated Credits	6.8	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	162	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	90.4	Acres
Preserved	71.6	Acres

Streams

Anticipated Credits	7,760	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	1.9	0	0	Acres
Forested	1.4	0	0	Acres
Scrub-Shrub	3.5	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White **8-Digit HUC** 05120208 **14-Digit HUC** 05120208170090

Current Status

Project Phase Construction **Purchased** Yes **Purchase Type** Fee Simple **Constructed** No **Begin Construction Date** 9/3/2009

Designed Yes **End Construction Date** N/A

Comments Construction delayed until late Summer 2009 due to archaeological coordination. Project under construction under the same contract as the mitigation site.

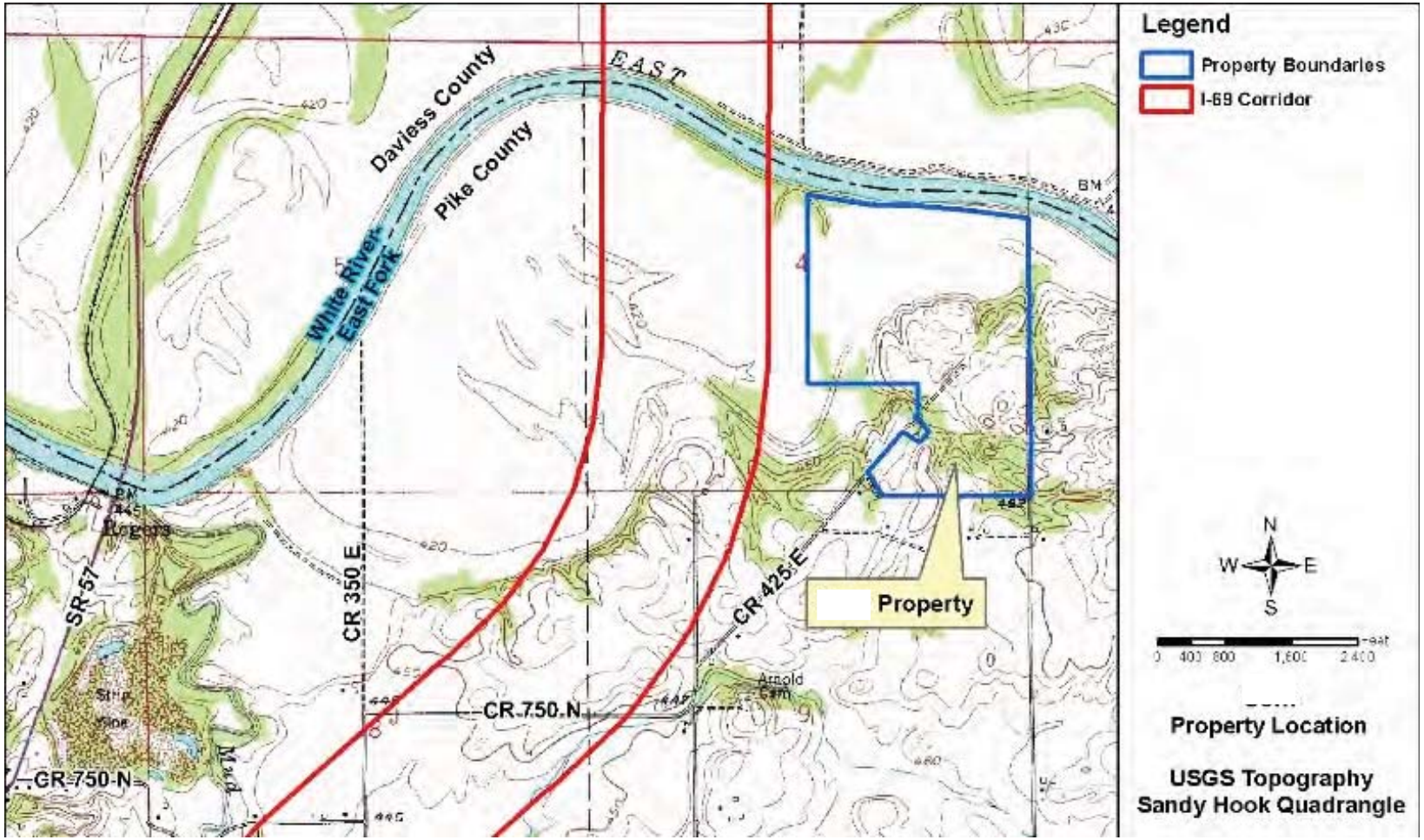
*Balance of property acreage other than wetland and forest mitigation consists of 1.5 acres of stream channel development and 0.6 acre of existing roadway easements.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-007 **Tract Name**

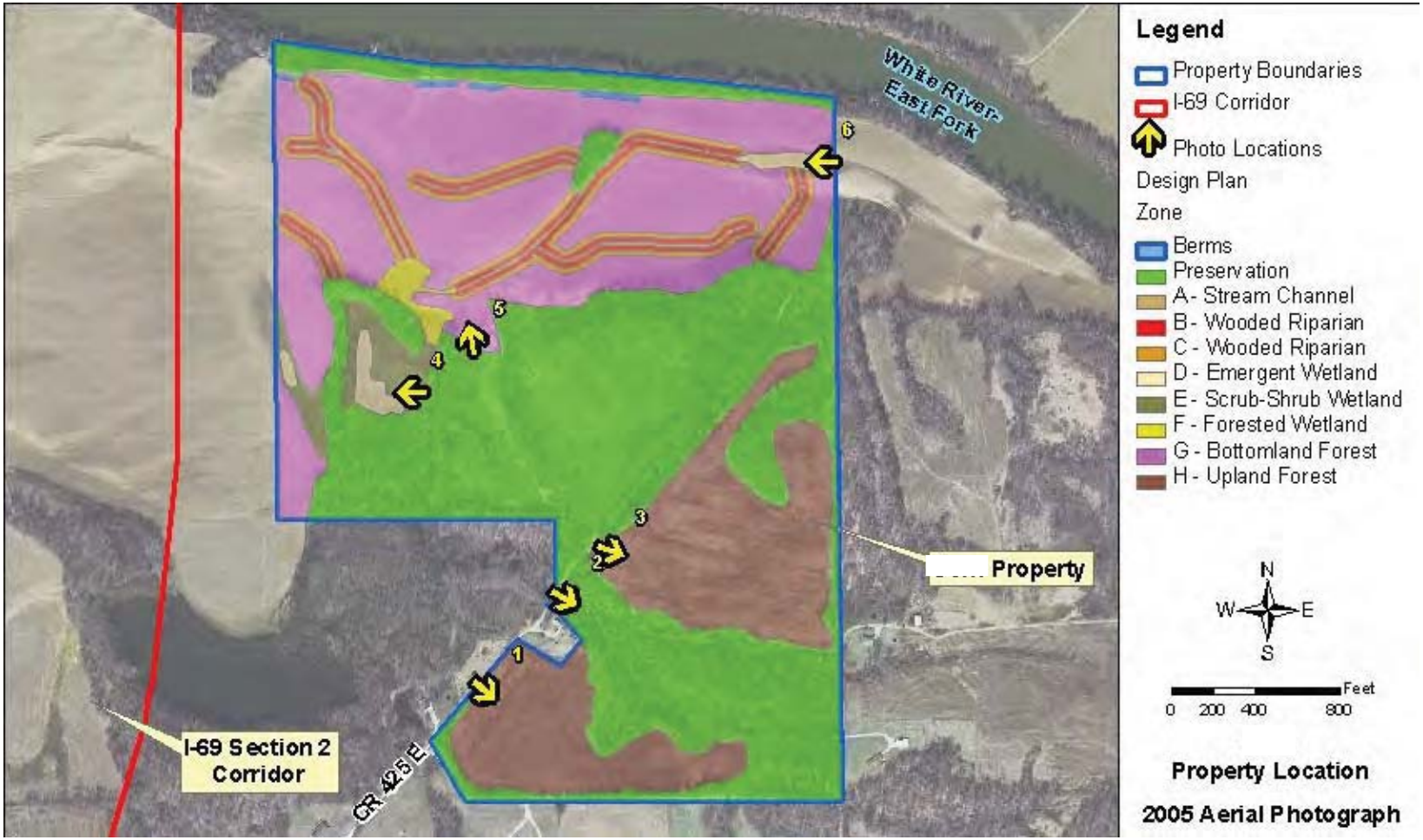


Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-007 **Tract Name**



Note: Planting Zones shown reflect final design plans for this site.

Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-007
Tract Name

Phase Pre-Construction
Year 2008

1

View of Upland Forest Planting Zone facing SE - 10/16/08

2

View of Stream, facing SE - 10/16/08

3

View of Upland Forest Planting Zone, facing E - 5/22/08

4

View of Wetland Planting Zones, facing W - 10/16/08

5

View of Wetland/Bottomland Forest Planting Zone, facing N - 10/16/08

6

View of Wetland/Bottomland Forest Planting Zone, facing W - 10/16/08

Form WD-1
Rev. 7-1-07

WARRANTY DEED

Project: 0710905;
I-69 Wetland Mitigation
Code: 5137
Parcel: 1

THIS INDENTURE WITNESSETH, That _____

the Grantor(s), of Pike County, State of Indiana Convey(s) and Warrant(s) to the **STATE OF INDIANA**, the Grantee, for and in consideration of the sum of Six Hundred Thirty-two Thousand Four Hundred Twenty-eight and NO/100 Dollars ($632,428.00) (of which said sum $632,428.00 represents land and improvements acquired and $ 0.00 represents damages) and other valuable consideration, the receipt of which is hereby acknowledged, certain Real Estate situated in the County of **Pike**, State of Indiana, and being more particularly described in the legal description(s) attached hereto as Exhibit "A" which exhibit is incorporated herein by reference.

This conveyance is subject to any and all easements, conditions and restrictions of record.

The Grantor(s) hereby specifically acknowledge(s) and agree(s) that the Real Estate conveyed herein is conveyed in fee simple and that no reversionary rights whatsoever shall remain with the Grantor(s), or any successors in title to the abutting lands of the Grantor(s), notwithstanding any subsequent abandonment, vacation, disuse, nonuse, change of use, conveyance, lease and/or transfer by the Grantee or its successors in title, of a portion or all of the said Real Estate or any right of way, roadway or roadway appurtenances established thereupon. This acknowledgment and agreement is a covenant running with the land and shall be binding upon the Grantor(s) and all successors and assigns.

Interests in land acquired by the Indiana
Department of Transportation
Grantee mailing address:
100 North Senate Avenue
Indianapolis, IN 46204-2219
I.C. 8-23-7-31

This Instrument Prepared By _____
Attorney at Law

I affirm under the penalties of perjury, that I have taken reasonable care to redact each Social Security number in this document unless required by law.

Name (printed) Gina M. Hansen

Signature Gina M Hansen

IN WITNESS WHEREOF, the said Grantor(s) has executed this instrument this 24th day of November, 2008.

Signature

Debra K. Corn
Printed Name

Signature

Printed Name

STATE OF Indiana :
SS:
COUNTY OF Gibson :

Before me, a Notary Public in and for said State and County, personally appeared Debra K. Corn, the Grantor(s) in the above conveyance, and acknowledged the execution of the same on the date aforesaid to be her *(his, her, their)* voluntary act and deed and who, being duly sworn, stated that any representation contained therein are true.

Witness my hand and Notarial Seal this 24th day of November, 2008.

Gina M Hansen
Signature

Gina M. Hansen
Printed Name

GINA M. HANSEN
Marion County
My Commission Expires
September 8, 2016

My Commission expires September 8, 2016

I am a resident of Marion County.

EXHIBIT "A"

Project 0710905
Code 5137
Parcel 1 Fee
Form WD-1

The East Half of the South Fractional Section 4, Township 1 North, Range 7 West, EXCEPT a part of the Southwest Quarter of the Southeast Quarter of said Section 4, Township 1 North, Range 7 West, and more particularly described by metes and bounds as follows, to-wit; Beginning at the quarter section corner between Sections 4 and 9, and running thence north 20 chains; thence east 20 chains; thence south 4.76 chains to the middle of the straight line railroad embankment to a stake from which a cottonwood tree 20 inches in diameter bears south 60 degrees east 27 links; thence south 41 degrees west with the middle of the railroad embankment 20 chains to a stake on the section line from which a red oak tree 4 inches in diameter bears south 8 degrees west 27 links and a dogwood 5 inches in diameter bears south 20 links; thence west 7.2 chains to the place of beginning, containing 30.24 acres, more or less,

and ALSO EXCEPTING the following tract of land: Beginning 7.20 chains east of the southwest corner of the Southwest Quarter of the Southeast Quarter of Section 4, Township 1 North, Range 7 West, and running thence east 24 rods; thence in a northwesterly direction 20 rods to the center line of the old railroad bed; thence south 41 degrees west along and with the center line of the old railroad bed 24 rods to the place of beginning, containing 1.5 acres, more or less, containing in all 171.86 acres, more or less,

and ALSO EXCEPTING Part of the East Half of the South Fractional Section 4, Township 1 North, Range 7 West of the Second Principal Meridian in Pike County, Indiana, being described as follows:
Commencing at the South Quarter-Corner of said Fractional Section 4, being marked by a 3/4-inch rebar with plastic cap stamped "BLA FIRM 0030"(hereinafter referred to as a "BLA rebar"); thence bearing North 89 degrees 39 minutes 54 seconds East (basis of bearings is the I-69 Coordinate System, West Zone) along the south line of the Southwest Quarter of the Southeast Quarter of said Fractional Section a distance of 475.20 feet (7.2 chains) to the center of an old railroad bed and being witnessed by a BLA rebar; thence the following 14 courses along the center of the traveled way of the county road that approximates said old railroad bed:
(1) North 40 degrees 36 minutes 50 seconds East 186.00 feet, witness a BLA rebar;
(2) North 43 degrees 27 minutes 20 seconds East 69.00 feet, witness a BLA rebar;
(3) North 48 degrees 03 minutes 00 seconds East 55.00 feet, witness a BLA rebar;
(4) North 44 degrees 56 minutes 00 seconds East 21.00 feet, witness a BLA rebar;
(5) North 38 degrees 03 minutes 00 seconds East 40.00 feet, witness a BLA rebar;
(6) North 28 degrees 24 minutes 40 seconds East 25.12 feet, witness a BLA rebar;
(7) North 33 degrees 23 minutes 00 seconds East 40.00 feet, witness a BLA rebar;
(8) North 40 degrees 23 minutes 30 seconds East 485.67 feet, witness a BLA rebar;
(9) North 41 degrees 14 minutes 06 seconds East a distance of 91.74 feet to the POINT OF BEGINNING of this description and the point of tangency of a curve having a radius of 157.09

EXHIBIT "A"

Project 0710905
Code 5137
Parcel 1 Fee
Form WD-1

feet, the radius point of which bears South 48 degrees 45 minutes 54 seconds East, said point of beginning also being witnessed by a BLA rebar;
(10) northeasterly along said curve an arc distance of 66.55 feet to the point of reverse curvature (witness a BLA rebar) of a curve having a radius of 216.76 feet, the radius point of which bears North 24 degrees 29 minutes 32 seconds West;
(11) northeasterly along said curve an arc distance of 30.80 feet to the point of compound curvature (witness a BLA rebar) of a curve having a radius of 92.33 feet, the radius point of which bears North 32 degrees 38 minutes 03 seconds West;
(12) northeasterly along said curve an arc distance of 51.43 feet to the point of tangency thereof (witness a BLA rebar), said point bearing South 64 degrees 32 minutes 52 seconds East from the radius point;
(13) North 25 degrees 27 minutes 08 seconds East a distance of 51.35 feet, witness a BLA rebar;
(14) North 31 degrees 45 minutes 42 seconds East a distance of 25.19 feet, witness a BLA rebar; thence South 58 degrees 14 minutes 18 seconds East a distance of 70.73 feet to a BLA rebar; thence South 45 degrees 00 minutes 00 seconds East 29.70 feet to a BLA rebar; thence South 39 degrees 48 minutes 42 seconds East a distance of 131.13 feet to a BLA rebar; thence South 40 degrees 00 minutes 00 seconds West a distance of 160.34 feet to a BLA rebar; thence North 60 degrees 00 minutes 00 seconds West a distance of 243.62 feet to the POINT OF BEGINNING. The above description contains 1.000 acre, more or less.

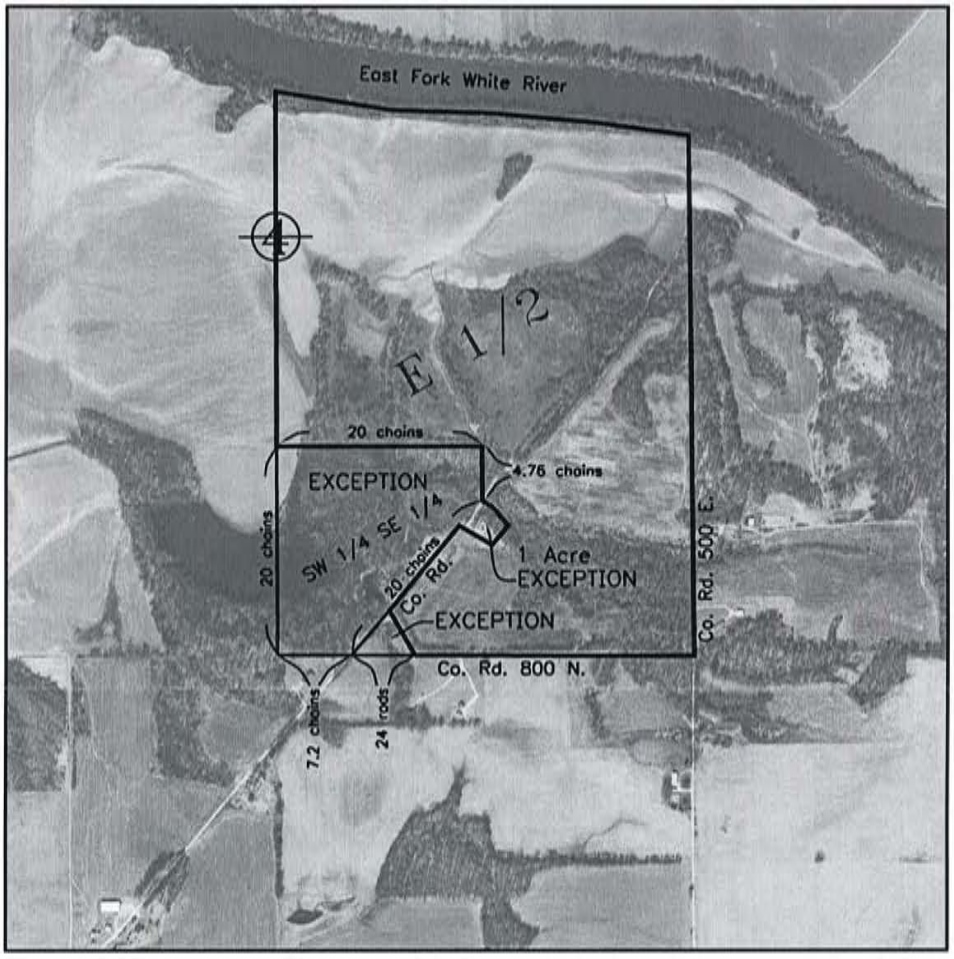
Containing in all, after said exceptions, 170.86 acres, more or less.

RIGHT-OF-WAY PARCEL PLAT

Prepared for Indiana Department of Transportation
by Bernardin Lochmueller & Associates, Inc. (Job No. 207-0014-2E5)

0 200 400 800
SCALE 1" = 800ft.

N

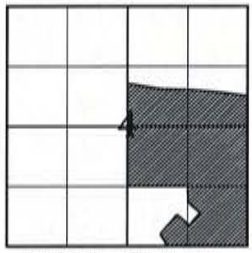


This plat was prepared using information obtained from the County records. It does not represent a survey of the owner's property.

RICHARD F. LEWIS
REGISTERED
NO. LS 80040353
STATE OF
INDIANA
LAND SURVEYOR

Richard F Lewis 11/03/08
Richard F. Lewis Date
Reg. Land Surveyor No. LS80040353
State of Indiana

Section 4



HATCHED AREA IS THE APPROXIMATE MITIGATION TRACT

PARCEL: 1 OWNER:	DRAWN BY: K. Myers 03/19/08
CODE: 5137	CHECKED BY: R. Lewis 03/19/08
Des. No.: 0710905	
ROAD: I-69	INSTRUMENT NO.: DR 125 Pgs. 252 & 253
COUNTY: Pike	DATED: 12/17/91
SECTION: 4	
TOWNSHIP: 1 N.	
RANGE: 7 W.	

Mitigation and Monitoring Plan
for the
I-69 Sections 2 and 3 "Draft" Umbrella Mitigation Bank

Project# 0710905
Contract# IR-30351

Date:
June 3, 2009

Prepared For:

Government Building North, Room N848
100 North Senate Avenue
Indianapolis, Indiana 46204-2249

Prepared By:

BERNARDIN · LOCHMUELLER & ASSOCIATES, INC.
6200 Vogel Road · Evansville · Indiana 47715-4006
PHONE (812) 479-6200 · TOLL FREE (800) 423-7411 · FAX (812) 479-6262

Table of Contents

Section I Introduction 1

Section II Objectives 1

Section III Site Selection 3

Section IV Site Protection Instrument 4

Section V Baseline Information 4

Section VI Determination of Credits 5

Section VII Mitigation Work Plan 6

Section VIII Maintenance Plan 16

Section IX Performance Standards 16

Section X Monitoring Requirements 19

Section XI Long-Term Management Plan 20

Section XII Adaptive Management Plan 21

Section XIII Financial Assurances 21

Attachments

Attachment 1 USGS Map Showing Location of Compensatory Mitigation Site
Attachment 2 2005 Aerial Photograph Showing Location of Compensatory Mitigation Site
Attachment 3 Photographs of Existing Conditions at Compensatory Mitigation Site
Attachment 4 Compensatory Mitigation Site Design Plans
Attachment 5 Compensatory Mitigation Site Special Provisions

Site
Mitigation and Monitoring Plan

I. Introduction

The Mitigation Site is being developed as part of the I-69 Sections 2 and 3 Umbrella Mitigation Bank. This mitigation plan is being developed to offset a portion of the wetland, stream and forest impacts caused by construction of Section 2 of the I-69 project. Additional mitigation sites will be developed to offset the remaining portion of impacts to wetlands, streams, and forests caused by Section 2.

II. Objectives

The mitigation concept for unavoidable impacts to wetlands, open water habitats, and streams determined to be "Waters of the U.S." involves ephemeral stream channel development, upland and bottomland forest development, along with emergent, scrub/shrub and forested wetland development within existing agricultural fields to the south of the East Fork of the White River, east of SR 57. In addition, mitigation will include preservation of existing wetlands, early succession forested land, upland forested areas, and a narrow strip of riparian habitat along the south bank of the East Fork of the White River. Habitat poles containing bat roosting opportunities will also be installed on the site. The mitigation plan will meet the needs of the Construction in a Floodway permit requirements through planting of bottomland forest species within the floodway, while at the same time address the Clean Water Act Section 404/401 permitting requirements through expansion of existing wetlands and preservation of existing wetland, bottomland, riparian forest, and upland forest habitats. The mitigation plan also addresses conditions resulting from Section 7 consultation through the preservation and development of forested habitat.

A. Functions and Values:

1. Impacted Water Resources

The wetlands impacted by I-69 Section 2 have varying levels of functions and values due to their variations in size, as well as wide ranges of animal habitat, botanical, and hydrologic quality measures. The largest wetland impact site is 5.10 acres in size and the smallest is 0.01 acre in size. Because of the varying size and quality of the wetland impact sites they all have different abilities to provide (1) storm/floodwater storage, (2) food and cover for wildlife, (3) hydrological support for adjacent communities, (4) peak floodwater reduction, (5) groundwater recharge, and/or (6) water purification.

The streams impacted by I-69 Section 2 are located within the Patoka, Lower White, and Lower East Fork White Watersheds. These watersheds have been severely impacted in the past due to agricultural practices and coal mining. Many of the streams impacted by this project have been channelized and the overbank riparian areas are often cultivated to the top of the banks and planted in row crops. These streams have a high potential for erosion and are susceptible to herbicide and pesticide runoff from adjacent farm fields. In general, the QHEI and HHEI scores for these streams were extremely low for the most part indicating a stressed condition.

2. Proposed Mitigation Site

The 14.5 acres of existing wetland, bottomland, and riparian forest habitats that occur on the Mitigation Site property currently perform functions such as flood storage, retention of sediment particles transported by the East Fork of the White River, water purification, food and cover for wildlife, and groundwater recharge. The proposed functions for the mitigation site will essentially remain the same, but will be expanded in size (i.e., storm water detention via the water control structures) and enhanced in quality for wildlife habitat through diversified woody and herbaceous species plantings, as well as, installation of habitat pole structures.

B. Functional Losses on Proposed Impact Site vs. Functional Gains on Proposed Mitigation Site:

The functional losses that will be incurred through the placement of fill within the wetlands and streams within the I-69 Section 2 project area are considered to be minimal in comparison to the functional gains that will be realized through the construction of the proposed Section 2 mitigation sites. The anticipated functional gains of the proposed mitigation site, namely flood/storm water storage, water purification, groundwater recharge and improved wildlife habitat, will exceed the functional losses identified at the impact sites in terms of quality of resource. Over time, the functional loss of wildlife habitat will also be offset when the newly created mitigation site develops into a more mature wetland, bottomland, and riparian forest. Table 1 compares the functions of the wetlands and streams being impacted by I-69 Section 2 compared to the functions that will be gained by the construction of the proposed Section 2 mitigation site.

Table 1. Comparison of Functions for Impact Sites and the Mitigation Site

Function	I-69 Section 2 Wetland and Stream Impact Areas	Mitigation Site	
		Existing	Proposed
Storm / Flood Water Retention	minor	moderate	expanded capacity
Water Purification	minor	moderate	expanded capacity
Groundwater Recharge	minor	moderate	expanded capacity
Wildlife Food and Cover	minor	moderate	notably improved

C. Functional Replacement:

The Mitigation Site plan offers in-kind wetland replacement for a portion of the impacts resulting from the I-69 Section 2 roadway project. A 3:1 ratio was used for forested and scrub/shrub wetland mitigation at this mitigation site. A ratio of 2:1 for impacted palustrine emergent wetlands was used to compensate for emergent wetlands impacted by the project. Similarly, a ratio of 3:1 was used for impacted upland forest areas to compensate for the upland forests impacted by the project. The Mitigation Site will compensate for a portion of I-69 Section 2 forested, scrub/shrub and emergent wetland impacts through the development of additional wetland habitat and will compensate for a portion of the I-69 Section 2 upland forest impacts through preservation of the existing wetland, bottomland and riparian forested areas and the reforestation of agricultural land to bottomland, riparian, and upland forest habitat. In addition, stream impacts will be mitigated at this site in the form of ephemeral stream channel development and riparian buffer habitat development at a 1:1 ratio. Mitigation for aquatic bed and open water impacts will be offered by way of out-of-kind replacement

through the development of additional emergent, scrub/shrub and forested wetland habitats, which will provide greater functional values than the impacted water resources.

Collectively, the Mitigation Site will include the development of approximately 1.9 acres of emergent wetlands, 3.5 acres of scrub/shrub wetlands, 1.4 acres of forested wetlands, 59.2 acres of bottomland forests (of which 12.8 acres will be riparian habitat mitigation), 31.2 acres of upland forest, and 1.5 acres (5,568 linear feet) of ephemeral stream channel development, as well as, preservation of 14.5 acres of existing wetland, bottomland, and riparian forested habitat, 17.5 acres of early succession forest land, and 39.6 acres of upland forest. Riparian habitat enhancement will be performed along 2,672 linear feet of the East Fork of the White River. In addition, this mitigation site includes approximately 0.6 acres of existing roadway easements.

III. Site Selection

The Mitigation Site property is within the Lower East Fork White River USGS 8-digit watershed (05120208) and a portion of the site is located within the 100-year floodplain of the East Fork of the White River. Existing elevations on the property range from approximately 418 feet at the lowest point in the proposed wetland mitigation areas to approximately 505.5 feet at the top of the bluff in the proposed upland forest mitigation area. The areas to receive wetland habitat development are generally flat, ranging from approximately 418 to 422.5 feet above mean sea level.

The majority of the 170.9 acre Mitigation Site property has been disturbed through land clearing and agricultural practices (See Photographs in Attachment 3). Land use adjacent to the mitigation site includes agricultural fields and woodlots to the west, east and south. The northern boundary of the site is bordered by the East Fork of the White River channel. There is a small amount of residential land adjacent to the site along the southern and eastern boundaries of the site. In addition, there are no airports located within 10,000 feet of the site.

Existing wetlands located on and adjacent to the Mitigation Site are primarily classified in the National Wetland Inventory (NWI) as palustrine forested wetlands (PFO). The mitigation site is to be designed such that additional palustrine forested (PFO), palustrine scrub/shrub (PSS), and palustrine emergent (PEM) wetland habitat areas will be created.

Hydrology for the Mitigation Site will be provided primarily via East Fork of the White River, which borders the northern boundary of the mitigation site. Communication with the land owners indicates that the northern half of the mitigation site (bottomland area) frequently is inundated by floodwaters from the East Fork of the White River. In addition, the existing wetland habitat areas located within the northern half of the property, at approximately the same elevations as the proposed wetland mitigation areas, indicates that wetland development areas of the mitigation site will have sufficient hydrology to support a wetland community. Under typical flood conditions associated with multiple annual rain events, floodwaters will inundate the lower elevations of this mitigation site. As the floodwater recedes, water is retained in local depressions within the site and within the existing wetland habitat areas. Currently, approximately 14.5 acres of the site consist of existing wetland, bottomland, and riparian forest habitat. The design plans found in Attachment 4 provide a site plan illustrating existing conditions. The upland areas of this Mitigation Site do not receive any floodwaters from the river channel.

Data showing daily river gage heights were obtained for the previous 20-years from the Shoals and Petersburg gages, which are the nearest White River gages upstream and downstream from the mitigation site that record historic gage readings. Utilizing the daily water level elevation at each river gage, an estimated daily water level elevation was computed for the mitigation site. It is estimated

that all areas of the mitigation site at or below 422 feet above mean sea level were inundated by floodwaters for an average of 8.8% of the growing season (April 1 to September 30) over the past 20 years. This includes nearly all areas proposed for wetland mitigation at this site.

The climate data for the Mitigation Site is based on the climate history in the city of Petersburg, Indiana, which is the closest incorporated city to the mitigation site. Average high temperatures range from 38° F in January to 87° F in July. Average low temperatures range from 21° F in January to 67° F in July. May is generally the wettest month, receiving an average of 5.1 inches of rainfall. Average yearly precipitation is approximately 44.5 inches (Source: weather.com). The Mitigation Site is located within Plant Hardiness Zone 6a, where minimum temperatures are mild at -5 to -10 deg F.

IV. Site Protection Instrument

The current land owner of the mitigation site is Debra The property will be purchased by way of fee simple title from the current landowner for the construction of the Mitigation Site by the Indiana Department of Transportation (INDOT). INDOT will be responsible for the construction and post construction monitoring of this mitigation site for success. After 10 years of post construction monitoring have been completed on the mitigation site, INDOT or an approved consultant will conduct InWRAP assessments on the wetland mitigation areas to identify if the Mitigation Site has sufficiently replaced the functions and values of the impacted wetlands. Proof will be provided that a restrictive covenant for the 170.9 acre mitigation site (legal description boundary) has been recorded for the property. These assessments will be required prior to approval of the Mitigation Site as part of the I-69 Sections 2 and 3 Umbrella Mitigation Bank.

V. Baseline Information

The responsible parties for the Mitigation Site are listed below:

Mitigation Site Developer/Owner:
Indiana Department of Transportation
Ecology and Waterway Permitting Section
Office of Environmental Services
Government Building North, Room N642
100 North Senate Avenue
Indianapolis, Indiana 46204-2249

Contact Person for Applicant:
INDOT Ecology Unit - Senior Environmental Manager - (317) 232-5206

Consultant Preparing Permit Application:
Bernardin, Lochmueller and Associates, Inc.
6200 Vogel Road
Evansville, Indiana 47715

Contact Person for Consultant:
Jeremy Kieffner – (800) 423-7411

Current Property Owner(s):
Debra
PO Box 112
Oakland City, Indiana 47660

The Mitigation Site consists of approximately 170.9 acres. The location of the Mitigation Site is as follows: Indiana: Pike County, Sandy Hook Quadrangle, Jefferson Township, T1N, R7W, Eastern Half of Section 4. Attachments 1 and 2 show the proposed Mitigation Site on the USGS Topographic Map and 2005 Aerial Photograph respectively.

Soils/Substrate:
The majority of the soils within the northern half (bottomland area) of the Mitigation Site consist of frequently flooded Haymond silt loam, Lindside silt loam, Nolin silty clay loam, Petrolia silty clay loam, and Stonelick fine sandy loam, which have experienced tilling for agricultural row crop plantings for many years. The soils within the southern half (upland area) of the mitigation site consist of Alvin fine sandy loam, Ayrshire fine sandy loam, Bloomfield loamy fine sand, Gilpin silt loam and Otwell silt loam, which are currently in upland forest habitat and pasture land. Trenching and recompaction along of the northern boundary of the mitigation site will be completed to disable any tiles that may be located in the mitigation site area. This plan does not involve the importation of soils from off-site to function as a seed bank. Flooding from the East Fork of the White River does deposit silt on the surface of the northern half of the mitigation site.

Detailed baseline information for the I-69 Section 2 impact sites will be provided as a part of the I-69 Section 2 and 3 permit applications.

VI. Determination of Credits

Through minor excavation and grading at the Mitigation Site, an additional area of 6.8 acres of jurisdictional wetland will be added to the existing 14.5 acres of wetland, bottomland, and riparian forest habitats. At 6.8 acres of wetland development, the wetland areas to be gained satisfy a portion of the total I-69 Section 2 target mitigation. In addition, 1.5 acres (5,568 linear feet) of stream channel development, 12.8 acres of riparian habitat development, and 2,672 linear feet of riparian habitat enhancement along the East Fork of the White River will mitigate for a portion of the stream impacts caused by Section 2 of the I-69 project. A total of 90.4 acres of bottomland, riparian and upland forest habitat (including the 12.8 acres of riparian habitat development) will be developed at this mitigation site to mitigate for a portion of the non-wetland forest impacts caused by Section 2. This plan will also preserve 71.6 acres of existing wetland, bottomland, riparian, early succession, and upland forest habitat to compensate for additional portions of the upland forest impacts. The entire Mitigation Site is approximately 170.9 acres.

Table 2 shows the portions of the impacted resources in the I-69 Section 2 project and required mitigation for these impacts that will be mitigated at the Mitigation Site, and the mitigation being offered at this mitigation site. Table 3 summarizes the total I-69 Section 2 impacts and required mitigation, as well as, the percentage of overall Section 2 impacts to be mitigated at this mitigation site.

Table 2. I-69 Section 2 Impact and Target Mitigation Summary (Site)			
Wetland Type	**I-69 Section 2 Impacts to be Mitigated at this Site**	**Mitigation Ratio**	**Mitigation Required**
Palustrine Forest	0.47 acres	3:1	1.4 acres
Palustrine Scrub/Shrub	1.17 acres	3:1	3.5 acres
Palustrine Emergent	0.95 acres	2:1	1.9 acres
Stream Channel Development	1.5 acres 5567.7 Linear feet	1:1	1.5 acres 5567.7 Linear Feet
Stream Riparian Habitat Enhancement	2672.2 Linear feet	1:1	2672.2 Linear Feet
Non-Wetland Forest Habitat Development	90.4 acres	1:1	90.4 acres*
Wetland/Riparian/Upland Habitat Preservation	36.1 acres	2:1	71.6 acres
Existing Easements	------	-----	0.6 acres
Total	**130.6 acres** **8239.9 Linear Feet**		**170.9 acres** **8239.9 Linear feet**

*****This area included 12.8 acres of riparian habitat development

Table 3. I-69 Section 2 Total Impacts and Required Mitigation Summary					
Resource Type	**I-69 Section 2 Total Impacts**	**Req'd Ratio**	**Total Mitigation Required**	**Mitigation Offered**	**Percent of Mitigation Being Completed at This Mitigation Site**
Palustrine Forested	21.63 acres	3:1	64.89 acres	1.4 acres	2.2 %
Palustrine Scrub-Shrub	0.55 acres	3:1	1.65 acres	1.9 acres	115.1 %
Palustrine Emergent	4.49 acres	2:1	8.98 acres	1.9 acres	21.2 %
Palustrine Aquatic Bed	0.79 acres	2:1	1.58 acres	1.6 acres*	100 %
Open Water	3.83 acres	1:1	3.83 acres	---- acres	0%
Streams	69,471 feet	1:1	69,471 feet	8239.9 feet 1.5 acres	11.9 %
Bottomland/Upland Forest	234.2 acres	3:1	702.6 acres	162.0 acres	23.1%
Total	**265.5 acres** **69,471 feet**		**783.5 acres** **69,471 feet**	**170.3 acres** **8239.9 feet**	**21.7%** **11.9 %**

***** Aquatic bed wetland impact will be mitigated out-of-kind with 1.6 acres of scrub-shrub wetland development

VII. Mitigation Work Plan

The following implementation plan addresses the mitigation commitments to take place on the Mitigation Site property.

A. Site Preparation:

1. Plans:

a. Grading:
Grading at the Mitigation Site property will be required to create the water retention berms and the ephemeral stream channels (Attachment 4). Material to be utilized for the

construction of the berms will be taken from the excavated stream channels located on the property. Grading will only occur within existing agricultural fields, therefore, no trees will be removed as a result of the grading activities. Exploratory trenching will be performed along the northern boundary of the mitigation site adjacent to the East Fork of the White River channel, with the exception of within the designated avoidance areas. The material will be placed back in the trenches and recompacted once exploration is complete.

b. Hydrologic Changes:
Excavation within the ephemeral stream channel development areas are the only areas proposed for excavation at the Mitigation Site. The construction of the water retention berms will allow for inundation/saturation of a greater area than that which is currently realized for wetland development. The berms will be placed in five (5) areas as identified on the design plans in Attachment 4. The removal of material and retention of water within these portions of the East Fork of the White River floodway will allow for the development of ephemeral stream channels and inundation/saturation of a greater area than that which is currently realized for wetland development. The site will continue to receive floodwater from the East Fork of the White River under the same hydrologic conditions (i.e., bank overflow conditions) that currently fuel the existing wetland areas. However, this hydrology will be enhanced with the development of the mitigation site by retaining more flood water within the site following flood events, as well as following rain events that do not generate overbank flow.

c. Water Control Structures:
Water retention berms will be placed at multiple locations within the northern half of Mitigation Site to enhance the hydrology of the wetland and ephemeral stream channel mitigation areas. The locations and specifications of these berms will be as identified in the design plans in Attachment 4. These water retention berms will be constructed as overflow structures, which will allow water to flow into the wetland development areas during high water events and prevent the water from flowing entirely out of the wetland development areas when the water recedes. The purpose for these water control structures is to allow the wetland development areas to retain water for a longer duration following rain events and elevate the local groundwater levels to enhance the overall hydrology of the site.

d. Erosion Control:
Silt fences will be used to minimize erosion of disturbed soil surfaces and runoff into the East Fork of the White River and the existing wetland areas during construction. The ephemeral stream channels will be seeded with a swale seed mix and a coconut fiber mat will be placed within the ephemeral stream channels to prevent the seed from being washed out and prevent soil erosion until the seed is established. The water retention berms will be seeded and a coir fiber matting (coconut fiber) will be placed over the berms to prevent the seed from being washed out and prevent soil erosion until the seed is established.

e. Bank Stabilization:
Bank stabilization will be limited to revegetation and installation of coir fiber matting (coconut fiber) on the water retention berms and within the channel and on the banks of the excavated ephemeral stream channels. The remainder of the site that will be disturbed is essentially flat; therefore, no other bank stabilization is anticipated.

f. Equipment:
Excavation and final grading will be accomplished using mechanized equipment (e.g., bulldozer, backhoe, dump truck, etc.). Seedbed preparation will utilize a tiller, harrow or

other suitable machinery. A roller or cultipacker will be used to lightly compact seeded areas following seed application. All bare root tree and shrub seedlings shall be mechanically planted with a tree planting machine.

All mechanized equipment will be pressure-washed at an off-site location to remove any dirt or soil that may be a potential seed source for invasive or non-native plant species prior to entering the site. Any equipment that leaves the site will also be pressure-washed at an off-site location before returning to the site.

g. Site Access Control:
Access to the Mitigation Site during and after construction will be via CR 425 E that intersects the mitigation site in the southwest corner (Attachment 4). Construction entrances will be installed at all entrances off of CR 425 E. Proposed field markings will help to prevent unauthorized access to the site.

h. Field Mark Mitigation Site:
The wetland and riparian mitigation areas will have 4x4 treated posts placed 150 feet apart along the outside borders, as identified on the plans in Attachment 4. These posts will visually show the edge of the wetland and riparian mitigation areas for monitoring and compliance field inspections. Posts will also be placed along the east and west boundary of the site next to the adjacent farm fields between the "Do Not Mow or Spray Signs" as identified on the design plans (Attachment 4). A total of 105 posts will be placed on these borders.

"Do Not Mow or Spray" signs fashioned in accordance with INDOT 2008 Standard Specification 621.06(h) as per Specification 622.20, will be placed along portions of the south, east, and west boundary of the Mitigation Site facing the adjacent parcels. The mitigation design plans in Attachment 4 show the location of these signs. A total of 10 signs will be placed around the property boundary of this mitigation site. These signs will identify the border of the mitigation site and prevent any accidental human disturbance from adjacent landowners.

In addition, one (1) sign that identifies this site as a mitigation site will be placed at the entrance to the mitigation site from CR 425 E according to the design plan in Attachment 4. The sign shall be constructed and designed in accordance with Standard Specification Section 802. This sign shall conform to the details provided in the Special Provision and shall read (see Attachment 5):

INDOT Mitigation Property
Wetland, Stream, Forest,
and Floodway Habitat
Mitigation Site

2. Planting Plan:

The planting plan for the Mitigation Site has been developed in accordance with INDOT 2008 Standard Specifications Sections 621 and 622 and the unique special provisions in Attachment 5. The mitigation site includes 8 planting zones which collectively will consist of 17 canopy tree species, 13 woody shrub species, and 4 seed mixes. Zone A includes the ephemeral stream channel development areas. Zone B includes the wooded riparian buffer area from the top of bank to 25 feet from the top of bank. Zone C includes the wooded riparian buffer area 25 feet

from the top of bank to 50 feet from the top of bank. Zone D includes the emergent wetland areas at elevations between 418 and 422.5 feet. Zone E includes the scrub/shrub wetland area at elevations between 418 and 422 feet. Zone F includes the forested wetland area at elevations between 420.5 and 422 feet. Zone G includes the bottomland forested areas at elevations between 421.5 and 435.5. Zone H includes the upland forested areas at elevations between 457 and 505.5. Attachment 4 contains the design plans showing the planting zone locations. Strict adherence to planting the trees, shrubs, and seed mix species in the appropriate zones is required.

Seedbed Preparation:
Following final grading, seedbed preparation shall consist of multiple tilling as detailed in the Special Provisions (Attachment 5) to eliminate any existing vegetation prior to seeding and tree/shrub planting. An alternative tilling schedule may be approved, provided it adequately eliminates any undesirable plant material.

Herbicide:
Since much of the Mitigation Site will be cleared of vegetation by grading and tilling, the use of herbicides as a pre-planting treatment is not anticipated for the entire site.

Fertilizer:
All Planting Zones A through H will receive an application of 12-12-12 granular fertilizer in accordance with INDOT 2008 Standard Specification 914.03. Fertilizer will be uniformly spread over the mitigation site at a rate of 400 lb/acre prior to or during final tilling. A total of 19.62 tons of fertilizer will be required for the mitigation site.

Seeding and Planting:
All seeds and bare root plants should be obtained from nurseries within American National Standards Institute (ANSI) Plant Hardiness Zones 4, 5 or 6. Potential vendors include, but are not limited to:

Indiana
- Indiana Department of Natural Resources
- J.F. New Native Plant Nursery (Walkerton, IN)
- Heartland Restoration Services, Inc. (Fort Wayne, IN)
- Berg Warner Nursery (Lizton, IN)

Illinois
- Lafayette Home Nursery, Inc. (Lafayette, IL)

Kentucky
- Shooting Star Nursery (Georgetown, KY)

Ohio
- Envirotech Consultants, Inc. (Somerset, OH)

Missouri
- Forrest Keeling Nursery (Elsberry, MO)
- Ripley County Farms (Doniphan, MO)

New York
- Southern Tier Consulting, Inc. (West Clarksville, NY)

Virginia
- Bobtown Nursery (Melfa, VA)

Seeding of herbaceous cover seed mixes shall take place between September 1 and May 25 of the following year. Planting of tree and shrub seedlings shall take place between October 1 and April 15 of the following year provided the seedlings are dormant. If possible, seeding and planting

shall take place immediately after the site has been prepared. In the event this is not possible, a temporary cover shall be established using Seed Mix T in accordance with INDOT Standard Specification 621.06(f) until such time as the permanent seeding and planting can take place. Alternative planting times must be approved by the INDOT Ecology Unit Senior Environmental Manager.

Herbaceous Cover:
All planting zones shall be planted with herbaceous ground cover to reduce weed competition and provide soil stabilization. The herbaceous cover for Zone A will consist of a swale seed mix as indicated in Table 1 in Attachment 5, or a comparable mix of at least seven (7) native graminoid species and ten (10) native forb species. Zones B, C, E, F, and G will consist of a wooded wetland establishment seed mix as indicated in Table 2 in Attachment 5, or a comparable wetland woods herbaceous cover mix consisting of at least nine (9) native graminoid species and six (6) native forb species. Zone D will consist of an emergent wetland seed mix as indicated in Table 3 in Attachment 5, or a comparable mix of at least seven (7) native graminoid species and thirteen (13) native forb species. Zone H will be seeded with annual rye seed. The water retention berms will consist of a slope stabilization seed mix as indicated in Table 4 in Attachment 5, or a comparable mix of at least five (5) native graminoid species. Seeding shall be by broadcast spreading at a rate of 44.53 lbs/acre for the wooded wetland establishment seed mix, 34.78 lbs/acre for the emergent wetland seed mix, 27.72 lbs/acre for the swale seed mix, 40.00 lbs/acre for the annual rye, and 57.63 lbs/acre for the slope stabilization seed mix. Seeding rates are based on pure live seed (PLS). Seeding should take place immediately following seedbed preparation. A roller, cultipacker or light raking shall be used on all seeded areas to ensure adequate seed-to-soil contact. Seeds shall not be more than 1/8 (0.125) inch deep. The seeded areas are to be immediately followed by mulching (see below). Table 4 summarizes the seeding requirements for the project.

Table 4. Mitigation Site Herbaceous Cover Seeding Plan

Planting Zone	Seed Mix	Seeding Rate	Area	Quantity
A	Swale Seed Mix	27.72 lbs/acre	1.5 ac.	41.6 lbs
B, C, E, F, and G	Wooded Wetland Establishment	44.53 lbs/acre	64.1 ac.	2,854.4 lbs
D	Emergent Wetland Seed Mix	34.78 lbs/acre	1.9 ac.	66.1 lbs
H	Annual Rye Grass	40.00 lbs/acre	31.2 ac.	1,248.0 lbs
Water Retention Berms	Slope Stabilization Seed Mix	57.63 lbs/acre	0.3 ac.	17.30 lbs

Trees and Shrubs:
Planting of the bare root tree and shrub seedlings and 3-gallon container grown tree seedlings is to be completed following seeding of the herbaceous cover. The seedlings will be transported, stored and handled in accordance with INDOT Specifications 914.08. All seedlings shall be kept moist during transportation. Storage of bare root seedlings shall be in a cool dark place until the date they are to be installed. The roots shall not be allowed to dry out before they are planted. Planting shall follow immediately after site preparation. Only that number of seedlings which can reasonably be planted during a single day may be removed from storage. Seedling trees and shrubs will be planted in accordance with sound horticultural practices with respect to moisture, root pruning, planting depth, planting hole size, soil compaction, etc. All bare root tree and shrub seedlings shall be mechanically planted. All 3-gallon container grown tree seedlings shall be manually planted. Seedlings shall be planted so the root collar is even with the ground surface.

A total of 5,716 tree seedlings and 1,428 shrub seedlings shall be planted within Zones B and C. Of these tree seedlings, 4,288 shall be bare root and 1,428 shall be 3-gallon container grown tree seedlings. This will provide an approximate ratio of bare root to 3-gallon container grown seedlings of 3:1. A total of 1,428 shrub seedlings shall also be planted throughout Zones B and C. All shrub species shall be bare root seedlings. A total of 2,382 bare root shrub seedlings shall be planted within Zone E. A total of 612 tree seedlings shall be planted within Zone F. Of these tree seedlings, 460 shall be bare root and 152 shall be 3-gallon container grown tree seedlings. This will provide an approximate ratio of bare root to 3-gallon container grown seedlings of 3:1. A total of 13,725 bare root tree seedlings and 3,445 bare root shrub seedlings shall be planted within Zone G, which will provide for a 4:1 tree to shrub ratio. A total of 9,452 bare root tree seedlings and 2,370 bare root shrub seedlings shall be planted within Zone H, which will provide for a 4:1 tree to shrub ratio. The Mitigation Site will have a total of 29,505 tree seedlings and 9,625 shrub seedlings planted in all proposed forest and scrub/shrub development zones.

Mechanical planting of the bare root tree and shrub seedlings shall be in a random manner with regard to species composition within Zones B and C to avoid clustering at approximately 10-foot spacing between seedlings and between planting rows. A 20-foot gap shall remain between every third and fourth mechanically-planted bare root tree seedling to allow space for manual planting of a 3-gallon container grown seedling with 10-foot spacing between the adjacent seedlings. The tree seedling density following the planting of the bare root and 3-gallon container grown seedlings will be approximately 436 stems/acre. Mechanical planting of the bare root shrub seedlings in Zones B and C shall also be in a random manner with regard to species composition to avoid clustering with a density of approximately 109 stems per acre. Shrubs shall be planted midway between every fourth and fifth tree seedling and within each planting row. This will provide a 4:1 tree to shrub ratio and prevent an overly dense understory layer. Shrubs will be planted within the planting rows rather than between the rows to allow enough space between each row for future maintenance or mowing, if necessary.

Mechanical planting of the bare root shrub seedlings shall be in a random manner with regard to species composition within Zone E to avoid clustering at approximately 8-foot spacing between seedlings and between planting rows. The shrub seedling density following the planting of the bare root seedlings will be approximately 680 stems/acre.

Mechanical planting of the bare root tree seedlings shall be in a random manner with regard to species composition within Zone F to avoid clustering at approximately 10-foot spacing between seedlings and between planting rows. A 20-foot gap shall remain between every third and fourth mechanically-planted bare root tree seedling to allow space for manual planting of a 3-gallon container grown seedling with 10-foot spacing between the adjacent seedlings. The tree seedling density following the planting of the bare root and 3-gallon container grown seedlings will be approximately 436 stems/acre.

Mechanical planting of the bare root tree seedlings shall be in a random manner with regard to species composition within Zones G and H to avoid clustering at approximately 12-foot spacing between seedlings and between planting rows. The tree seedling density following the planting of the bare root seedlings will be approximately 303 stems/acre. Mechanical planting of the bare root shrub seedlings in Zones G and H shall also be in a random manner with regard to species composition to avoid clustering with a density of approximately 76 stems per acre. Shrubs shall be planted midway between every fourth and fifth tree seedling and within each planting row. This will provide a 4:1 tree to shrub ratio and prevent an overly dense understory layer. Shrubs will be planted within the planting rows rather than between the rows to allow enough space

between each row for future maintenance or mowing, if necessary. No trees or shrubs will be planted within the avoidance areas located within Zone G.

Tree and shrub planting specifications shall be as outlined in the Special Provisions located in Attachment 5. Table 5 indicates the tree species, wetland status, quantities, planted form (e.g., bare root), on-centering spacing and grouping arrangements for each planting zone.

Table 5 Mitigation Site Tree and Shrub Planting Plan

Species	Indicator Status	Count	Form	On-Center Spacing	Grouping
Zone B Wooded Riparian Area from Top-of-Bank back to 25 feet from Top-of-Bank Area: 6.3 acres					
Tree Species					
Ulmus americana American Elm	FACW-	514	bare root	10' x 10'	Equal and random species distribution throughout the planting zone. A 20-foot gap shall remain between every 3rd and 4th bare root tree seedling to allow for manual planting of 3-gallon container grown seedling. Planting rows shall follow the patterns identified in Attachment 4.
		172	3-gallon		
Acer saccharinum Silver maple	FACW	514	bare root		
		172	3-gallon		
Populus deltoides Cottonwood	FAC+	514	bare root		
		172	3-gallon		
Platanus occidentalis Sycamore	FACW	514	bare root		
		172	3-gallon		
Shrub Species					
Cornus obliqua Pale Dogwood	FACW+	229	bare root	10' x 40'	Equal and random species distribution throughout the planting zone. Shrubs shall be planted midway between every 4th and 5th tree seedling within each planting row.
Lindera benzoin Common Spicebush	FACW-	229	bare root		
Sambucus canadensis Elderberry	FACW-	229	bare root		
Zone C Wooded Riparian Area 25 feet from Top-of-Bank to 50 feet from Top-of-Bank Area: 6.5 acres					
Tree Species					
Carya laciniosa Shellbark Hickory	FACW	532	bare root	10' x 10'	Equal and random species distribution throughout the planting zone. A 20-foot gap shall remain between every 3rd and 4th bare root tree seedling to allow for manual planting of 3-gallon container grown seedling. Planting rows shall follow the patterns identified in Attachment 4.
		177	3-gallon		
Quercus palustris Pin Oak	FACW	532	bare root		
		177	3-gallon		
Quercus bicolor Swamp White Oak	FACW+	532	bare root		
		177	3-gallon		
Carya illinoinensis Pecan	FACW	532	bare root		
		177	3-gallon		
Shrub Species					
Cornus obliqua Pale Dogwood	FACW+	236	bare root	10' x 40'	Equal and random species distribution throughout the planting zone. Shrubs shall be planted midway between every 4th and 5th tree seedling within each planting row.
Lindera benzoin Common Spicebush	FACW-	236	bare root		
Sambucus canadensis Elderberry	FACW-	236	bare root		
Zone E Scrub / Shrub Area Area: 3.5 acres					
Cephalanthus occidentalis Buttonbush	OBL	397	bare root	8' x 8'	Equal and random species distribution throughout the planting zone. Planting rows shall follow the patterns
Lindera benzoin Common Spicebush	FACW-	397	bare root		

Species	Indicator Status	Count	Form	On-Center Spacing	Grouping
Sambucus canadensis Elderberry	FACW-	397	bare root		identified in Attachment 4.
Cornus obliqua Pale Dogwood	FACW+	397	bare root		
Physocarpus opulifolius Ninebark	FACW-	397	bare root		
Amorpha fruticosa Indigobush	FACW-	397	bare root		
Zone F Wetland Forest Area Area: 1.4 acres					
Quercus palustris Pin Oak	FACW	115	bare root	10' x 10'	Equal and random species distribution throughout the planting zone. A 20-foot gap shall remain between every 3rd and 4th bare root tree seedling to allow for manual planting of 3-gallon container grown seedling. Planting rows shall follow the patterns identified in Attachment 4.
		38	3-Gallon		
Quercus bicolor Swamp White Oak	FACW+	115	bare root		
		38	3-Gallon		
Carya illinoinensis Pecan	FACW	115	bare root		
		38	3-Gallon		
Betula nigra River Birch	FACW	115	bare root		
		38	3-Gallon		
Zone G Bottomland Forest Area Area: 46.4 acres Note: Avoidance areas (2.1 acres) will not receive tree or shrub plantings					
Tree Species					
Quercus palustris Pin Oak	FACW	1,489	bare root	12'x 12'	Equal and random species distribution throughout the planting zone. Planting rows shall follow the patterns identified in Attachment 4.
Quercus shumardii Shumard Oak	FACW-	1,489	bare root		
Quercus macrocarpa Bur Oak	FAC-	1,489	bare root		
Quercus alba White Oak	FACU	1,489	bare root		
Carya ovata Shagbark Hickory	FACU	1,489	bare root		
Carya illinoinensis Pecan	FACW	1,489	bare root		
Juglans nigra Black Walnut	FACU	1,489	bare root		
Populus deltoides Cottonwood	FAC+	1,489	bare root		
Ulmus americana American Elm	FACW-	1,489	bare root		
Shrub Species					
Cornus drummondii Roughleaf Dogwood	FAC	670	bare root	12' x 48'	Equal and random species distribution throughout the planting zone. Shrubs shall be planted midway between every 4th and 5th tree seedling within each planting row.
Cornus racemosa Gray Dogwood	NL	670	bare root		
Ilex verticillata Common Winterberry	FACW+	670	bare root		
Physocarpus opultfolius Ninebark	FACW-	670	bare root		
Viburnum lentago Nannyberry	FAC+	670	bare root		

Species	Indicator Status	Count	Form	On-Center Spacing	Grouping
Zone H Upland Forest Area Area: 31.2 acres					
Tree Species					
Quercus rubra Red Oak	FACU	2,363	bare root	12' x 12'	Equal and random species distribution throughout the planting zone. Planting rows shall follow the patterns identified in Attachment 4.
Quercus alba White Oak	FACU	2,363	bare root		
Liriodendron tulipifera Tuliptree	FACU+	2,363	bare root		
Prunus serotina Black Cherry	FACU	2,363	bare root		
Shrub Species					
Amelancbter arborea Serviceberry	FACU	790	bare root	12' x 48'	Equal and random species distribution throughout the planting zone. Shrubs shall be planted midway between every 4th and 5th tree seedling within each planting row.
Corylus Americana American Hazelnut	FACU	790	bare root		
Viburnum prunifolium Blackhaw	FACU	790	bare root		

Mulching:
Mulch material for Zones B, C, D, E, F, G, and H will conform to INDOT 2008 Standard Specifications 914.05(a). Material will be applied such that it covers the site at an average rate of 2 tons/acre. The mulch material shall be secured by crimping as per Specification 621.05(c) to hold the seed in place and prevent removal during periods of high water. Mulch shall be crimped into place immediately upon placement. Mulch will be applied in Planting Zones B, C, D, E, F, G, and H for a total of 194.4 tons. Zone A and the water retention berms will receive a coconut fiber mat to stabilize the stream channels and berms and prevent the seed from being washed out prior to establishment.

Watering:
The seeded and planted areas will be watered at a frequency and duration sufficient enough to ensure that 80% aerial coverage of herbaceous species are established by June 30 of the summer following seeding activities if seeding occurs in the fall or winter, or 60 days after completion of seeding activities if seeding occurs in the spring. If sufficient coverage of herbaceous ground cover is not established on these deadlines, all deficient areas shall be reseeded and watered until 80% coverage is achieved. If irrigation is required for watering of this site, it is anticipated that water will be extracted from the East Fork of the White River channel utilizing a temporary water pump that will be removed upon completion of watering. The special provisions in Attachment 5 provide a detailed specification outlining watering requirements for the Mitigation Site.

Exotic and Undesirable Species Control:
While volunteer woody and herbaceous species will undoubtedly become established within this mitigation site, the potential for exotic and/or native invasive species of concern to the Indiana Department of Natural Resources (such as purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), reed grass (*Phragmites spp.*), garlic mustard (*Alliaria petiolata*), autumn olive (*Elaeagnus umbellata*), crown vetch (*Coronilla varia*) or cattails (*Typha sp.*)) is minimal. If a threatening infestation is identified during monitoring, an appropriate control method shall be recommended to remove the invading species and/or prevent further encroachment.

Given the current progression of succession evident throughout much of the Mitigation Site, it is reasonable to expect that creating similar hydrologic conditions in the northern half of this site near the existing wetland areas may promote additional high density colonization by voluntary tree species. The establishment of native volunteer woody species will be allowed within the mitigation site, provided their presence does not adversely affect the viability potential of the planted species to the extent that success criteria cannot be met. If it is foreseen that such native establishment poses a threat to the planted woody species, corrective measures in the form of mechanical clearing or herbicide application may be necessary.

Schedule:
The Mitigation Site is proposed for construction in the Summer of 2009 pending the approval of the I-69 Sections 2 and 3 Umbrella Mitigation Bank Agreement.

Construction Monitoring:
Monitoring of the construction activities associated with the mitigation site project (including grading, pre-seeding/planting site preparation, planting and post-planting treatments) are to be conducted by INDOT Ecology Unit or personnel contracted by INDOT. Construction monitoring will include on-site management of all activities associated with construction including maintenance of records (i.e., bill of lading for seed and planting materials, fertilizer, herbicides, etc.), documentation of dates of completed activities and documented approval of decisions concerning deviations from the proposed design plan.

B. As-Built Conditions:

1. Post-construction Documentation:

Within six weeks of completion of site preparation and planting, a report documenting the as-built conditions of the site will be submitted to the United States Army Corps of Engineers (USACE) and the Interagency Review Team (IRT). The IRT is comprised of representatives from the Indiana Department of Environmental Management (IDEM), the United States Fish and Wildlife Service (USFWS), the Indiana Department of Natural Resources (IDNR), the United States Environmental Protection Agency (USEPA), and the Natural Resources Conservation Service (NRCS). The report should provide evidence through a bill of lading or invoice that the proper mitigation plant species were delivered in the correct numbers and were viable at the time of planting. If it was necessary to retain the delivered plants in storage for a period of time prior to planting, a sufficient description of the duration, conditions under which they were stored and nursery attention provided to ensure viability should be included. A brief description of the methods used to plant the bare root plants including verification of grouping and spacing should be provided. The report will document any and all notable deviations from the plan and reasons for such deviations. The report will also include documentation that the required erosion control measures were implemented and maintained.

Photo documentation of the tree and shrub plantings and post planting mulch application should also be submitted. At this time, permanent photographic stations that document each of the planting zones should be established. The station location should be identified on a set of plans, including the direction in which the photos were taken. These stations will become the reference sites for future monitoring report photographs.

2. As-built Plans:

A set of as-built plans will be submitted with the post-construction documentation to either confirm that the site was graded and planted according to the plan, or to document any deviations that took place.

VIII. Maintenance Plan

No maintenance is planned for the Mitigation Site. Should it be determined through monitoring and consultation with the USACE and the IRT that maintenance is required, INDOT will be responsible for implementing maintenance or remedial activities. These activities may include but are not limited to herbicide treatment to eliminate invasive species, mowing, reseeding, or replanting.

IX. Performance Standards

A. Minimum Success Criteria:

1. Wetlands:

Wetland Delineation Report:
Prior to final approval of the Mitigation Site as part of the Umbrella Mitigation Bank, a wetland delineation report must be completed on the mitigation site and submitted to the USACE for approval. This report must include a survey of the wetland delineation boundaries. The final credited acres of the mitigation area shall be adjusted based on the delineated boundary. The wetland delineation shall follow the most recently adopted USACE Wetland Delineation Manual.

Vegetation:
Through monitoring report documentation, it should be demonstrated that at the end of the 10-year monitoring period, the following vegetative success criteria are met.

a. At least 340 stems/acre must be maintained within Zone E and at least 240 stems/acre must be maintained within Zone F. Volunteer tree and shrub species may be counted if they appear to be generally similar in age and condition to the planted seedlings. Volunteer tree species must either be one of the planted species or be included in the following list: Shellbark Hickory (*Carya laciniosa*), Bitternut Hickory (*Carya cordiformis*), Silver Maple (*Acer saccharinum*), Green Ash (*Fraxinus pennsylvanica*), Eastern Cottonwood (*Populus deltoides*), Slippery Elm (*Ulmus rubra*), or American Elm (*Ulmus Americana*).
b. Greater than 50% (percent of aerial cover) of the dominant vegetation species for Zones D, E and F are hydrophytic, thus meeting the current federal criteria for vegetation.
c. No single species within the wetland mitigation planted zones (Zones D, E and F) should constitute more than 25% of the surviving species. This criteria does not apply to the existing wetland, bottomland forest, upland forest and riparian areas.
d. The combined surface area coverage of reed canary grass (*Phalaris arundinacea*) and cattail (*Typha spp.*) shall not cover more than 15% of the mitigation wetland areas (Zones D, E and F).
e. The mitigation wetland areas (Zones D, E and F) are free of the following exotic species: purple loosestrife (*Lythrum salicara*) and common reed (*Phragmites australis*).
f. Native vegetation excluding cattails (*Typha spp.*) must cover at least 70% of the Zones D, E and F.
g. No more than 10% of the surface area coverage of the mitigation wetland areas (Zones D, E and F) may be open water, bare ground or a combination of the two.

Hydrology:
Through monitoring report documentation, it should be demonstrated that at the end of the 10-year monitoring period, the following hydrology success criteria are met.

a. The hydrology of the wetland mitigation areas (Zones D, E and F) should match the proposed hydrology in Section III of this mitigation and monitoring plan with regards to source, frequency and duration. At a minimum, the wetland areas should be inundated and/or saturated within the upper 12" of the soil for a duration greater than or equal to 5% of the growing season under normal conditions. Since the mitigation plan is essentially at the same elevations as the existing wetland areas, the newly constructed wetland areas will experience the same hydrologic flooding cycle that the existing wetland areas do.
b. The site hydrology of the wetland mitigation areas (Zones D, E and F) should be self-sustaining. The long term hydrologic requirements of the site do not require seasonal or episodic manipulations of water levels to ensure success. The frequency and duration of flooding from the East Fork of the White River is sufficient to maintain minimum hydrologic conditions.

2. Streams:

Success criteria for compensatory mitigation for streams shall be based on the functional/bio-assessment of the stream being mitigated and address the following elements:

a. The channel length of mitigation (Zone A) will be equal to the channel length identified in the Mitigation Work / Implementation Plan section above.
b. The mean channel width, depth, channel slope, sinuosity, bankfull dimensions, and bank characteristics of the stream channel mitigation area shall match the mitigation design plans in Attachment 4 with the range of natural variablity.
c. Riparian buffers (Zones B and C) shall be planted along all developed stream channel mitigation areas (Zone A) as identified on the plans in Attachment 4. The vegetation success criteria within these zones should match the following.
    1. At least 240 stems/acre must be maintained (Zones B and C). Volunteer tree species may be counted if they appear to be generally similar in age and condition to the planted seedlings. Volunteer tree species must either be one of the planted species or be included in the following list: Shagbark Hickory (*Carya ovata*), Shellbark Hickory (*Carya laciniosa*), Bitternut Hickory (*Carya cordiformis*), Silver Maple (*Acer saccharinum*), Sugar Maple (*Acer saccharum*), Green Ash (*Fraxinus pennsylvanica*), White Ash (*Fraxinus Americana*), Eastern Cottonwood (*Populus deltoides*), Red Oak (*Quercus rubra*), Post Oak (*Quercus stallata*), White Oak (*Quercus alba*), Slippery Elm (*Ulmus rubra*), American Elm (*Ulmus Americana*), or Black Locust (*Robinia pseudoacacia*).
    2. No single species within the riparian mitigation planted zones (Zones B and C) should constitute more than 40% of the surviving species.
    3. The combined surface area coverage of reed canary grass (*Phalaris arundinacea*) and cattail (*Typha spp.*) shall not cover more than 15% of the mitigation area.
    4. The mitigation area is free of the following exotic species: purple loosestrife (*Lythrum salicara*) and common reed (*Phragmites australis*).
    5. Native vegetation excluding cattails (*Typha spp.*) must cover at least 70% of the Zones A, B, and C.
d. Overall stream mitigation should be self-sustaining.

3. Bottomland / Upland Forests:

   Success criteria for the bottomland and upland forested mitigation areas at the end of the 10-year monitoring period shall be as follows:

   Vegetation:

   a. At least 240 stems/acre (approximately 80% survival of the planted tree species) must be maintained (Zone G and H). Volunteer tree species may be counted if they appear to be generally similar in age and condition to the planted seedlings. Volunteer tree species must either be one of the planted species or be included in the following list: Shagbark Hickory (*Carya ovata*), Shellbark Hickory (*Carya laciniosa*), Bitternut Hickory (*Carya cordiformis*), Silver Maple (*Acer saccharinum*), Sugar Maple (*Acer saccharum*), Green Ash (*Fraxinus pennsylvanica*), White Ash (*Fraxinus Americana*), Eastern Cottonwood (*Populus deltoides*), Red Oak (*Quercus rubra*), Post Oak (*Quercus stallata*), White Oak (*Quercus alba*), Slippery Elm (*Ulmus rubra*), American Elm (*Ulmus Americana*), or Black Locust (*Robinia pseudoacacia*).
   b. No single tree species within the forested mitigation planted zones should constitute more than 25% of the 240 stems within the bottomland forested mitigation area (Zone G) and no more than 40% of the 240 stems within the upland forested mitigation areas (Zones H). If it is determined that a dense stand of voluntary tree species has developed, but is not posing a threat to the survival of the planted tree species, the percent of stems of a single tree species criteria shall not apply.
   c. The combined surface area coverage of reed canary grass (*Phalaris arundinacea*) and cattail (*Typha spp.*) shall not cover more than 15% of the mitigation area.
   d. The bottomland / upland mitigation areas (Zones G and H) are free of the following exotic species: purple loosestrife (*Lythrum salicara*) and common reed (*Phragmites australis*).
   e. Native vegetation excluding cattails (*Typha spp.*) must cover at least 70% of Zone G and H.

a. <u>Project Specific Success Criteria:</u>

   1. Function and Value Measurements:

      The targeted function of providing wetland and woodland wildlife habitat within the East Fork of the River floodplain is directly associated with the continual growth and survival of the planted tree and shrub species. Monitoring of the survival and growth of the planted species on an annual basis will be the primary means of measuring the functional success of the mitigation site. The target wildlife habitat functions are to be considered successful if the minimum success criteria outlined above have been met and show signs of sustainability at the end of the ten (10) year monitoring period. The ability of the mitigation site to temporarily store surface water when the East Fork of the White River floods, will be assessed through direct observation of this mitigation site during monitoring following flood events.

   2. Achievability:

      The target functions of the Mitigation Site are considered to be achievable over time. The establishment of additional habitat within the East Fork of the White River floodplain will be realized in a short period of time once the additional wetland and riparian acreage is exposed to a frequent and sufficiently long hydroperiod. Achieving the goal of a mature wetland/floodplain/upland forest capable of providing shelter and food for wildlife will not begin to be fully realized for 10 or more years until the planted trees have grown substantially. In the

intervening time period, this site will provide successional habitat for a variety of species dependent upon such habitat.

X. Monitoring Requirements

A. Monitoring Reports:

Annual monitoring reports will be prepared for the Mitigation Site until it has been approved as part of the I-69 Sections 2 and 3 Umbrella Mitigation Bank. A tracking system will be developed using GIS to track the success of this mitigation site.

1. Timing:

Annual inspections will be completed each year at any time during the 1st, 2nd, 3rd, 5th, 7th, and 10th growing seasons following planting. In any year planting was conducted, monitoring shall take place no sooner than the end of the growing season following planting. Wetland delineations shall be conducted during the 3rd, 5th, 7th, and 10th growing seasons to determine the actual boundaries of established and restored wetlands within the mitigation site. The monitoring reports will be submitted to the USACE and the IRT by December 31 of each year in which monitoring was conducted for the 10 year monitoring period.

2. Methods:

a. Data collection points:
Each assessment period shall include randomly established data collection points within the planted portions of the mitigation area designated as Zones A, B, C, D, E, F, G and H. Each data collection point should measure 0.25 acre in size and include a count of planted alive and dead tree species for the purposes of determining overall survival rates. The number of volunteer tree species should also be documented within each of the data collection points. Each of the data points established within the wetland portion of the Mitigation Site (Zones D, E and F) should also be documented using the routine wetland determination data forms from the most recently adopted USACE Wetland Delineation Manual.

b. Photography:
A single photograph should be taken at each data collection point to visually record the conditions at the time of data collection. Photographs should also be taken from the permanent stations established as part of the post-construction documentation.

3. Documentation:

a. Each mitigation report should include a copy of the mitigation plan sheet with any annotations that spatially illustrate conditions observed (e.g., areas of high plant mortality, areas of volunteer dominance, exotic encroachment, unique wildlife habitat usage).
b. A brief description of the following features of the mitigation area should be provided.
(1) Indicate which areas within the wetland mitigation area (Zones D, E and F) show soil conditions that are inundated, saturated or not subject to hydric conditions under normal circumstances.
(2) Determine and document whether the vegetation within the entire mitigation site (Zones A, B, C, D, E, F, G and H) meets both the minimum criteria and performance standards established in Section IX. Include survival rates of planted species, composition and extent of volunteer species, presence of any exotic/undesirable species, and overall percent cover based on information from the data collection points.

c. Provide a brief description of any remedial measures taken to ensure the site meets the minimum criteria, performance standards, and overall goals and objectives of the mitigation project (i.e., invasive species removal, replanting, additional measures to protect against specific wildlife damage).

4. Responsible Parties:

INDOT or a designated agent will be responsible for submitting the required annual monitoring reports.

B. Assessment of Function/Value Replacement:

Functional assessments should be documented based on qualitative observations related to the sites ability to store flood waters and provide habitat for wildlife.

C. Release From Monitoring:

1. The site will be monitored for a minimum of ten (10) years as outlined above. In order to be approved as part of the Umbrella Mitigation Bank, it must be demonstrated that the success criteria for the wetland, stream, and forested mitigation areas have been met at the end of the ten (10) year period. A final monitoring report should be submitted to the USACE and the IRT requesting the site be approved. If the appropriate agencies confirm that the success criteria for the wetland, stream, and forest mitigation areas have been met, then the credits for the entire mitigation site may be released.

   If the appropriate agencies determine that the success criteria for the wetland, stream, and forested mitigation areas have not been met at the end of this ten (10) year monitoring period, the credits will be suspended until remedial actions have been developed and implemented to correct the problems. A monitoring report shall be required for each consecutive year until two (2) sequential reports indicate that all success criteria have been met. Following the approval of the mitigation site, coordination with USACE and the IRT will be conducted to establish continual management practices.

2. The proposed final monitoring report should include the required documentation from the previous year's monitoring effort, as well as a formal wetland delineation for the wetland and stream mitigation areas (Zones A, B, C, D, E and F) of the site. This report should also provide evidence that the goals of mitigation have been met and that the site generally represents a self-sustaining ecosystem. Results of InWRAP assessments performed on the wetland mitigation areas during the final monitoring should be included in the report to identify if this mitigation site has sufficiently replaced the functions and values of the impacted wetlands. If requested, INDOT, or their designated agent, will meet with the USACE and IRT members to confirm the mitigation plan has been executed and is successful.

3. Provide proof that a restricted covenant for the 170.9 acre Mitigation Site (legal description boundary) has been recorded for the property.

XI. Long-Term Management Plan

A short-term management and maintenance plan will be submitted to the USACE and the IRT following construction and planting of the site if it is deemed necessary to implement such measures to assure woody plant survival and control of exotics and invasive species. Long-term management

and maintenance of the Mitigation Site will be completed by INDOT until an agency or organization has been identified and approved by the USACE and the IRT to assume control and/or ownership of the mitigation site for long-term management and maintenance.

XII. Adaptive Management Plan

The primary challenge anticipated with the Mitigation Site will be the control of volunteer grass and weed species and prevention of such species competing with the planted tree and shrub seedlings. The other challenge anticipated with this mitigation site is the amount of flooding that may occur on the site after planting has been completed causing the seed mixes and tree and shrub seedlings to be washed away. There are no other identified challenges with the use of this site as mitigation for the I-69 Section 2 project.

A. Reporting Protocol:

If a success criteria stated above is not met for all or any portion of the mitigation site in any year, INDOT, or their designated agent, shall prepare an analysis of the cause(s) of failure and, if determined necessary by the USACE and the IRT, propose remedial action for pre-approval.

B. Response to Unsuccessful Remediation:

In the event that the USACE and the IRT determine the mitigation cannot be successfully achieved at the intended site, INDOT will coordinate with these agencies to discuss an alternative mitigation strategy on-site, or investigate the need to propose suitable mitigation at other eligible sites.

XIII. Financial Assurances

A. Construction:

All property within the Mitigation Site will be owned by the State of Indiana prior to construction. INDOT will be responsible for securing the necessary funding through state and/or federal sources to purchase the property and construct the mitigation site according to plan.

B. Monitoring:

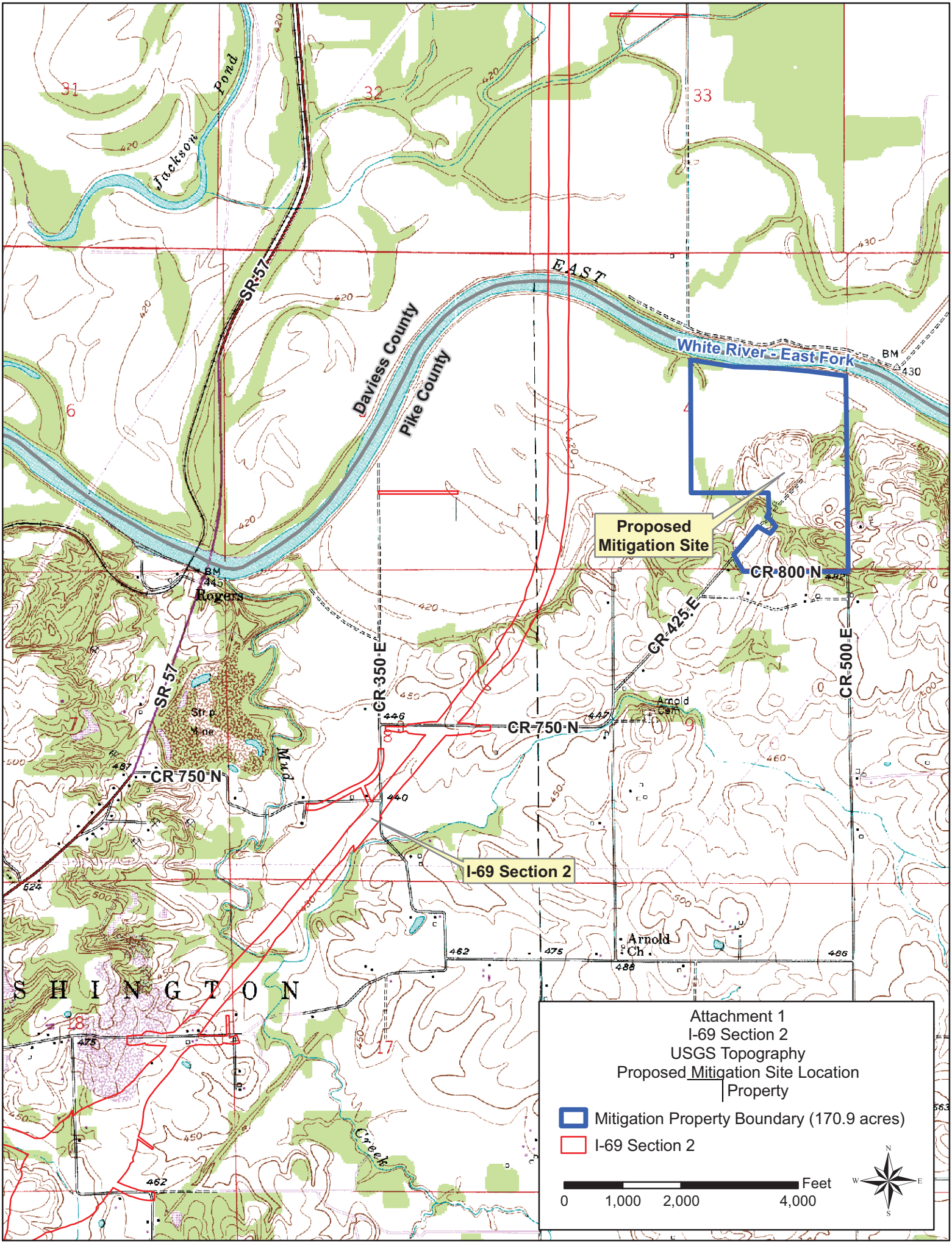
INDOT will be responsible for securing the necessary funding to conduct post-construction monitoring activities including preparation and filing of the required annual monitoring report.

C. Contingency:

The contractor will be responsible for guaranteeing the establishment of the planted seed mixes and survival of the planted tree and shrub species for a period of two years following completion of the planting as warranted in the special provision (Attachment 5). In the event that replanting is required or mowing and/or herbicide treatment is needed to control invasive species, the contractor will be responsible for such activities for a period of two years following completion of the planting. The contractor will be held to a two year warranty period and will be required to post a Warranty Bond in favor of INDOT for a minimum of 150% of the total cost of the warranted items. The warranty bond shall be provided within 14 days of acceptance of the Mitigation Site.

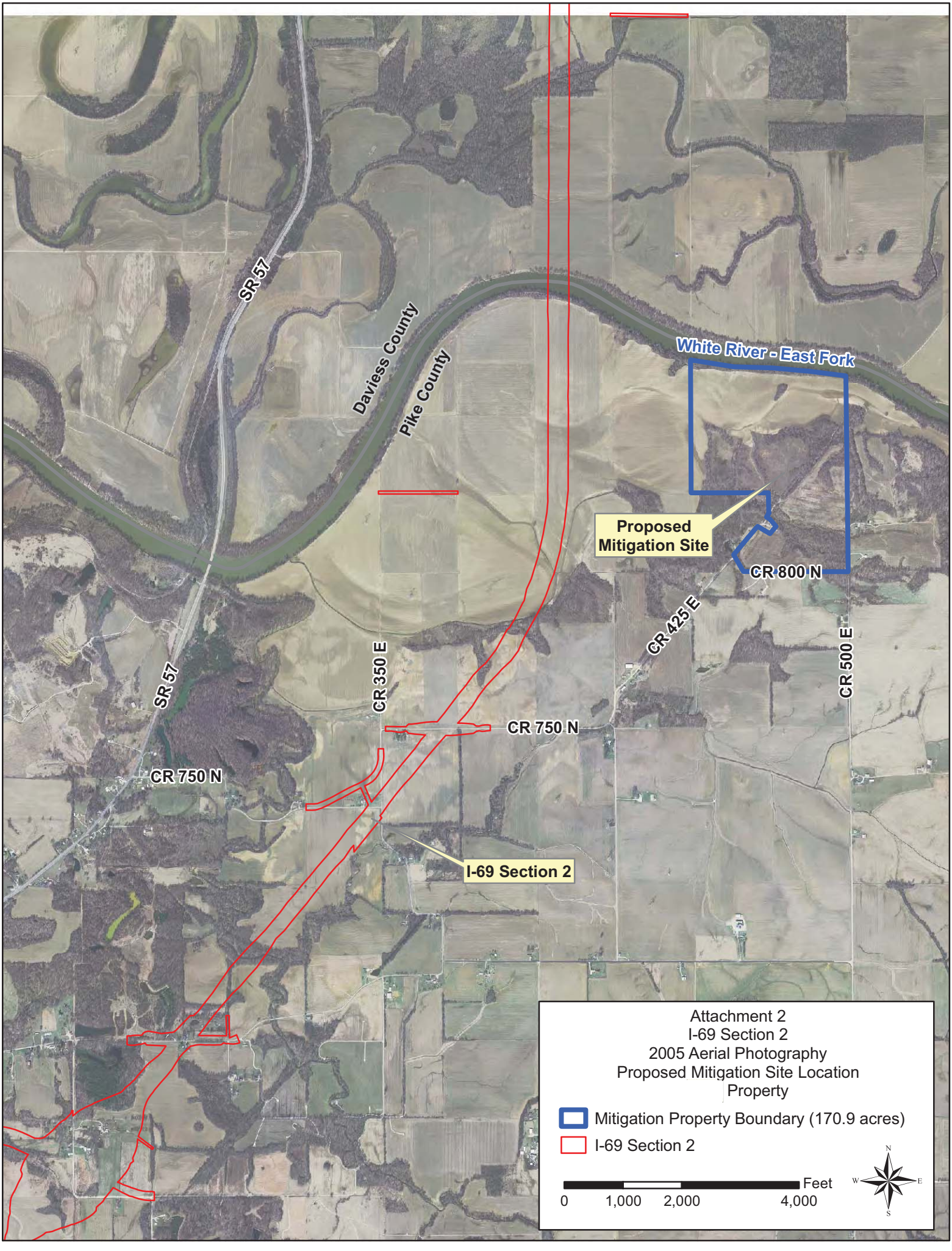
Attachment 1

I-69 Section 2
USGS Map Showing the Mitigation Site Location


Jackson Pond
SR-57
EAST
White River - East Fork
Daviess County
Pike County
BM 430
Proposed Mitigation Site
CR-800-N
CR-425-E
CR-500-E
CR-350-E
CR-750-N
Rogers
Str. p. Mine
Arnold Cem.
Arnold Ch.
I-69 Section 2
SHINGTON
Creek
Attachment 1
I-69 Section 2
USGS Topography
Proposed Mitigation Site Location
Property
Mitigation Property Boundary (170.9 acres)
I-69 Section 2
Feet
0
1,000
2,000
4,000
N
W
E
S

Attachment 2

I-69 Section 2
2005 Aerial Photograph showing the Mitigation Site Location


SR 57
Daviess County
Pike County
White River - East Fork
Proposed Mitigation Site
CR 800 N
CR 425 E
CR 500 E
SR 57
CR 350 E
CR 750 N
CR 750 N
I-69 Section 2
Attachment 2
I-69 Section 2
2005 Aerial Photography
Proposed Mitigation Site Location
Property
Mitigation Property Boundary (170.9 acres)
I-69 Section 2
Feet
0
1,000
2,000
4,000
N
W
E
S

Attachment 3

I-69 Section 2
Mitigation Site Photographs

Property Photos

Photo 1: Looking east at bottomland mitigation area.

Photo 2: Looking southwest at wetland woods preservation area.

Photo 3: Looking northwest at upland forest development area.

Photo 4: Looking east at upland forest development area.

Photo 5: Looking northeast at early succession preservation area.

Photo 6: Looking west at early succession preservation area.

Property Photos (continued)

Photo 7: Looking north at field in bottomland/riparian development area.

Photo 8: Looking east at field in bottomland/riparian development area.

Photo 9: Looking south at scrub-shrub and emergent wetland development area.

Photo 10: Looking northwest at scrub-shrub and emergent wetland development area.

Photo 11: Looking south at forested wetland development area.

Photo 12: Looking west at forested wetland development area.

Attachment 4

I-69 Section 2
Mitigation Site
Design Plans

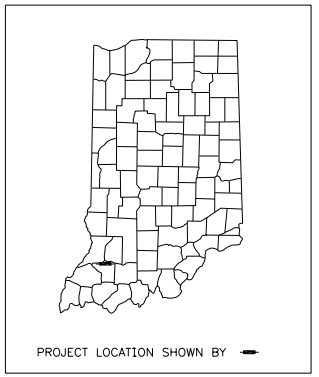
PROJECT	DESIGNATION
0710905	0710905
CONTRACT	
IR-30351	

INDIANA DEPARTMENT OF TRANSPORTATION

MITIGATION PLANS

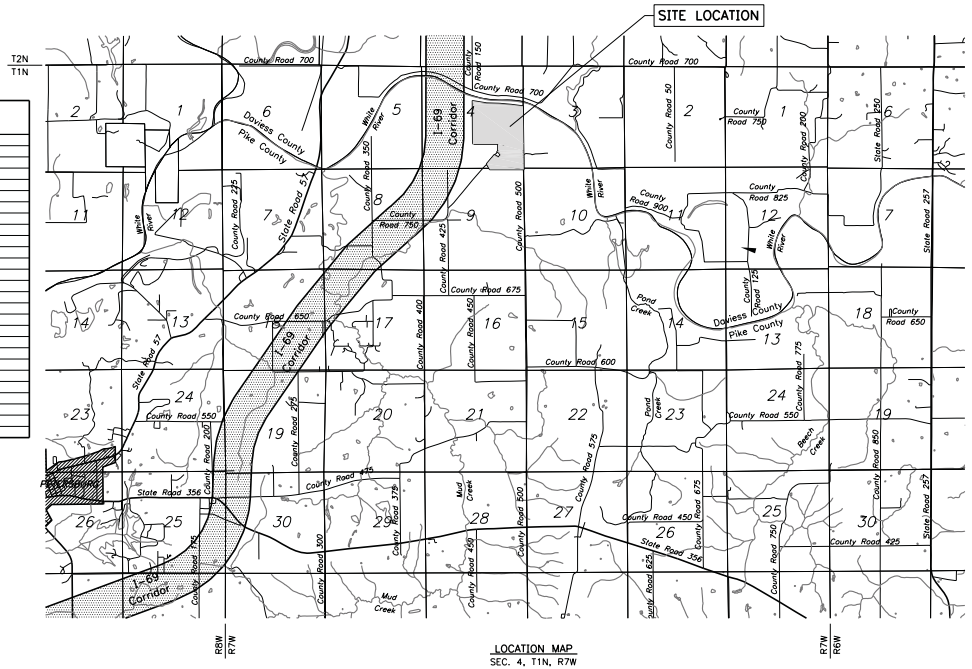
PROJECT NO. 0710905 P.E.
PROJECT NO. 0710905 R/W
PROJECT NO. 0710905 CONST.

TRAFFIC DATA	
A.A.D.T. (2002)	V.P.D.
A.A.D.T. (2022)	V.P.D.
D.H.V. (2022)	V.P.H.
DIRECTIONAL DISTRIBUTION	%
TRUCKS	% A.A.D.T.
	% D.H.V.
DESIGN DATA	
DESIGN SPEED	mph
PROJECT DESIGN CRITERIA	
FUNCTIONAL CLASSIFICATION	
RURAL/URBAN	
TERRAIN	
ACCESS CONTROL	

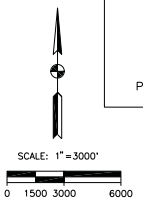


SWPPP INDEX

ITEM NO.	DESIGNATION	PLAN SHEET NO.
A1	PLAN INDEX	1
A2	PLAT	3
A3	PROJECT NARRATIVE	12
A4	VICINITY MAP	1
A5	PROJECT SITE LEGAL DESCRIPTION	1 & 12
A6	LOT LOCATIONS & SITE IMPROVEMENTS	3-4
A7	HYDROLOGIC UNIT CODE	12
A8	WATER QUALITY PERMITS	12
A9	STORM WATER DISCHARGE POINTS	4-7
A10	ADJACENT WETLANDS, LAKES AND WATER COURSES	3
A11	RECEIVING WATERS	12
A12	GROUNDWATER DISCHARGES	12
A13	FLOODPLAIN, FLOODWAYS, AND FLOODWAY FRINGES	3
A14	PEAK DISCHARGE	Attached Separately
A15	ADJACENT LANDUSE	12
A16	LOCATIONS OF DISTURBED AREAS	4-7
A17	EXISTING VEGETATIVE COVER	12
A18	SOIL MAPS	3
A19	PROPOSED STORM WATER SYSTEM	12
A20	OFF-SITE CONSTRUCTION ACTIVITIES	12
A21	SOIL STOCKPILES, BORROW AND/OR DISPOSAL AREAS	4-6
A22	EXISTING SITE TOPOGRAPHY	4
A23	PROPOSED FINAL TOPOGRAPHY	4-7
B1-B15	CONSTRUCTION COMPONENT	12
C1-C5	POST-CONSTRUCTION COMPONENT	12



LOCATION MAP
SEC. 4, T1N, R7W



NOTE: THESE PLANS ARE PREPARED USING ENGLISH DIMENSIONS

[INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS DATED 2008 TO BE USED WITH THESE PLANS]

BERNARDIN · LOCHMUELLER & ASSOC., INC.
6200 Vogel Road Evansville, Indiana 47715
(812)479-6200 / fax: (812)479-6262

PLANS PREPARED BY: BERNARDIN LOCHMUELLER & ASSOC. (812)479-6200
6200 Vogel Road, Evansville, IN 47715 PHONE NUMBER

CERTIFIED BY: 12/08/08 DATE

APPROVED FOR LETTING: CHIEF, DIVISION OF DESIGN DATE

JASON A. DUPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

HORIZONTAL SCALE	BRIDGE FILE
AS SHOWN	
VERTICAL SCALE	DESIGNATION
---	0710905
SURVEY BOOK	SHEETS
	1 of 25
CONTRACT	PROJECT
IR-30351	0710905

S:\Surveys\103-0001\2008_Wetlands\Corn\MIT_DWGS\CORN-TITLE-SHEET.dwg 12/08/08 12:13 mrlehle

UTILITIES

NO UTILITIES IN PROJECT LIMITS

1-800-382-5544
CALL TOLL FREE
1-800-428-5200
FOR CALLS OUTSIDE OF INDIANA

GENERAL NOTES

	All earth shoulders, median areas, and cut and fill slopes shall be plain or mulch seeded except where sodding is specified.
	The final cross section of the grading contract will be the original cross sections of the paving contract. However, partial or complete cross sections shall be taken if necessary to determine the actual excavation quantities.
	The paper relocation will be cross sectioned by the Engineer before construction.
	Existing asphalt pavement located outside the construction limits, between Sta. ___ and Sta. ___, shall be removed as directed.
	The quantity of peat excavation shown of the plans has been estimated on the basis of theoretical cross sections by using treatment of existing fills, treatment by removal, or treatment by displacement, where each treatment applies.
	Sheet Signs and Posts shall not be ordered until the exact number of signs and length of each post has been determined upon field investigation.
	All Signs shall be marked for identification. The Marking Material shall be either Scotch Lite, Seibulite, Reflexite or approved equal. The identifying message shall consist of INDOT and the Month and Year the sign is installed. The Message Copy shall consist of White or Black Lettering (of a minimum of 25mm in height) on Black or White Background respectively. The Marking for Sheet Signs shall be placed on the lower corner closest to the center-line of the road. The Marking for Panel Signs shall be placed on the bottom panel on the end closest to the centerline of the roadway. The Marking shall not be covered by the Sign's support after installation of the sign.
	Existing Exit Direction Signs and Stop Signs shall not be removed until the new ones are at the job site and ready to install. These two signs shall be seen by traveling motorists at all times. At least one Advance Guide Sign is required in advance of the Exit Point.
	All design shall be in accordance with the Standard Specifications for Structural Supports for Highway Signs, Lum-inaires and Traffic Signals, Latest Edition.
	The Contractor will have an Option of Either Using our Standard Installation or Transpo's Break-Safe Type A and Type B Couplings for Sign Supports (Wide Flange)

•• REPRESENTS GENERAL NOTES REQUIRED

INDEX

SHEET NO.	DESIGNATION
1	TITLE SHEET
2	INDEX & GENERAL NOTES
3	SOILS / WETLAND INFORMATION
4	OVERALL SITE LAYOUT
5	STREAM LAYOUT WEST
6	STREAM LAYOUT EAST
7	WETLAND LAYOUT
8	STREAM PROFILES 1-4
9	STREAM PROFILES 5-8
10	DETAILS
11	HABITAT POLE DETAILS
12	STORM WATER POLLUTION PREVENTION PLAN INFORMATION SHEET
13	STORM WATER POLLUTION PREVENTION PLAN LAYOUT
14	STORM WATER POLLUTION PREVENTION PLAN DETAILS
15-25	CROSS SECTION STREAMS 1-8

REVISIONS

SHEET NO.	DATE	REVISED
11	2/23/09	Remove Raptor Platform & Add Raptor Exclusion Cone
2	06/05/09	Add Avoidance Area Control Points Table
4	06/05/09	Remove Stream 4 Alignment, Revised Quantities, Added Avoidance Areas With No Tree Plantings, Remove Tile Exploration From Avoidance Areas
5	06/05/09	Remove Stream 4 Alignment And Associated Riparian Planting Zones, Added Avoidance Areas With No Tree Plantings
6	06/05/09	Remove Stream 4 Alignment And Associated Riparian Planting Zones, Added Avoidance Areas With No Tree Plantings
8	06/05/09	Delete Stream 4 Profile
13	06/05/09	Remove Stream 4 Alignment And Associated Riparian Planting Zones, Added Avoidance Areas With No Tree Plantings
19	06/05/09	Delete Stream 4 Cross Section

WATER CONTROL BERM CENTERLINE POINTS

WATER CONTROL BERM CENTERLINE POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
140	305450.95	659223.52	Berm CL
141	305430.70	659324.64	Berm CL
142	305453.42	659392.19	Berm CL
143	305445.46	659547.13	Berm CL
145	305405.11	659905.68	Berm CL
146	305409.87	660074.49	Berm CL
150	305399.25	660152.78	Berm CL
151	305387.95	660304.40	Berm CL
155	305360.43	660676.70	Berm CL
156	305360.49	660751.60	Berm CL
157	305340.59	660942.50	Berm CL
160	304215.28	659945.46	Berm CL
161	304158.33	659982.87	Berm CL

AVOIDANCE AREA CONTROL POINTS ⚠1

AVOIDANCE AREA CONTROL POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
170	305358.89	660156.37	Boundary
171	305246.26	660150.68	Boundary
172	305242.85	660222.21	RP (70'R)
173	305239.44	660293.75	Boundary
174	305351.71	660299.10	Boundary
175	305355.30	660227.73	RP (70'R)
176	304777.80	660896.01	Boundary
177	304774.24	661004.75	Boundary
178	304845.10	661008.32	RP (70'R)
179	304915.96	661011.88	Boundary
180	304919.90	660905.04	Boundary
181	304848.85	660900.53	RP (70'R)
182	305197.78	661290.06	Boundary
183	305190.80	661409.07	Boundary
184	305259.90	661414.34	RP (70'R)
185	305329.01	661419.61	Boundary
186	305338.58	661309.10	Boundary
187	305268.18	661299.58	RP (70'R)

STREAM ALIGNMENT POINT TABLES

STREAM 1 ALIGNMENT POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
10	305408.73	659366.48	P.O.T.
11	305297.44	659344.45	R.P. (100'R)
12	305345.39	659443.64	P.I.
13	305202.77	659546.10	R.P. (100'R)
14	305156.44	659446.88	P.I.
15	304772.72	659431.47	R.P. (300'R)
16	304959.42	659674.09	P.I.
17	304586.97	659856.46	P.O.T.

STREAM 2 ALIGNMENT POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
20	305109.41	659304.58	P.O.T.
21	304959.62	659401.71	R.P. (150'R)
22	305109.67	659425.15	P.I.
23	305070.99	659545.02	P.O.T.

STREAM 3 ALIGNMENT POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
25	304953.17	659899.28	P.O.T.
26	305207.00	660072.73	R.P. (300'R)
27	304887.80	660063.39	P.I.
28	304985.26	660594.99	R.P. (75'R)
29	305064.99	660597.10	P.I.
30	305040.38	660659.89	P.O.T.

STREAM 5 ALIGNMENT POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
40	304733.81	661467.66	P.O.T.
41	304625.12	661440.87	R.P. (100'R)
42	304716.32	661391.03	P.I.
43	304740.89	661273.27	R.P. (100'R)
44	304640.26	661313.49	P.I.
45	304548.23	660794.17	R.P. (100'R)
46	304648.69	660765.11	P.I.
47	304664.10	660605.83	R.P. (100'R)
48	304544.39	660605.44	P.I.
49	304579.40	660462.11	R.P. (50'R)
50	304629.23	660477.42	P.I.
51	304629.62	660442.10	P.O.T.

STREAM 6 ALIGNMENT POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
55	304608.31	661537.43	P.O.T.
56	304896.53	661629.84	R.P. (100'R)
57	304874.17	661738.27	P.I.
58	305008.30	661705.42	P.O.T.

STREAM 7 ALIGNMENT POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
60	305061.88	661412.91	P.O.T.
61	305044.09	660967.34	R.P. (100')
62	305151.53	660937.21	P.I.
63	304982.58	660749.61	P.O.T.
64	304789.45	660607.21	P.O.T.
65	304753.95	660282.99	R.P. (200'R)
66	304591.67	660402.91	P.I.
67	304506.08	660247.57	P.O.T.
68	304435.36	660090.62	P.O.T.

STREAM 8 ALIGNMENT POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
70	304759.46	659272.23	P.O.T.
71	304541.08	659324.21	R.P. (150'R)
72	304638.79	659446.61	P.I.
73	304484.93	659508.41	Node Description

REVISION	DATE	DESCRIPTION
⚠1	06/05/09	Add Avoidance Area Control Points Table

JASON A. DUDLOW REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER 12/08/08 DATE

DESIGNED: JAD DRAWN: RAP

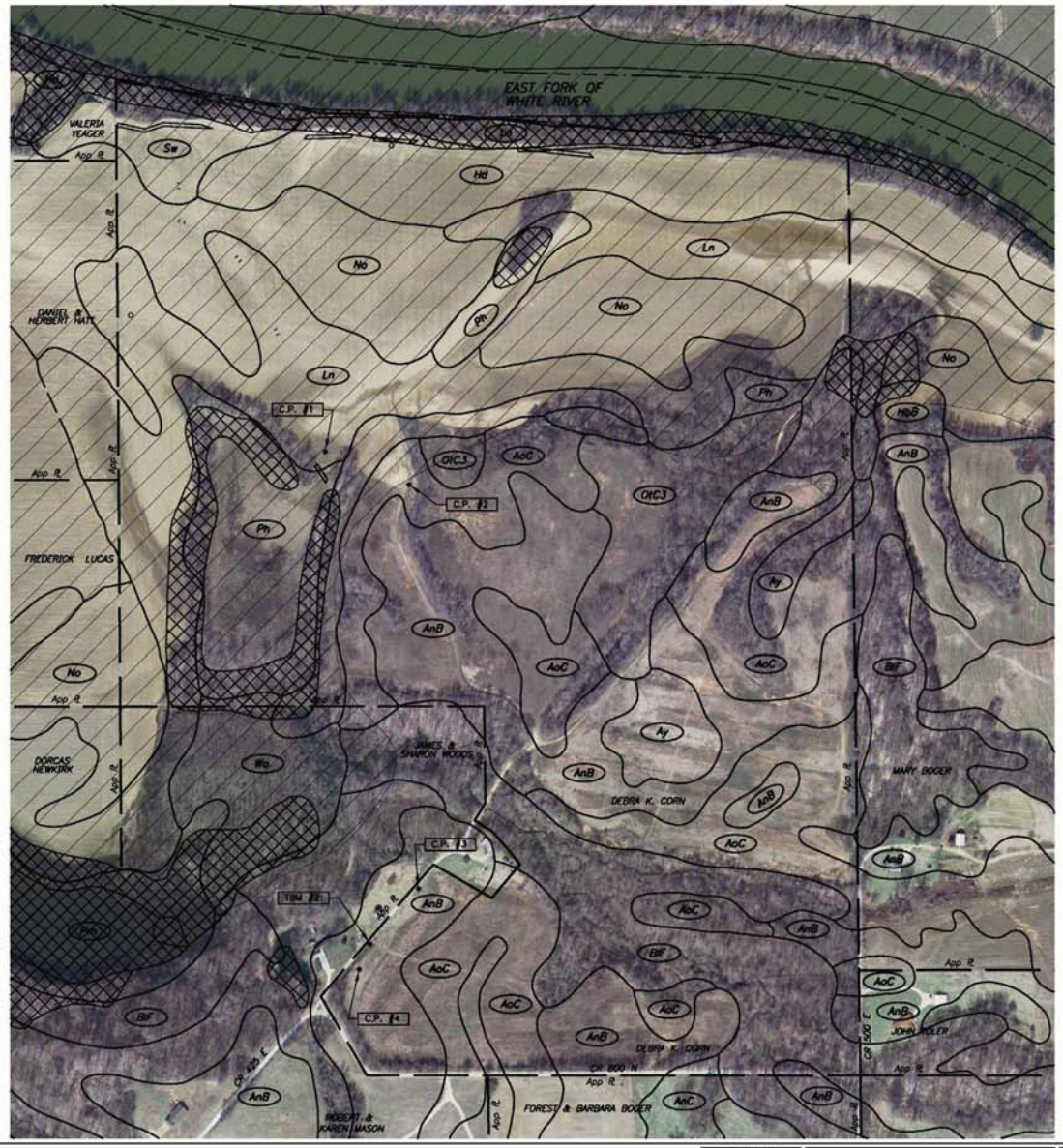
CHECKED: DJR CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

INDEX & GENERAL NOTES

HORIZONTAL SCALE	BRIDGE FILE
VERTICAL SCALE	DESIGNATION 0710905
SURVEY BOOK	SHEETS 2 of 25
CONTRACT IR-30351	PROJECT 0710905

S:\Survey\103-0001\2008_Biennial\Corr\MT_DWG\Index.dwg 06/08/09 10:28 mattford



0 75 150 300 450

USDA SOIL SURVEY CHARACTERISTICS

AnB–Alvin fine sandy loam: Slopes are 2 to 6 percent. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink–swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria.

AoC–Alvin–Bloomfield complex: Slopes are 6 to 15 percent. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink–swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria.

Ay–Ayrshire fine sandy loam, loamy substratum: Slopes are 0 to 2 percent. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink–swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, March. Organic matter content in the surface horizon is about 1 percent. This soil does not meet hydric criteria.

BIF–Bloomfield loamy fine sandy: Slopes are 25 to 50 percent. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink–swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil does not meet hydric criteria.

GnF–Gilpin silt loam: Slopes are 15 to 30 percent. This component is on hills. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink–swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria.

Hd–Haymond silt loam: Slopes are 0 to 2 percent. This component is on flood plains. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink–swell potential is low. This soil is frequently flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria.

Ln–Lindside silt loam: Slopes are 0 to 2 percent. This component is on flood plains. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink–swell potential is moderate. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during January, February, March. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria.

No–Nolin silty clay loam: Slopes are 0 to 2 percent. This component is on flood plains. The parent material consists of fine–silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink–swell potential is low. This soil is frequently flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

OIC3–Otwell silt loam: Severely eroded. Slopes are 6 to 12 percent. This component is on lake plains. Depth to a root restrictive layer, fragipan, is 12 to 20 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is moderate. Shrink–swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 1 percent. This soil does not meet hydric criteria.

Ph–Petrolia silty clay loam: Slopes are 0 to 1 percent. This component is on backswamps. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink–swell potential is moderate. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March. Organic matter content in the surface horizon is about 2 percent. This soil meets hydric criteria.

Sw–Stonelick fine sandy loam: Slopes are 0 to 2 percent. This component is on flood plains. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink–swell potential is low. This soil is frequently flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil does not meet hydric criteria.

Wo–Wakeland silt loam: Slopes are 0 to 2 percent. This component is on flood plains. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink–swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, March. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria.

LEGEND

- Denotes NWI Mapped Wetlands
- Denotes IDNR Mapped Floodplain
- XX — NRCS Soil Type

JASON A. DuPONT — REGISTERED — No. PE10303058 — STATE OF INDIANA — PROFESSIONAL ENGINEER

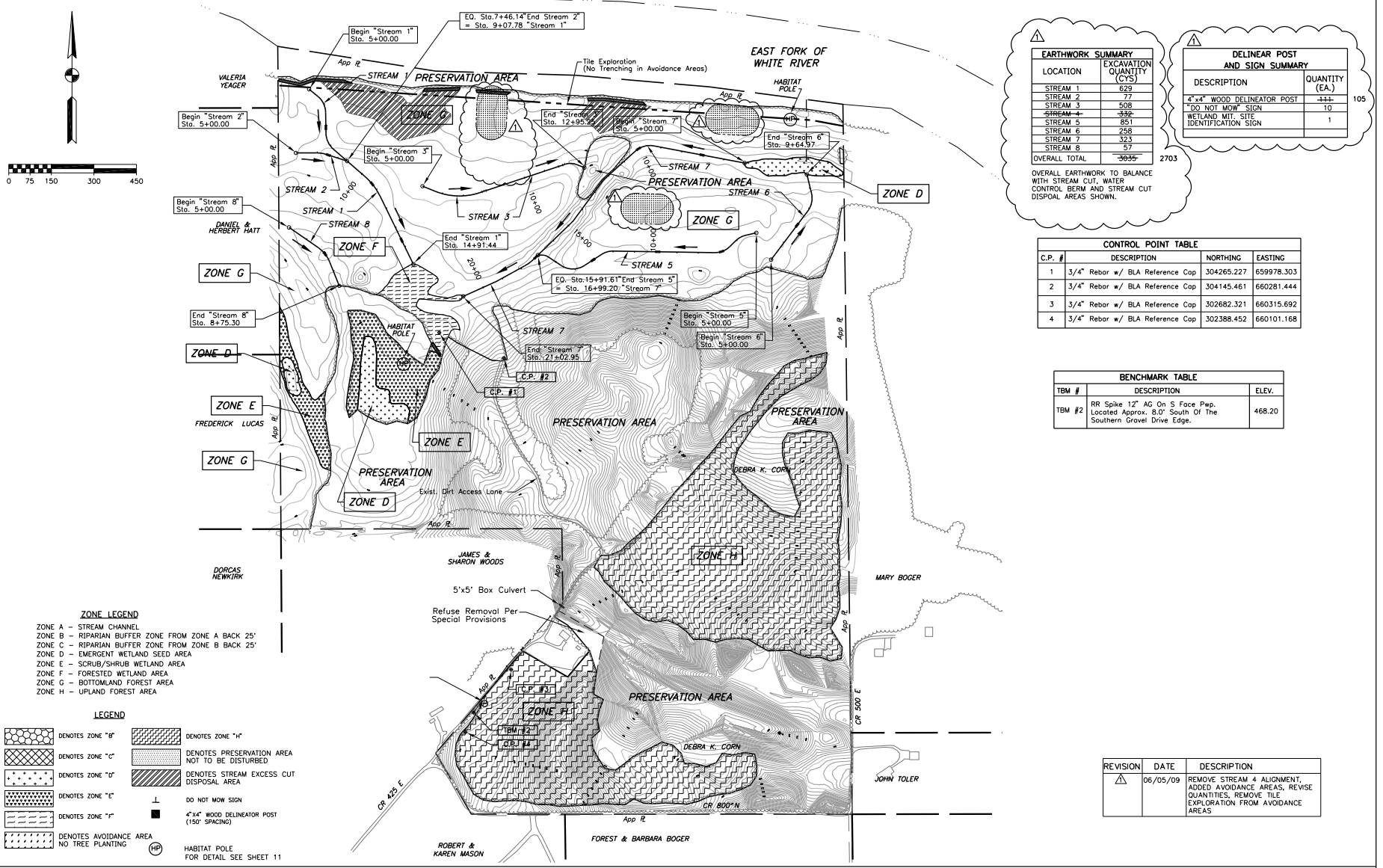
RECOMMENDED FOR APPROVAL: Jason A. DuPont — DESIGN ENGINEER — 12/08/08 DATE

DESIGNED: JAD | DRAWN: RAP | CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

SOILS/WETLAND INFORMATION

HORIZONTAL SCALE	BRIDGE FILE
1"=150'	
VERTICAL SCALE	DESIGNATION
--	0710905
SURVEY BOOK	SHEETS
	3 of 25
CONTRACT	PROJECT
IR-30351	0710905



EARTHWORK SUMMARY	
LOCATION	EXCAVATION QUANTITY (CYS)
STREAM 1	629
STREAM 2	77
STREAM 3	508
~~STREAM 4~~	~~332~~
STREAM 5	851
STREAM 6	258
STREAM 7	323
STREAM 8	57
OVERALL TOTAL	~~3035~~ 2703

OVERALL EARTHWORK TO BALANCE WITH STREAM CUT, WATER CONTROL BERM AND STREAM CUT DISPOAL AREAS SHOWN.

DELINEAR POST AND SIGN SUMMARY	
DESCRIPTION	QUANTITY (EA.)
4"x4" WOOD DELINEATOR POST	~~111~~ 105
"DO NOT MOW" SIGN	10
WETLAND MIT. SITE IDENTIFICATION SIGN	1

CONTROL POINT TABLE			
C.P. #	DESCRIPTION	NORTHING	EASTING
1	3/4" Rebar w/ BLA Reference Cap	304265.227	659978.303
2	3/4" Rebar w/ BLA Reference Cap	304145.461	660281.444
3	3/4" Rebar w/ BLA Reference Cap	302682.321	660315.692
4	3/4" Rebar w/ BLA Reference Cap	302388.452	660101.168

BENCHMARK TABLE		
TBM #	DESCRIPTION	ELEV.
TBM #2	RR Spike 12" AG On S Face Pwp. Located Approx. 8.0' South Of The Southern Gravel Drive Edge.	468.20

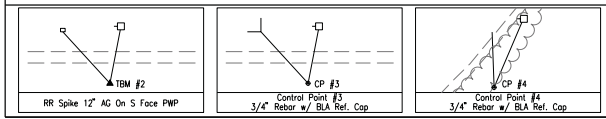
ZONE LEGEND

ZONE A – STREAM CHANNEL
ZONE B – RIPARIAN BUFFER ZONE FROM ZONE A BACK 25'
ZONE C – RIPARIAN BUFFER ZONE FROM ZONE B BACK 25'
ZONE D – EMERGENT WETLAND SEED AREA
ZONE E – SCRUB/SHRUB WETLAND AREA
ZONE F – FORESTED WETLAND AREA
ZONE G – BOTTOMLAND FOREST AREA
ZONE H – UPLAND FOREST AREA

LEGEND

DENOTES ZONE "B"
DENOTES ZONE "C"
DENOTES ZONE "D"
DENOTES ZONE "E"
DENOTES ZONE "F"
DENOTES AVOIDANCE AREA NO TREE PLANTING
DENOTES ZONE "H"
DENOTES PRESERVATION AREA NOT TO BE DISTURBED
DENOTES STREAM EXCESS CUT DISPOSAL AREA
DO NOT MOW SIGN
4"x4" WOOD DELINEATOR POST (150' SPACING)
HP HABITAT POLE FOR DETAIL SEE SHEET 11

REVISION	DATE	DESCRIPTION
1	06/05/09	REMOVE STREAM 4 ALIGNMENT, ADDED AVOIDANCE AREAS, REVISE QUANTITIES, REMOVE TILE EXPLORATION FROM AVOIDANCE AREAS



JASON A. DUPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

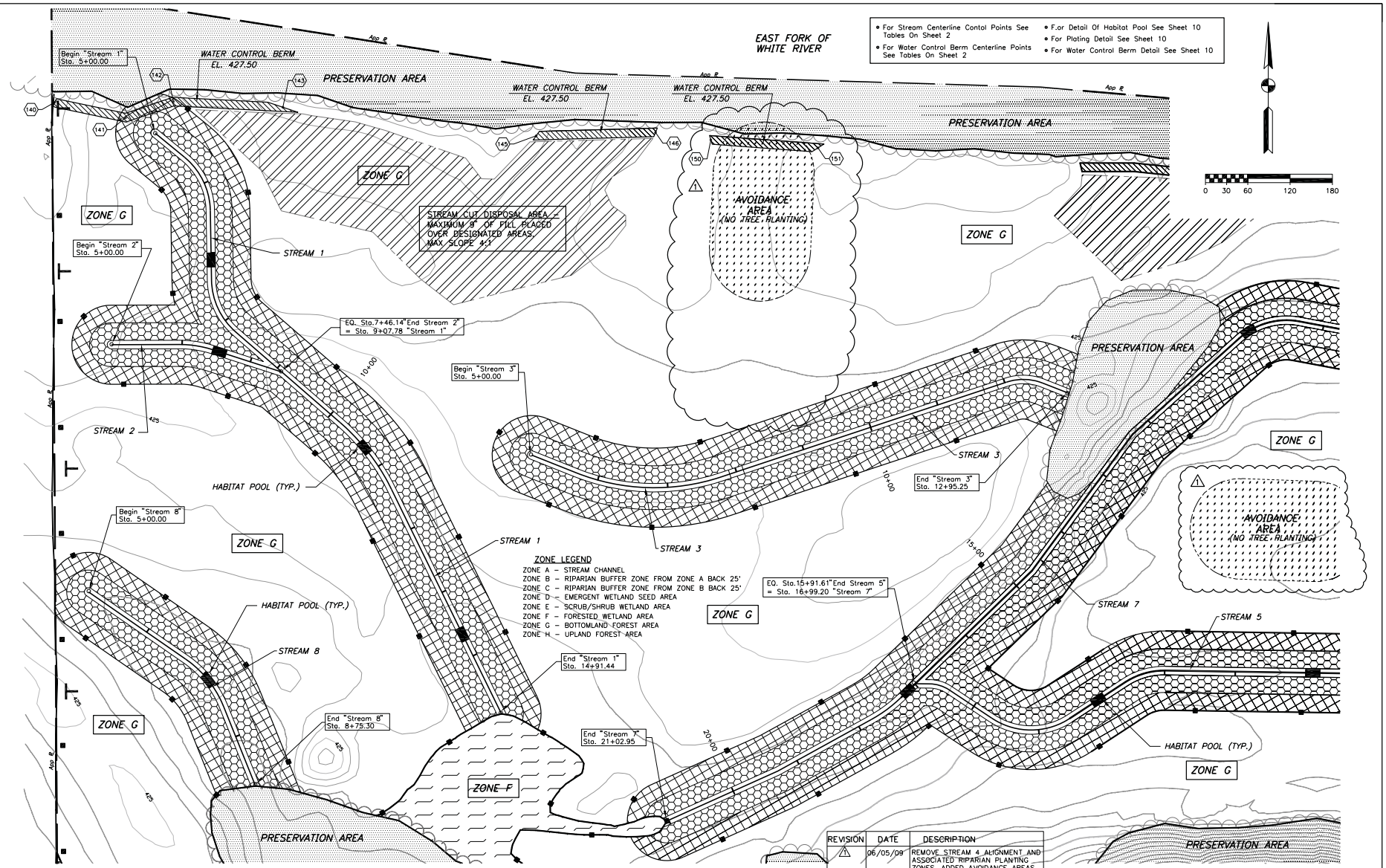
DESIGNED: JAD DRAWN: RAP
CHECKED: DJR CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

OVERALL SITE LAYOUT

HORIZONTAL SCALE	BRIDGE FILE
1"=150'	
VERTICAL SCALE	DESIGNATION
--	0710905
SURVEY BOOK	SHEETS
	4 of 25
CONTRACT	PROJECT
IR-30351	0710905

S:\Survey\103-0001\2008_Bridges\Corr\RT_DWGS\OVERALL_SITEPLAN.dwg 06/08/09 10:45 rstafford



REVISION	DATE	DESCRIPTION
1	06/05/09	REMOVE STREAM 4 ALIGNMENT AND ASSOCIATED RIPARIAN PLANTING ZONES, ADDED AVOIDANCE AREAS WITH NO TREE PLANTINGS.

LEGEND

- DENOTES ZONE "B"
- DENOTES ZONE "C"
- DENOTES ZONE "D"
- DENOTES ZONE "E"
- DENOTES ZONE "F"
- DENOTES ZONE "H"
- DENOTES PRESERVATION AREA NOT TO BE DISTURBED
- DENOTES STREAM EXCESS CUT DISPOSAL AREA
- DENOTES AVOIDANCE AREA NO TREE PLANTING
- DO NOT MOW SIGN
- 4"x4" WOOD DELINEATOR POST (150' SPACING)

JASON A. DUPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

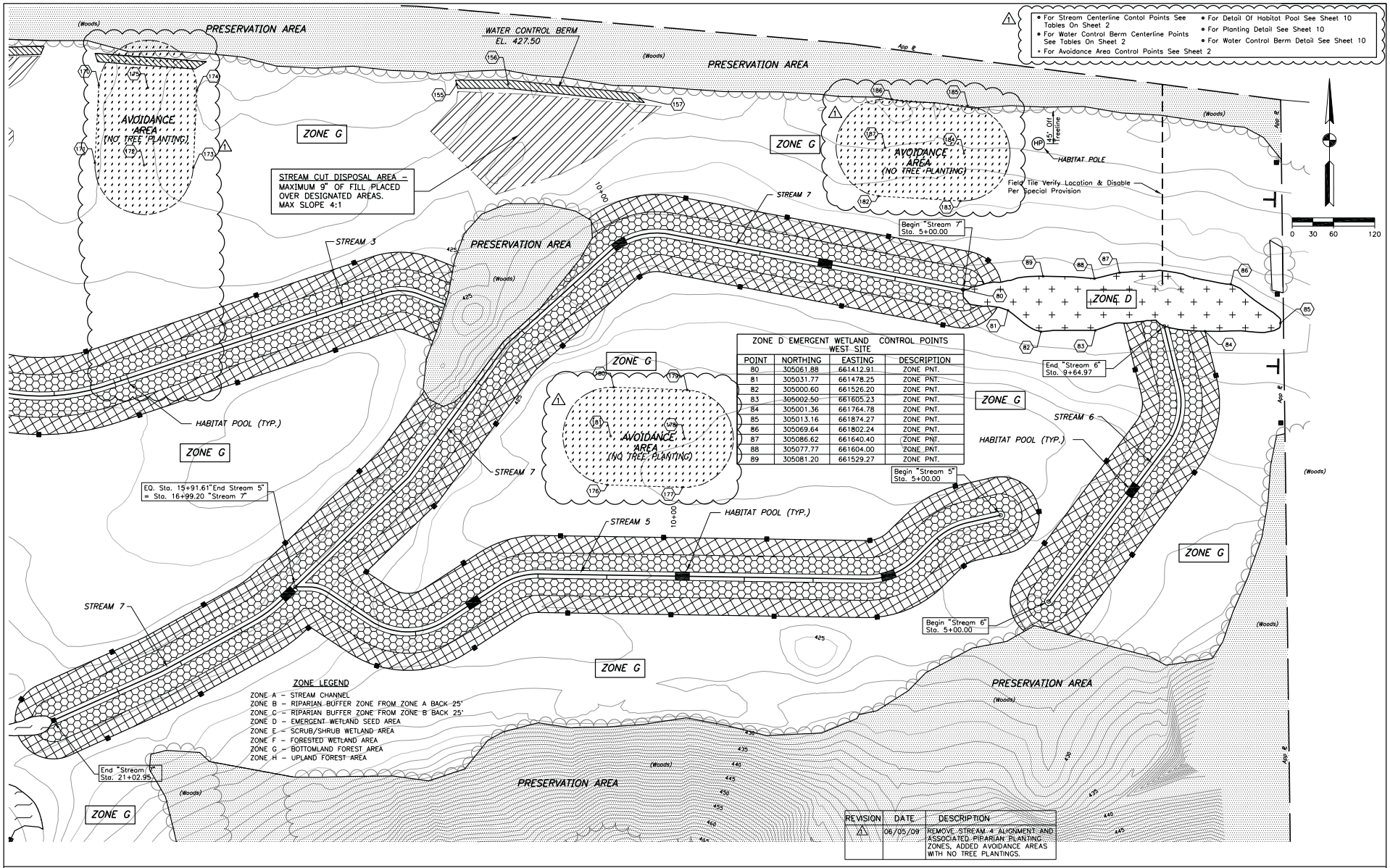
DESIGNED: JAD | DRAWN: RAP | CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

STREAM LAYOUT WEST

HORIZONTAL SCALE 1"=60'	BRIDGE FILE
VERTICAL SCALE --	DESIGNATION 0710905
SURVEY BOOK	SHEETS 5 of 25
CONTRACT IR-30351	PROJECT 0710905

S:\Survey\103-0001\2008_Mitigation\Corr\WI_DWGS\STREAM-LAYOUT-WEST.dwg 06/08/09 10:47 rstafford



- For Stream Centerline Contol Points See Tables On Sheet 2
- For Water Control Berm Centerline Points See Tables On Sheet 2
- For Avoidance Area Control Points See Sheet 2
- For Detail Of Habitat Pool See Sheet 10
- For Planting Detail See Sheet 10
- For Water Control Berm Detail See Sheet 10

ZONE D EMERGENT WETLAND CONTROL POINTS
WEST SITE

POINT	NORTHING	EASTING	DESCRIPTION
80	305061.88	661412.91	ZONE PNT.
81	305031.77	661478.25	ZONE PNT.
82	305000.60	661526.20	ZONE PNT.
83	305002.50	661605.23	ZONE PNT.
84	305001.36	661764.78	ZONE PNT.
85	305013.16	661874.27	ZONE PNT.
86	305069.64	661802.24	ZONE PNT.
87	305086.62	661640.40	ZONE PNT.
88	305077.77	661604.00	ZONE PNT.
89	305081.20	661529.27	ZONE PNT.

ZONE LEGEND

ZONE A – STREAM CHANNEL
ZONE B – RIPARIAN BUFFER ZONE FROM ZONE A BACK 25'
ZONE C – RIPARIAN BUFFER ZONE FROM ZONE B BACK 25'
ZONE D – EMERGENT WETLAND SEED AREA
ZONE E – SCRUB/SHRUB WETLAND AREA
ZONE F – FORESTED WETLAND AREA
ZONE G – BOTTOMLAND FOREST AREA
ZONE H – UPLAND FOREST AREA

REVISION	DATE	DESCRIPTION
1	06/05/09	REMOVE STREAM 4 ALIGNMENT AND ASSOCIATED RIPARIAN PLANTING ZONES, ADDED AVOIDANCE AREAS WITH NO TREE PLANTINGS.

LEGEND

- DENOTES ZONE "B"
- DENOTES ZONE "C"
- DENOTES ZONE "D"
- DENOTES ZONE "E"
- DENOTES ZONE "F"
- DENOTES ZONE "H"
- DENOTES PRESERVATION AREA NOT TO BE DISTURBED
- DENOTES STREAM EXCESS CUT DISPOSAL AREA
- DENOTES AVOIDANCE AREA NO TREE PLANTING
- DO NOT MOW SIGN
- 4"x4" WOOD DELINEATOR POST (150' SPACING)
- HP HABITAT POLE FOR DETAIL SEE SHEET 11

JASON A. DUPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

DESIGNED: JAD | DRAWN: RAP | CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

STREAM LAYOUT EAST

HORIZONTAL SCALE	BRIDGE FILE
1"=60'	
VERTICAL SCALE	DESIGNATION
--	0710905
SURVEY BOOK	SHEETS
	6 of 25
CONTRACT	PROJECT
IR-30351	0710905

S:\Survey\103-0001\2008_Methods\Corr\WI_DWGS\STREAM-LAYOUT-EAST.dwg dwg 06/08/09 10:48 mstaffor

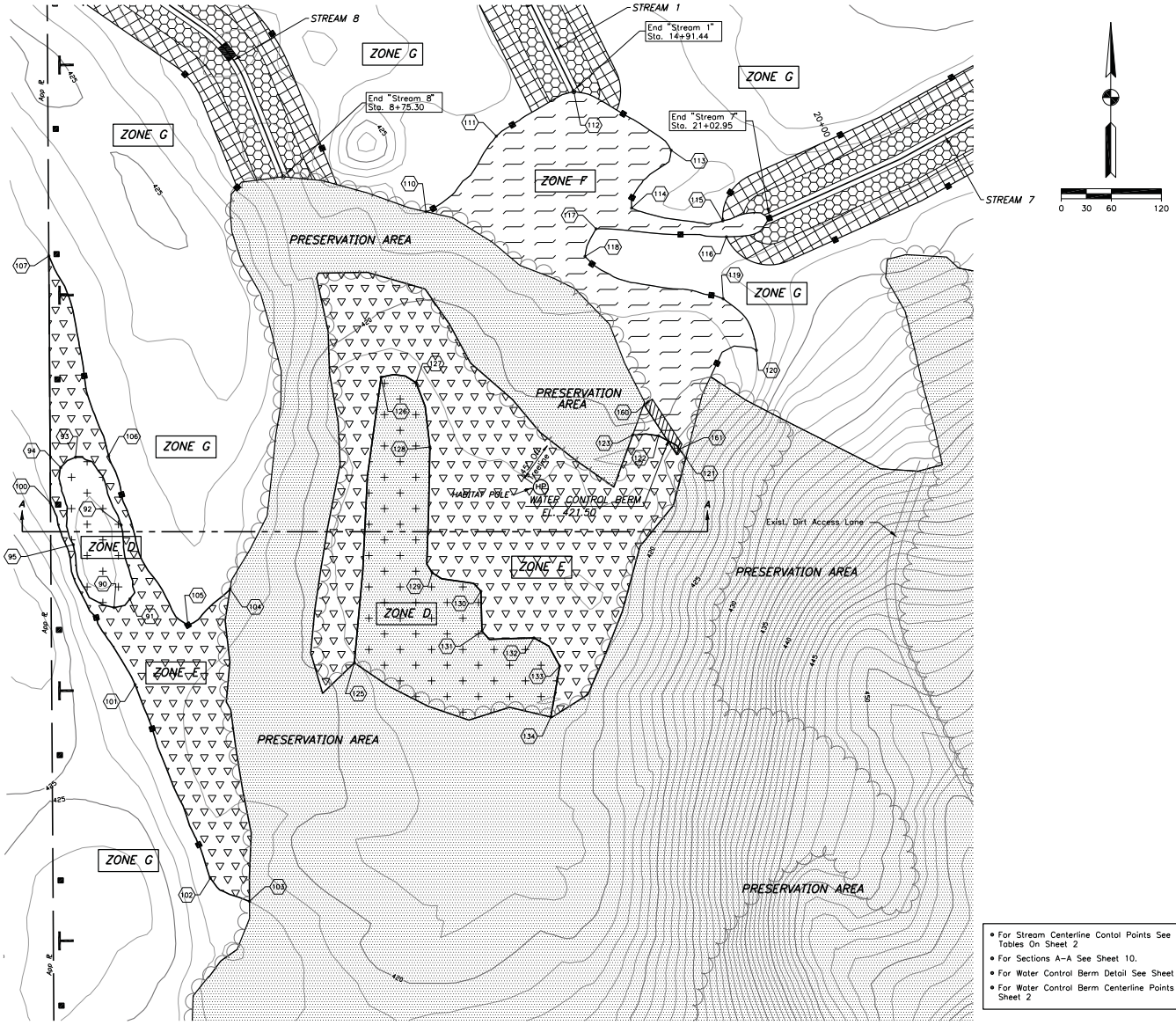
PLANTING ZONE CONTROL POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
90	303968.98	659305.63	ZONE PNT.
91	303979.33	659324.64	ZONE PNT.
92	304067.70	659314.08	ZONE PNT.
93	304148.99	659259.39	ZONE PNT.
94	304136.69	659241.73	ZONE PNT.
95	304044.41	659256.80	ZONE PNT.
100	304094.15	659229.44	ZONE PNT.
101	303876.60	659330.86	ZONE PNT.
102	303644.95	659421.01	ZONE PNT.
103	303617.13	659467.93	ZONE PNT.
104	303991.29	659444.69	ZONE PNT.
105	303947.88	659394.20	ZONE PNT.
106	304150.93	659299.11	ZONE PNT.
107	304390.26	659227.50	ZONE PNT.
110	304443.11	659679.26	ZONE PNT.
111	304533.56	659763.69	ZONE PNT.
112	304586.97	659856.46	ZONE PNT.
113	304516.75	659973.07	ZONE PNT.
114	304447.40	659925.66	ZONE PNT.
115	304431.97	660034.57	ZONE PNT.
116	304413.03	660039.26	ZONE PNT.
117	304422.62	659883.05	ZONE PNT.
118	304389.47	659869.82	ZONE PNT.
119	304338.77	660035.43	ZONE PNT.
120	304277.07	660075.25	ZONE PNT.
121	304148.29	659990.69	ZONE PNT.
122	304174.75	659958.12	ZONE PNT.
123	304175.79	659927.06	ZONE PNT.
125	303902.76	659593.51	ZONE PNT.
126	304245.00	659625.62	ZONE PNT.
127	304238.33	659667.46	ZONE PNT.
128	304161.34	659683.96	ZONE PNT.
129	304010.69	659686.78	ZONE PNT.
130	303988.52	659745.09	ZONE PNT.
131	303940.67	659746.36	ZONE PNT.
132	303932.66	659808.65	ZONE PNT.
133	303898.95	659839.58	ZONE PNT.
134	303837.97	659828.91	ZONE PNT.

ZONE LEGEND

ZONE A – STREAM CHANNEL
ZONE B – RIPARIAN BUFFER ZONE FROM ZONE A BACK 25'
ZONE C – RIPARIAN BUFFER ZONE FROM ZONE B BACK 25'
ZONE D – EMERGENT WETLAND SEED AREA
ZONE E – SCRUB/SHRUB WETLAND AREA
ZONE F – FORESTED WETLAND AREA
ZONE G – BOTTOMLAND FOREST AREA
ZONE H – UPLAND FOREST AREA

LEGEND

- DENOTES ZONE "B"
- DENOTES ZONE "C"
- DENOTES ZONE "D"
- DENOTES ZONE "E"
- DENOTES ZONE "F"
- DENOTES ZONE "H"
- DENOTES PRESERVATION AREA NOT TO BE DISTURBED
- DENOTES STREAM EXCESS CUT DISPOSAL AREA
- HP HABITAT POLE FOR DETAIL SEE SHEET 11



- For Stream Centerline Contol Points See Tables On Sheet 2
- For Sections A–A See Sheet 10.
- For Water Control Berm Detail See Sheet 10
- For Water Control Berm Centerline Points See Sheet 2

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL Jason A DuPont 12/08/08
DESIGN ENGINEER DATE

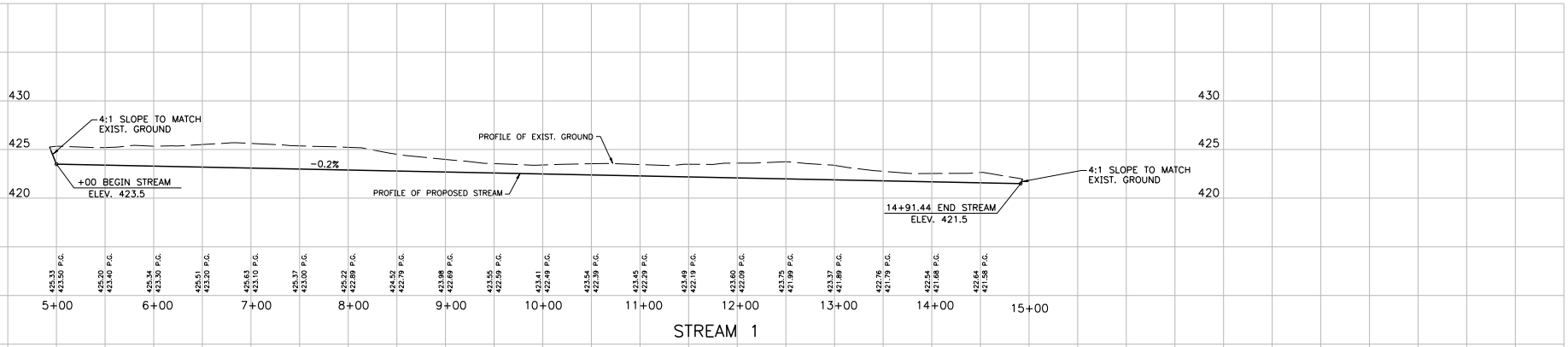
DESIGNED: JAD DRAWN: RAP
CHECKED: DJR CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

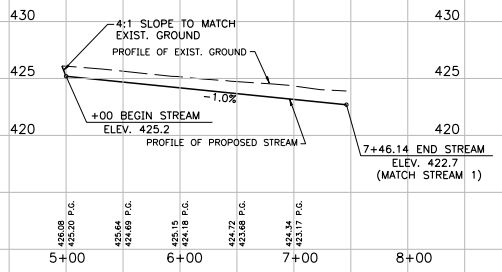
WETLAND LAYOUT

HORIZONTAL SCALE	BRIDGE FILE
1"=60'	
VERTICAL SCALE	DESIGNATION
--	0710905
SURVEY BOOK	SHEETS
	7 of 25
CONTRACT	PROJECT
IR-30351	0710905

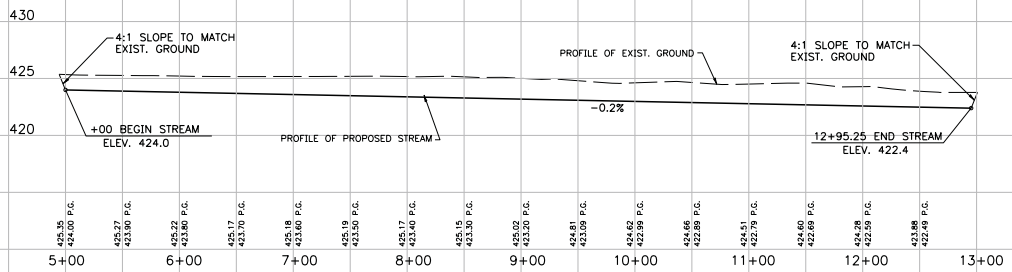
S:\Survey\103-0001\2008_Mitigate\Con\WT_LAYOUT.dwg 12/08/08 11:59 rap



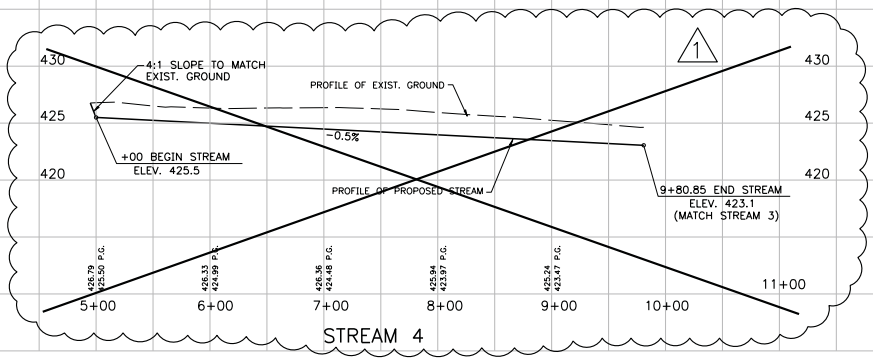
STREAM 1



STREAM 2



STREAM 3



STREAM 4

REVISION	DATE	DESCRIPTION
1	06/05/09	DELETE STREAM 4 PROFILE

JASON A. DEJOY REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

DESIGNED: JAD | DRAWN: RAP

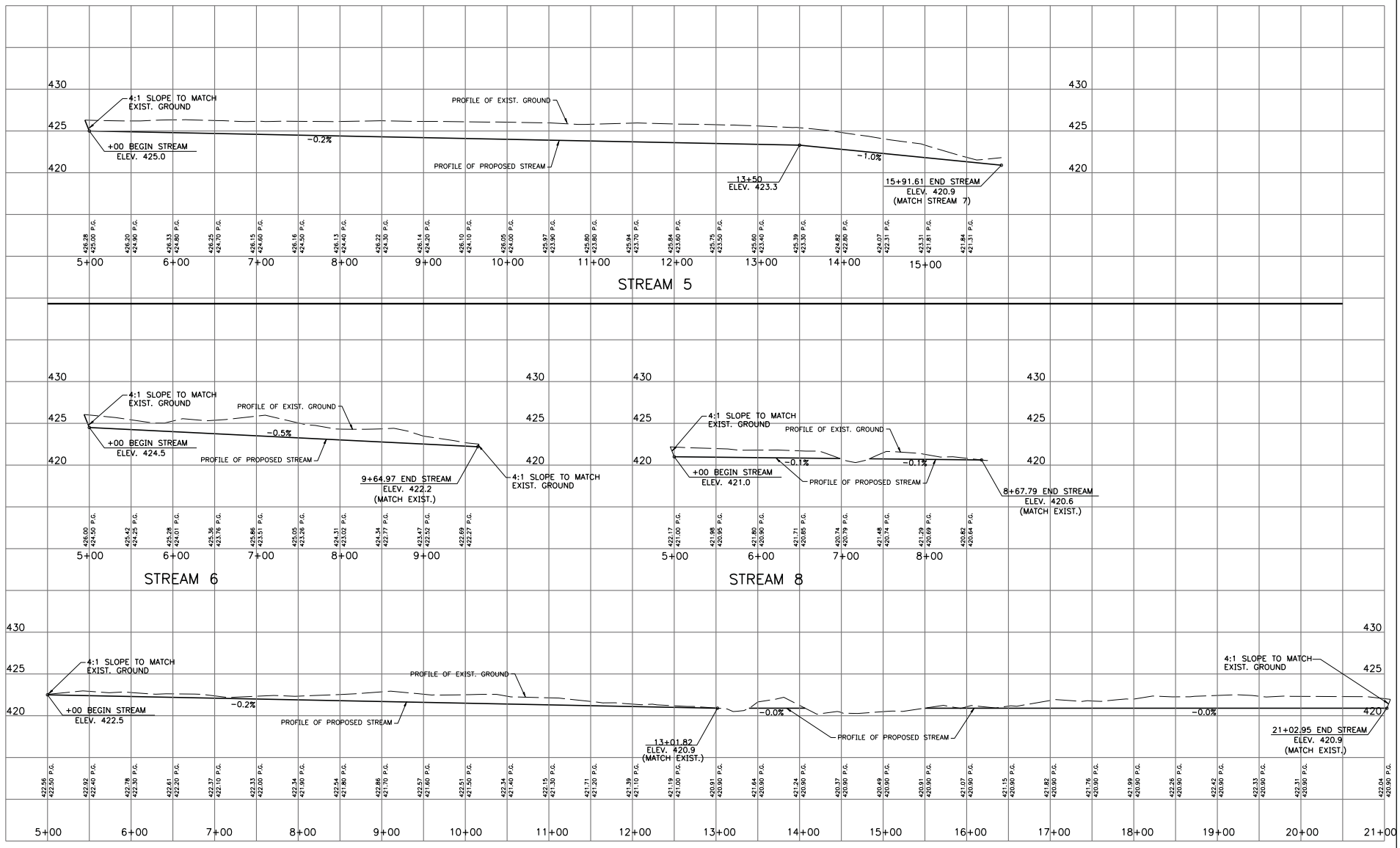
CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

WEST SITE STREAM PROFILES STREAMS 1-4

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	
VERTICAL SCALE	DESIGNATION
1"=5'	0710905
SURVEY BOOK	
	8 of 25
CONTRACT	PROJECT
IR-30351	0710905

S:\Surveys\103-0001\2008_Wetlands\Corr\MIT_DWGS\PROFILE_STREAM_1.dwg 06/05/09 08:56 nick



S:\Surveys\103-0001\2008_Wetlands\Corr\MIT_DWGS\PROFILE_STREAM_5.dwg 12/08/08 11:47 rap

JASON A. DUPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

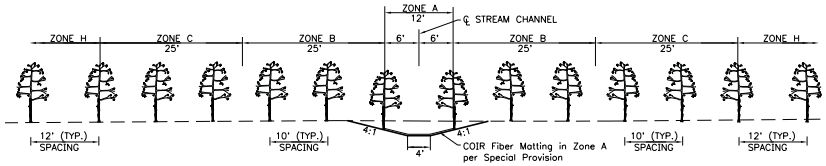
DESIGNED: JAD | DRAWN: RAP

CHECKED: DJR | CHECKED: DJR

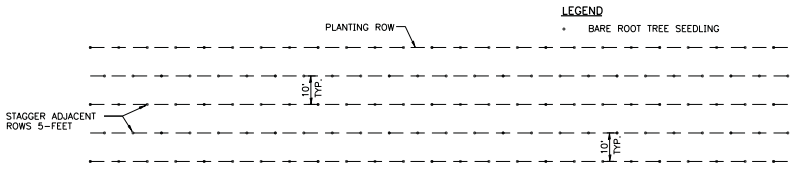
INDIANA DEPARTMENT OF TRANSPORTATION

WEST SITE STREAM PROFILES STREAMS 5-8

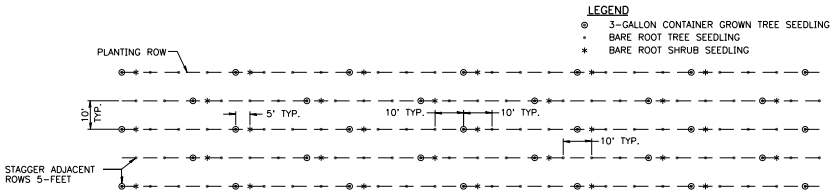
HORIZONTAL SCALE	BRIDGE FILE
1"=50'	
VERTICAL SCALE	DESIGNATION
1"=5'	0710905
SURVEY BOOK	
	9 of 25
CONTRACT	PROJECT
IR-30351	0710905



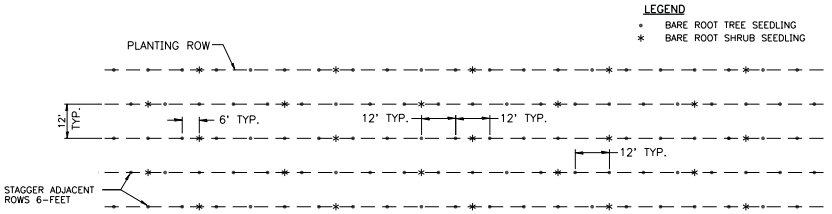
TYPICAL STREAM CHANNEL PLANTING ZONE SECTION
NOT TO SCALE



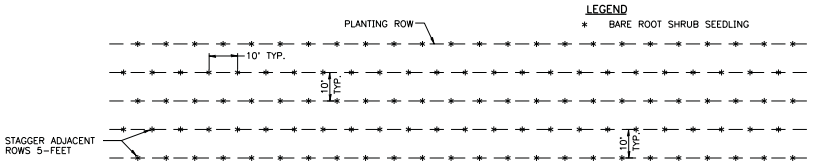
PLANTING TREE LAYOUT (ZONE G)
NOT TO SCALE



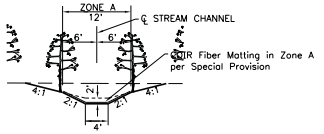
PLANTING TREE & SHRUB LAYOUT (ZONES B & C)
NOT TO SCALE



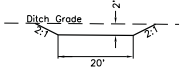
PLANTING TREE & SHRUB LAYOUT (ZONES H)
NOT TO SCALE



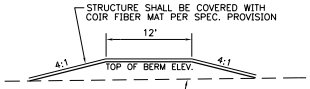
PLANTING TREE LAYOUT (ZONE F)
NOT TO SCALE



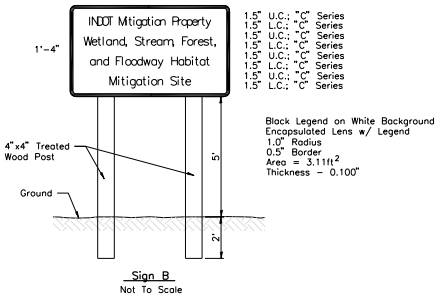
TYPICAL HABITAT POOL SECTION
NOT TO SCALE



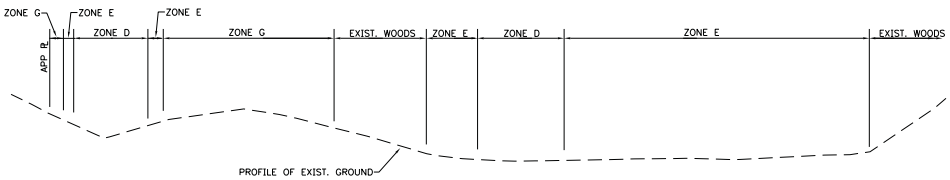
HABITAT POOL PROFILE
NOT TO SCALE



WATER CONTROL BERM SECTION
NOT TO SCALE



Sign B
Not To Scale



SECTION A-A
NOT TO SCALE
(SEE SHEET XX)

JASON A. DUPONT
REGISTERED
No. PE10303058
STATE OF INDIANA
PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

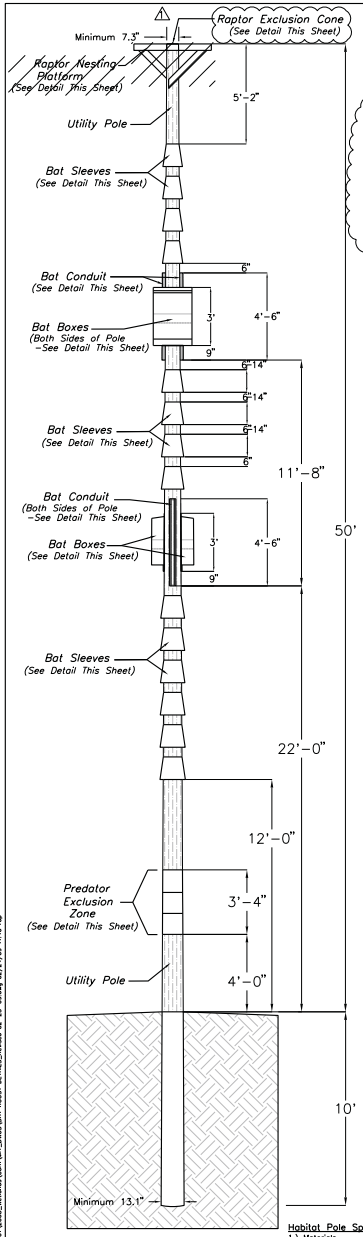
DESIGNED: JAD | DRAWN: RAP
CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

DETAILS

HORIZONTAL SCALE	BRIDGE FILE
AS SHOWN	
VERTICAL SCALE	DESIGNATION
---	0710905
SURVEY BOOK	SHEETS
	10 of 25
CONTRACT	PROJECT
IR-30351	0710905

S:\Surveys\103-0001\2008_Bettendorf\Corr\MT_DWGS\DETAILS.dwg 12/08/08 11:40 rap

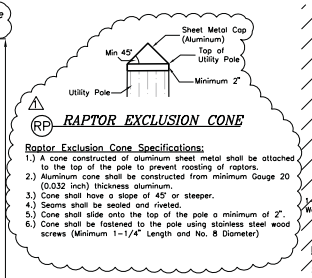


HP HABITAT POLE

Habitat Pole Specifications:

1.) Materials
- Wood Class 3 (or larger) Utility Pole, 60 feet tall
  Note: Utility pole must meet minimum ANSI requirements for Class 3 poles

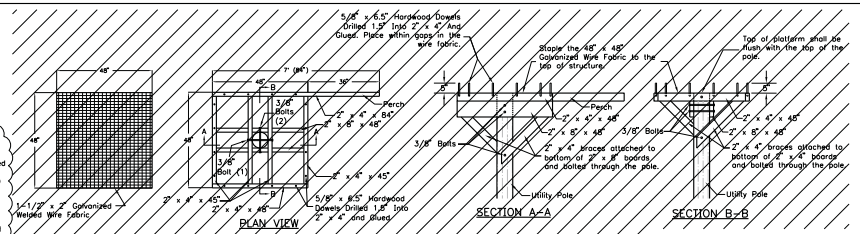
2.) Method
- Attach all habitat roost structures to the utility pole (see details this sheet)
- Install the utility pole 10 feet below ground level with 50 feet above ground level



RP RAPTOR EXCLUSION CONE

Raptor Exclusion Cone Specifications:

1.) A cone constructed of aluminum sheet metal shall be attached to the top of the pole to prevent roosting of raptors.
2.) Aluminum cone shall be constructed from minimum Gauge 20 (0.032 inch) thickness aluminum.
3.) Cone shall have a slope of 45° or steeper.
4.) Seams shall be sealed and riveted.
5.) Cone shall slide onto the top of the pole a minimum of 2".
6.) Cone shall be fastened to the pole using stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)



RP RAPTOR NESTING PLATFORM

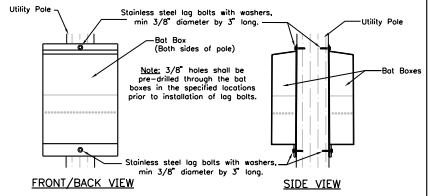
Raptor Nesting Platform Specifications:

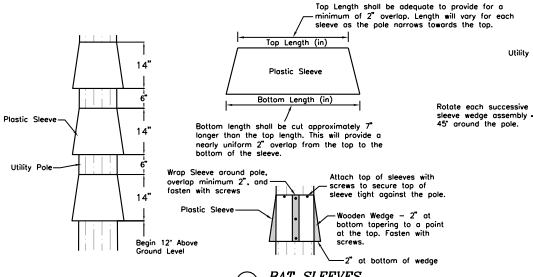
1.) All wood materials shall be treated lumber per INDOT 2008 Standard Specification 911.02.
2.) References to 2" x 4" and 2" x 8" lumber are nominal sizes
- Actual dimensions are 1-1/2" x 3-1/2" and 1-1/2" x 7-1/4", respectively.

3.) All bolts, screws, and staples utilized shall be stainless steel to prevent corrosion.
4.) Galvanized wire fabric shall be stapled to the platform assembly with a minimum of 1" long staples

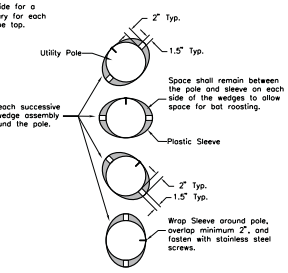
Source: USFWS & APLIC, Aviation Protection Plan (APP), April 2008. This design is modified from Figure 14 of this plan. (http://training.fws.gov/bannchallies/CSP/)

BAT BOX MOUNTING DETAIL





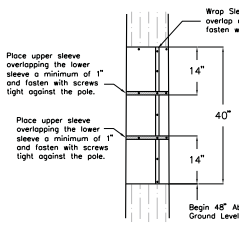
BS BAT SLEEVES



Bat Sleeve Specifications:

1.) Materials
- Heavy grade black polyethylene animal guard (supplied in 14" x 16' roll)
- Polyethylene material shall be a minimum of 0.035" thick
- Vendors may include but are not limited to:
  - Reed City Power Line Supply (Mooresville, IN)
  - Osmose Utility Services (http://osmoseutilities.com/cms/repository/media/2008_Products_Catalog.pdf)
- Stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)
  - Longer screws of varying lengths shall be used for attachment of wooden wedges to allow for a minimum of 1" penetration into the utility pole (Minimum No. 8 Diameter)
- Treated 2" x 4" lumber (for wedges) per INDOT 2008 Standard Specification 911.02.
- References to 2" x 4" lumber are nominal sizes, actual dimensions are 1-1/2" x 3-1/2"

2.) Method
- Cut wooden wedges out of 2" x 4" treated boards
  - Wedges shall be 2" tall at base, tapering to a point at the top, per detail this sheet
- Attach wedges on opposite sides of the pole using screws
- Cut plastic sleeve to length to allow for a minimum 2" overlap at the top and bottom (see calculations above)
- Wrap the plastic sleeve around the pole and wedges
- Fasten the sleeve to the pole with the top of the sleeve tight around the entire pole
- Install screws into the overlapped portion of the sleeve
- Bottom of lowest bat sleeve shall be approximately 12' above ground level

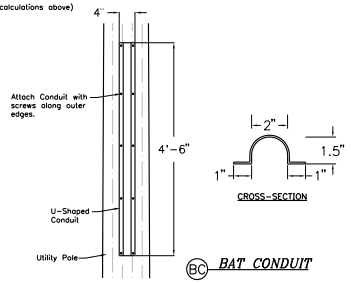


PE PREDATOR EXCLUSION ZONE

Predator Exclustion Zone Specifications:

1.) Materials
- Heavy grade black polyethylene animal guard (supplied in 14" x 16' roll)
- Polyethylene material shall be a minimum of 0.035" thick
- Stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)

2.) Method
- Cut plastic sleeve to length to allow for a minimum 1" overlap
- Wrap the lowest plastic sleeve tight around the pole with the bottom approximately 48" above ground level
- Fasten the sleeve to the pole with screws along the overlap
- Wrap the subsequent sleeves with 1" overlapping the lower sleeve and fasten along the top and within the overlap of each sleeve

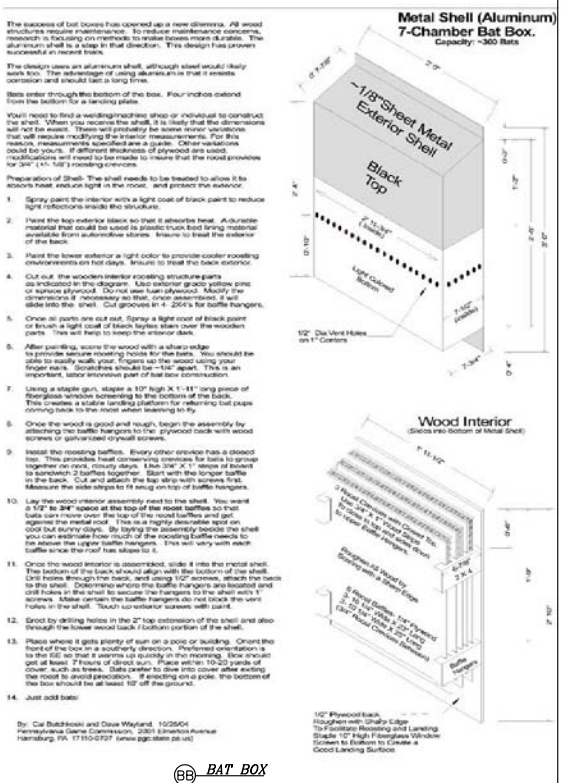


BC BAT CONDUIT

Bat Conduit Specifications:

1.) Materials
- Plastic U-shaped conduit
- Stainless steel wood screws (Minimum 2" Length and No. 8 Diameter)

2.) Method
- Cut 4 pieces of conduit to 4.5 feet in length
- Attach 2 conduit strips, one on each side of the pole, with the bottom elevation at 22 feet above ground level
- Attach the remaining 2 conduit strips at 90° angle from the first set of conduit, with a bottom elevation of 33 feet-8 inches above ground level
- Conduit shall be attached with screws along each edge



BB BAT BOX

Bat Box Specifications:

1.) A total of 4 Bat Boxes shall be assembled and installed per these plans with aluminum exterior shells.
2.) Aluminum exterior shells shall be constructed from the following minimum gauge (thickness) aluminum:
- Back of Bat Box Shell: Gauge 3 (0.2294 inch)
- Front, Sides, and Top of Bat Box Shells: Gauge 8 (0.1285 inch)

2.) Attach 2 bat boxes, one on each side of the pole per the detail above, with a bottom elevation of 22'-9" above ground level.
3.) Attach the remaining 2 bat boxes per the detail above, 90° from the first set of boxes at a bottom elevation of 33'-5" above ground level.

Vendor:
- Vendors of the constructed bat boxes may include but are not limited to this vendor:
  Environmental Solutions and Innovations, Inc., 781 Neeb Rd.,Cincinnati, OH 45233

Source:
- This bat box design was created by:
  Cal Butchkoski and Dave Wayland, Pennsylavia Game Commission, 2001 Elmerton Avenue, Harrisburg, PA 17110-9797 (www.pgc.state.pa.us)

REVISION	DATE	DESCRIPTION
1	2/23/09	Remove Raptor Platform & Add Raptor Exclusion Cone

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL: Jason A. DuPont 12/08/08
DESIGN ENGINEER — DATE

DESIGNED: JAD — DRAWN: RAP
CHECKED: DJR — CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

HABITAT POLE DETAILS

HORIZONTAL SCALE	BRIDGE FILE
AS SHOWN	
VERTICAL SCALE	DESIGNATION
---	0710905
SURVEY BOOK	SHEETS
	11 of 25
CONTRACT	PROJECT
IR-30351	CN 0710905

S:\Surveys\101-0001\006_Wetlands\Corr\all_DWGS\BAT ROOST DETAILS_Revised 02-23-09.dwg 02/24/09 11:18 rap

NATURE & PURPOSE OF CONSTRUCTION ACTIVITY

A-1 Index showing locations of required Plan Elements.
Sheet 1

A-2 11x17 inch plat showing building lot numbers/boundaries and road layout/names.
24x36 plat found in plans on Sheet 3

A-3 Narrative describing the nature and purpose of the project.
This 170.9-acre mitigation site, known as the Corn property, will be purchased by the Indiana Department of Transportation (INDOT) to compensate for a portion of the water resource impacts caused by the construction of Section 2 of the I-69 Project from Evansville to Indianapolis. Construction on this site will include excavation of stream channels, construction of water retention berms, seedbed preparation, and planting of herbaceous vegetation, trees, and shrubs throughout the site.

A-4 Vicinity map showing project location.
Sheet 1 (Title Sheet)

A-5 Legal Description of the Project Site
This project is located in: Indiana, Pike County, Sandy Hook Quadrangle, Jefferson Township; T-1-N, R-7-W, Section 4;
Latitude: 38° 32' 40" North
Longitude: 87° 11' 22" West

A-6 Location of all lots and proposed site improvements.
Grading and Planting Plan on Sheets 4-7.

A-7 Hydrologic unit code (14 digit)
05120208170090 (East Fork White River-Mud Creek (Pike))

A-8 Notation of any State or Federal water quality permits.
This mitigation site is being constructed to meet the requirements of the IDNR Construction in a Floodway Permit, IDEM Section 401 Water Quality Certification, USACE Section 404 Permit for I-69 Section 2, and Section 7 Consultation. This mitigation site is also a result of commitments made in the Tier 1 Environmental Impact Statement for the I-69 project.

A-9 Specific points where stormwater discharge will leave the site.
Stormwater will likely leave the site as sheetflow in multiple locations and migrate north into the East Fork of the White River. Other stormwater will migrate into an unnamed tributary of the East Fork of the White River prior to leaving the site in a westerly direction and entering the river. See Sheets 4-7 for the existing and proposed contours.

A-10 Location and name of all wetlands, lakes and water courses on and adjacent to the site.
A review of the National Wetland Inventory (NWI) Map indicated that some low-lying portions of the property not utilized for agricultural purposes are classified as existing palustrine forested (PFO) wetlands. These areas include the forested areas adjacent to the river, the forested areas surrounding the proposed wetland development areas, and two islands of forested areas surrounded by agricultural cropland. This project serves to preserve, enhance, and expand these existing wetland features. See Sheet 3.

A-11 Identification of all receiving waters.
The runoff from the site will likely migrate north, directly into the East Fork of the White River, or migrate in westerly direction via an unnamed tributary into the East Fork of the White River.

A-12 Identification of potential discharges to ground water.
There are no known areas within the project site where stormwater will be discharged to groundwater.

A-13 100 year floodplains, floodways, and floodway fringes.
Approximately one-half of the site, including the northern and western portions of the property, lies within the 100-year floodplain of the East Fork of the White River, special flood hazard area Zone "A" per FEMA F.I.R.M. floodplain maps, Panel Number 180473 0002 A, effective June 15, 1979. See Sheet 3.

A-14 Pre-construction and post construction estimate of Peak Discharge (100 year storm event)
This project is designed to reduce the peak discharge and retain water on-site for an extended period of time to serve as a wetland and bottomland/upland forest mitigation site. See Attached Hydraulic Calculations.

A-15 Adjacent landuse
CR 800 N borders the southern edge of the property and CR 500 E borders a portion of the east side of the property. The remainder of the adjacent land use includes agricultural fields, upland\bottomland forests, and the East Fork of the White River (northern border). In addition, up to four residential properties are adjacent to the proposed mitigation site.

A-16 Locations and approximate boundaries of all disturbed areas.
The Grading and Planting Plan can be found on Sheets 4-7. The excavated stream channels and the water retention berms shown on the plans are the only areas of the site to receive excavation or grading. All excess material excavated from the stream channels will be utilized for construction of the water retention berms with the balance to be evenly dispersed throughout the designated areas, as shown on the plans. Tile exploratory trenching will also involve ground disturbance. The various planting zones will receive seedbed preparation (tilling).

A-17 Identification of existing vegetative cover.
The majority of the site, and all areas to receive ground disturbance, are currently utilized for agricultural row crops planted in beans during the 2008 growing season or pasture land. Other land use on the property includes existing forested wetlands and upland forests, which are not to be disturbed and will be preserved as a part of this mitigation plan.

A-18 Soils map including soil descriptions and limitations.
See Sheet 3.

A-19 Locations, size and dimensions of proposed stormwater systems.
The excavated stream channels and the water retention berms are the only stormwater systems proposed for the site. The excavated stream channels are designed to hold water within the channels for an extended period of time and to direct runoff into the proposed wetland development areas. The berms will be constructed to prevent runoff from entering the East Fork of the White River via swales. The location of the stream channels and berms can be found on Sheets 4-6.

A-20 Plans for any off-site construction activities associated with this project.
No off-site construction activities are anticipated with this project.

A-21 Locations of proposed soil stockpiles and/or borrow/disposal areas.
Material needed for the construction of the water retention berms shall be obtained from the excavated stream channels. Excess material from the excavation of the stream channels shall be evenly distributed in the designated areas shown on Sheets 5-6.

A-22 Existing site topography.
Existing Site Layout on Sheet 4.

A-23 Proposed final topography.
Planting Plan and final topography on Sheets 4-7.

Assessment of Stormwater Pollution Prevention Plan
Construction Component (Section B)

B-1 Description of potential pollutant sources associated with the construction activities:
Potential pollutant sources associated with the construction activity include those normally associated with construction equipment, such as: oils, fuels, hydraulic fluids, transmission fluids, brake fluid, antifreeze, greases, brake dust, etc.. All heavy equipment shall be parked on site at a location, when not in use; leakage from the equipment will be captured by the surrounding terrain, and not be provided a direct path to the surrounding waterways. Additionally, sediment generated from the construction activity and equipment is a potential pollutant.

Assessment of Stormwater Pollution Prevention Plan (Cont'd)
Construction Component (Section B)

B-2 Initial Setup:
Upon completion of the initial site inspection, and before any ground disturbance occurs, this erosion control plan shall be implemented. Any good erosion control plan must be dynamic and ever changing as the project develops. Continual maintenance and updating of the plan is of utmost importance. Below is the sequencing of events for this erosion control plan:

1. Identify and protect all existing vegetation designated to remain; flag all areas of avoidance. Note: All areas not currently utilized for agricultural purposes shall not be disturbed. In addition, areas in the central portion of the site, which currently are scrub/shrub uplands shall not be disturbed. These areas are shown on the plans as "Preservation Areas".
2. Call for an underground locate to verify location of existing utilities.
3. Establish areas for storage of potential pollutants (e.g. fuel storage, oils, hydraulic fluids, etc.)
4. Notify the Soil and Water Conservation District (SWCD) and IDEM agents 48 hours in advance of beginning work.
5. Install construction entrance(s) to keep sediment off public roadway. Remove any sediment tracked on roadway, (DO NOT flush).
6. Install silt fence as shown on plans.
7. Begin excavation and grading:
   A. Perform tile exploration trenching and tile removal. Backfill and compact trenches.
   B. Excavate the stream channels and construct the water retention berms as specified on the plans. Material needed for construction of the water retention berms shall be obtained from the excavated stream channels. Excess material from the stream channel excavation shall be evenly distributed throughout the designated area as shown on the plans. Following final grading; seed and fertilize the water retention berms and excavated stream channels, followed by stabilization with erosion control blankets per the Special Provisions.
   C. Prepare the seedbed within each of the planting zones. Permanently seed, fertilize, and mulch all disturbed areas per the Special Provisions. Following seeding, plant the specified tree and shrub species in the designated planting zones as shown on the plans and detailed in the Special Provisions. If permanent seedbed preparation and final seeding/planting cannot occur immediately following final grading, all disturbed areas shall be seeded with a temporary seed mixture T per INDOT 2008 Standard Specification 621.06 (f).
8. Submit the completed Notice of Termination (N.O.T.) form to the SWCD, IDEM, or other Entity Designated by the Department as the reviewing agency. The N.O.T. will be reviewed for concurrence and either returned to the Project Site Owner or forwarded to IDEM.

B-3 Construction Entrance:
The Contractor shall provide a minimum of 2 stable entrances/exits to keep mud and sediment off public roads. Installation shall be per the detail shown on Sheet 14. See Sheet 13 for locations.

B-4 Sediment control measures for sheet flow areas:
Temporary Silt Fence (SF): A silt fence is a fabric barrier used to retain sediment from small, sloping, disturbed areas by reducing the velocity of sheet flow. Silt fence shall be installed in the areas where there is potential for stormwater carrying solids to leave the site or runoff a foreslope into an unprotected ditch as sheet runoff, prior to any work being performed in that area. See Sheet 13.

B-5 Sediment control measures for concentrated flow areas:
Erosion Control Blanket (ECB): A biodegradable, organic or synthetic mulch incorporated with a biodegradable, photodegradable or permanent propylene, natural fiber or similar netting. It is an alternative to mulch and normally used on slopes and in concentrated flow channels. Erosion control blankets shall be installed to prevent erosion of the excavated stream channels and water retention berms.

B-6 Storm sewer inlet protection measure locations and specifications:
Not Applicable

B-7 Runoff control measures:
Water Retention Berms: Water retention berms shall be installed to minimize runoff from leaving the site and retain water for an extended period of time for the purpose of maintaining adequate hydrology to support a bottomland habitat community. Installation of the water retention berms shall be as shown on the plans.

B-8 Stormwater outlet protection specifications:
Rock Splashpad (RS): A rock splashpad shall be installed at the outlet location of any culverts to reduce the runoff velocity and prevent scour. A culvert shall be installed, as required, at any construction entrances that cross an existing roadside ditch.

B-9 Grade stabilization structure locations and specifications:
Not Applicable

B-10 Locations, dimensions, specifications and construction details of each stormwater quality measure:
The location, dimensions, and details of all stormwater quality measures are as shown on Sheets 13 & 14.

B-11 Temporary surface stabilization methods appropriate for each season:
Temporary surface stabilization shall be accomplished by the use of a temporary seeding mixture along with temporary mulching. The temporary seed mixture shall be used to establish a temporary cover for disturbed soil during the construction operations. Temporary cover mixes shall be placed on disturbed areas that are expected to undisturbed for over 14 days. Temporary seed mixes shall consist of seed mixture T as outlined in the INDOT 2008 Standard Specifications 621.06 (f).

Fertilizer shall be applied at a rate of 400 lbs/acre of 12-12-12 analysis, or equivalent. Mulching Material (clean grain straw or hay) shall be applied at a rate of 2 ton/acre, 75% coverage of the disturbed area should be obtained.

B-12 Permanent surface stabilization specifications:
Permanent surface stabilization shall be achieved by the use of a seeding mixture, along with mulching material and fertilizer. The mulching rate will be critical for optimal seed germination. The mulching material will provide optimal moisture conditions, therefore reducing the likelihood that reseeding will be required for the project site. Permanent seeding will take place in areas after final construction and seedbed preparation.

Seed mixtures will vary throughout the site with respect to the different planting zones. Seeding specifications and seed mixture requirements can be found in the Special Provisions for this wetland mitigation site. The majority of the site will also receive tree and/or shrub seedling plantings as outlined in the Special Provisions. The location of each of the planting zones to receive the special plantings can be found on Sheets 4-7.

Fertilizer shall be applied to all planting zones at a rate of 400 lbs/acre of 12-12-12 analysis, or equivalent. Mulching Material (clean grain straw or hay) shall be applied at a rate of 2 tons/acre, 75% coverage of the disturbed area should be obtained. Erosion control blankets shall be installed within the excavated stream channels to provide further protection from erosion.

Assessment of Stormwater Pollution Prevention Plan (Cont'd)
Construction Component (Section B)

B-13 Material handling and spill prevention plan:
Any onsite storage of hazardous materials/potential pollutants, such as diesel fuel, shall be surrounded by an earthen dike or other secondary containment system having a storage volume equal to 150% of tank capacity, to contain potential pollutants. Any additional means of containing releases should be accessible at each petroleum storage area; this would include various absorbent materials. In the event of a release, a licensed environmental consulting company should be contacted for spill cleanup assistance. Furthermore, all equipment, when not in use, shall be parked onsite in an area that, should potential pollutants leak, they will be contained within the immediate area and will not be inadvertently conveyed to drainage swales and away from the project. Any leakage of pollutants from storage vessels or equipment shall be cleaned up and disposed of offsite in a legal manner.

B-14 Monitoring and maintenance guidelines for each proposed pollution prevention measure:
Temporary erosion and sediment control measures shall be inspected by the Erosion Control Supervisor, or a qualified representative, once every seven days and within 24 hours after a 1/2 inch rainfall. The inspection completed after a rain event can be considered the weekly inspection. Inspections shall be documented and records shall be maintained by the Erosion Control Supervisor, to be made available for review upon request. Records shall include, at a minimum, the date, the inspector's name, the maintenance and corrections needed based on this inspection, and the status of previously identified deficiencies. The temporary protection measures shall be returned to good working condition within 48 hours after inspection or as directed.

For maintenance requirements see the Erosion & Sediment Control Measure Details on Sheet 14 for the measures listed below:

1) Construction Entrance (CE)
2) Silt Fence (SF)
3) Erosion Control Blanket (ECB)

The Erosion Control Supervisor, or qualified representative, shall routinely inspect the overall performance of erosion and sediment control facilities and areas downstream of the project site. If eroded material/sediment is apparent downstream from the facilities, some failure has occurred, and the Supervisor shall notify the Contractor. The Contractor will remove the accumulated sediment downstream and add additional erosion control measures to address the issues as necessary. The Contractor shall implement all recommended solutions to the problem areas as recommended by the Supervisor.

At the proper time, with approval from the owner or their contracted representative, the contractor shall submit a Rule 5 Notice of Termination (N.O.T.) to the SWCD agent/reviewing authority for approval. Upon approval, the contractor shall dismantle the remaining erosion control elements. The contractor shall remove any unsuitable material from the site left from the erosion control measures.

B-15 Erosion and sediment control specifications for individual building lots:
Not applicable, this project does not consist of the construction of, or on, multiple building lots.

Stormwater Pollution Prevention Plan
Post Construction Component (Section C)

C-1 Description of pollutants and their sources associated with the proposed land use:
Additional pollutant sources will be from trash (both organic and inorganic), lawn chemicals, grass clippings, grit brought in from the existing surrounding roads from various vehicles (fuel, antifreeze, oil, grease, brake dust, brake fluid, transmission fluid, other hydrocarbons, etc..), pet and other animal waste, etc..

C-2 Sequence describing stormwater quality measure implementation:
Upon completion of site grading, all disturbed areas of the site will be permanently seeded, fertilized and mulched as outlined in the Special Provisions to reduce the amount of sediment leaving the site. Tree and shrub seedlings shall be planted as specified in the Special Provisions. This will assist in permanent surface stabilization. Additionally, the water retention berms will remain as permanent structures to reduce and slow runoff from the site. Finally, all existing vegetation outside of the designated planting zones will not be disturbed, and this vegetation will continue to filter out pollutants from the stormwater prior to it leaving the site, and entering into the surrounding water resources.

C-3 Description of proposed post construction stormwater quality measures:
The above referenced measures will serve as filtering and erosion control measures, to reduce the amount of pollutants and sediment contained within the stormwater before entering the surrounding water resources. The excavated stream channels and special plantings to be installed on this site will help to retain water, allow for filtration of sediment and pollutants, and reduce runoff from the site. In addition, these measures will return this property back into a functional wetland, riparian, and forest habitat which is expected to improve the overall water quality of the East Fork of the White River Watershed.

C-4 Location, dimensions, specifications and construction details of each stormwater quality measure:
The entire project site will be seeded and planted in accordance with the Special Provisions for this mitigation site. The installation of the water retention berms shall be as shown on the plans. Details of the individual structures, including silt fence, construction entrances, erosion control blankets, etc. are shown on Sheet 14 of these plans.

C-5 Description of maintenance guidelines for proposed post-construction water quality measures:
Erosion and sediment control: Repair and revegetate eroded areas in the project site. These measures will be implemented, as needed, based on regular inspections by the appropriate government agency. After the permanent seeding has reached 100% coverage and 70% density the project site will not need revisited unless future ground disturbance occurs.

Nuisance control: Address odor, insects, and overgrowth issues associated with stagnant or standing water in the roadside ditches. This will be handled as necessary per inspection by the appropriate government agency or following complaints adjacent property owners.

Sediment removal: Remove accumulated sediment from all areas of the project site, especially within the excavated stream channels and behind the water retention berms.

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — DATE 12/08/08

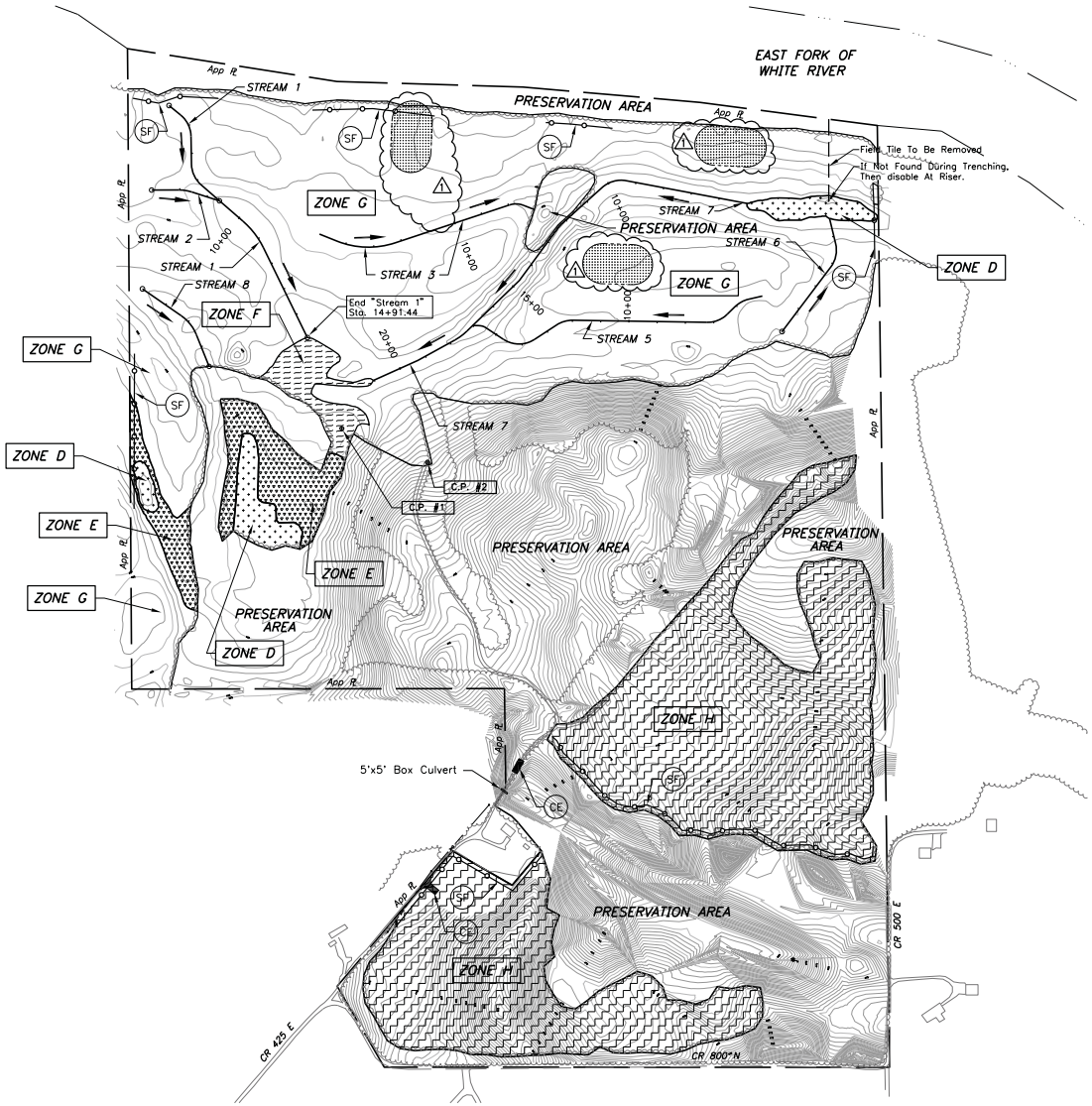
DESIGNED: JAD | DRAWN: RAP | CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

STORM WATER POLLUTION PREVENTION PLAN

HORIZONTAL SCALE	BRIDGE FILE
VERTICAL SCALE	DESIGNATION 0710905
SURVEY BOOK	SHEETS 12 of 25
CONTRACT	PROJECT 0710905
IR-30351	

S:\Surveys\103-0001\2008_Mitigation\Corn\MT_2MCD\Mit_Sheet.dwg 12/08/08 12:13 mrieke



REVISION	DATE	DESCRIPTION
1	06/05/09	DELETE STREAM 4 ALIGNMENT, ADDED AVOIDANCE AREAS

JASON A. DUPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

DESIGNED: JAD | DRAWN: RAP

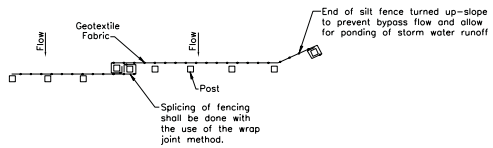
CHECKED: DJR | CHECKED: DJR

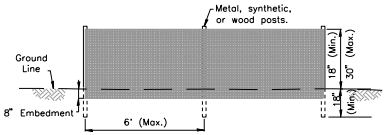
INDIANA DEPARTMENT OF TRANSPORTATION

STORM WATER POLLUTION PREVENTION PLAN

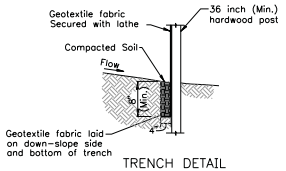
HORIZONTAL SCALE	BRIDGE FILE
1"=150'	
VERTICAL SCALE	DESIGNATION
--	0710905
SURVEY BOOK	SHEETS
	13 of 25
CONTRACT	PROJECT
IR-30351	0710905

S:\Survey\103-0001\2008_Methods\Corr\WT_DWGS\EROSION CONTROL.dwg 06/08/09 10:51 rstafford





ELEVATION



TRENCH DETAIL

(SF) SILT FENCE

Installation:

1. Lay out the location of the fence so that it is parallel to the contour of the slope; providing for a sediment storage area. Turn the ends of the fence up slope to prevent bypass.
2. Excavate an 8 inch deep by 4 inch wide trench along the entire length of the fence line. An alternate to trenching is to use mechanical equipment to plow in the silt fence.
3. Install the silt fence with the filter fabric located on the up-slope side of the excavated trench and the supprt posts on the down-slope side of the trench.
4. Drive the posts at least 18 inches into the ground, tightly stretching the fabric between the posts as each is driven into the soil. A minimum of 12 inches of filter fabric should extend into the trench. (If splicing is required, see detail above)
5. Lay the lower four inches of filter fabric on the bottom of the trench and extend it toward the up-slope of the trench.
6. Backfill the trench with soil material and compact it in place.

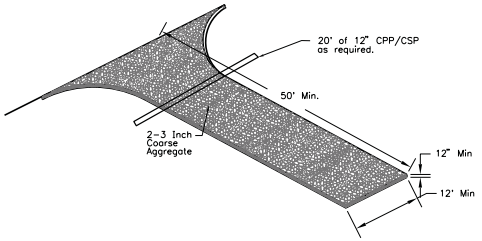
Materials & Specifications:

Silt Fence
- Fabric– Woven or non–woven geotextile fabric
- Height– 18 inches min. above ground level (30 inches max.)
- Reinforcement–Fabric securely fastened to posts with wood lathe

Support Posts
- Material– 2x2 inch hardwood posts (Steel fence posts are an acceptable substitute providing they have projections for fastening the fabric).
- Spacing: 1) 6 feet max. for extra strength fabric without wire backing.
  2) 8 feet max. if fence is supported by wire mesh fencing.

Maintenance:

- Inspect the silt fence within 24 hours of a rain event and at least seven calender days.
- If the fabric tears, starts to decompose, or in any way becomes ineffective, replace the affected portion immediately. (All repairs should mee specifications as outlined above.
- Remove deposited sediment when it reaches half the height of the fence at its, lowest point or is causing the fabric to bulge.Take care to avoid undermining the fence during clean out.
- After the contributing drainage area has been stabilized, remove the fence and sediment deposits, bring the disturbed area to grade, and stabilize.



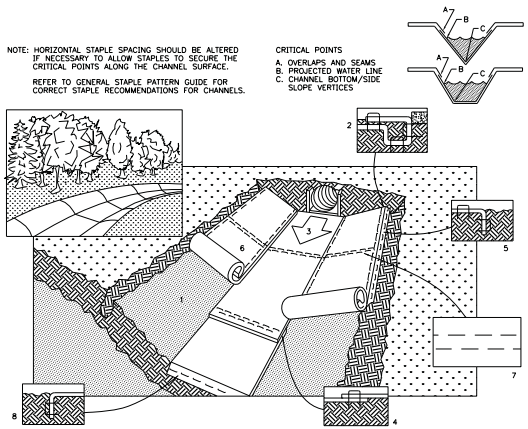
(CE) TEMPORARY CONSTRUCTION ENTRANCE

INSTALLATION

1. Avoid locating on steep slopes or at curves in public roads.
2. Aemove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.
3. If slope towards the road exceedes 2%, construct a 6–8 inch high water bar (ridge) with 3:1 side slopes across the foundation area about 15 feet from the entrance to divert runoff away from the road (practice 3.24)
4. Install pipe under the pad if needed to maintain proper public road drainage.
5. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.
6. Place stone to dimensions and grade shown in the erosion/sediment control plan leaving the surface smooth and sloped for draingoe
7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin

MAINTENANCE

- Inspect entrance pad and sediment disposal area weekly and after storm events or heavy use.
- Reshape pad as needed for drainage and runoff control.
- Topdress with clean stone as needed.
- Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping. flushing should only be used if the water is conveyed into a sediment trap or basin.
- Repair any broken road pavement immediately.



NOTE: HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

REFER TO GENERAL STAPLE PATTERN GUIDE FOR CORRECT STAPLE RECOMMENDATIONS FOR CHANNELS.

CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF SEED.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW ON BOTTOM OF CHANNEL.
4. PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH A 6" OVERLAP. USE A DOUBLE ROW OF STAGGERED STAPLES 4" APART TO SECURE BLANKETS.
5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED IN 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. BLANKETS ON SIDE SLOPES MUST BE OVERLAPPED 4" OVER THE CENTER BLANKET AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A ROW OF STAPLES 4" APART OVER ENTIRE WIDTH OF THE CHANNEL. PLACE A SECOND ROW 4" BELOW THE FIRST ROW IN A STAGGERED PATTERN.
8. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

(ECB) CHANNEL INSTALLATION

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

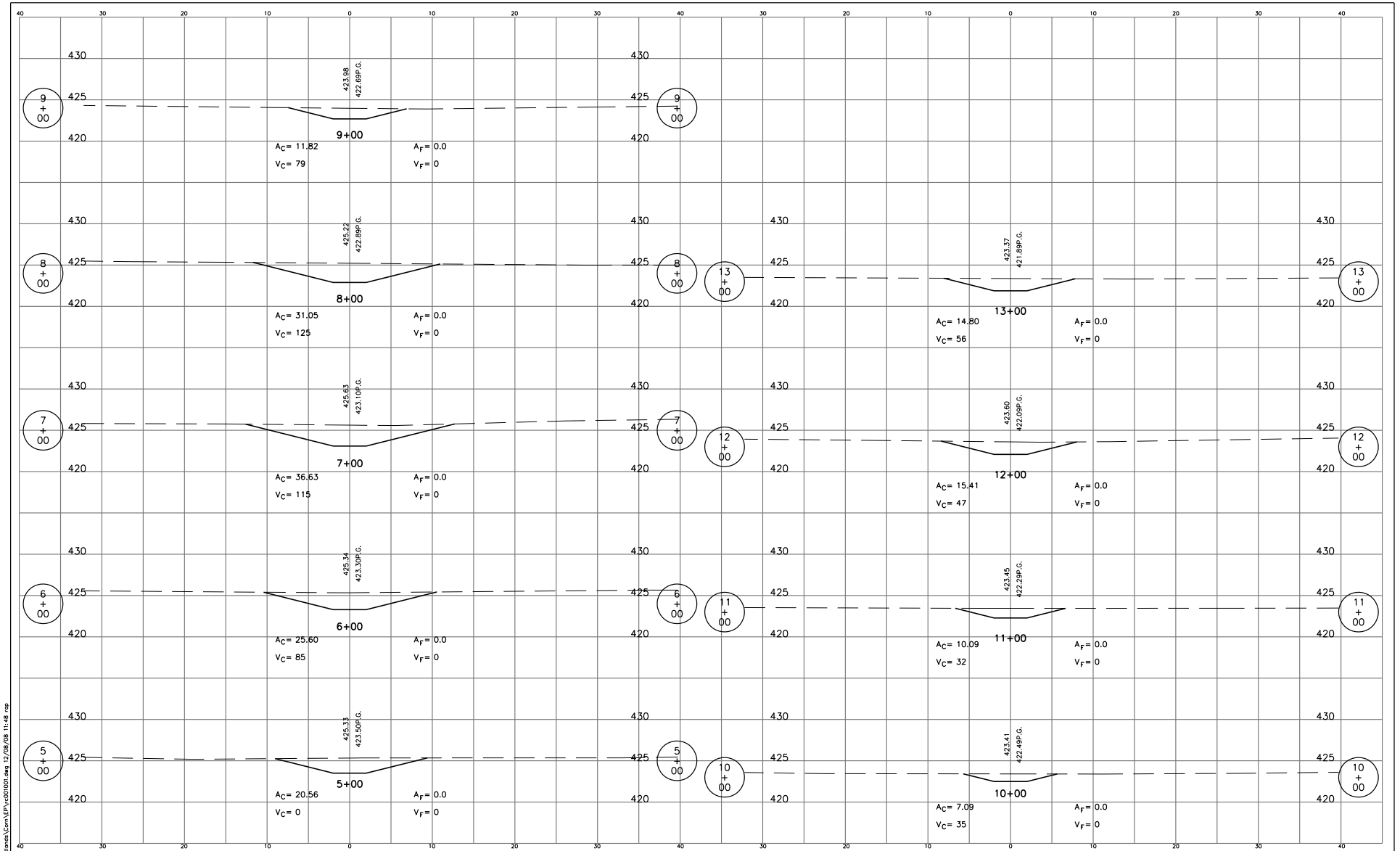
DESIGNED: JAD | DRAWN: RAP | CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

STORM WATER POLLUTION PREVENTION PLAN DETAILS

HORIZONTAL SCALE	BRIDGE FILE
AS SHOWN	
VERTICAL SCALE	DESIGNATION
---	0710905
SURVEY BOOK	SHEETS
	14 of 25
CONTRACT	PROJECT
IR-30351	0710905

S:\Seranm\1103-0001\2008_Metronet\Corr\MT_DWGS\EROSION-DETAILS.dwg 12/08/08 11:43 rap



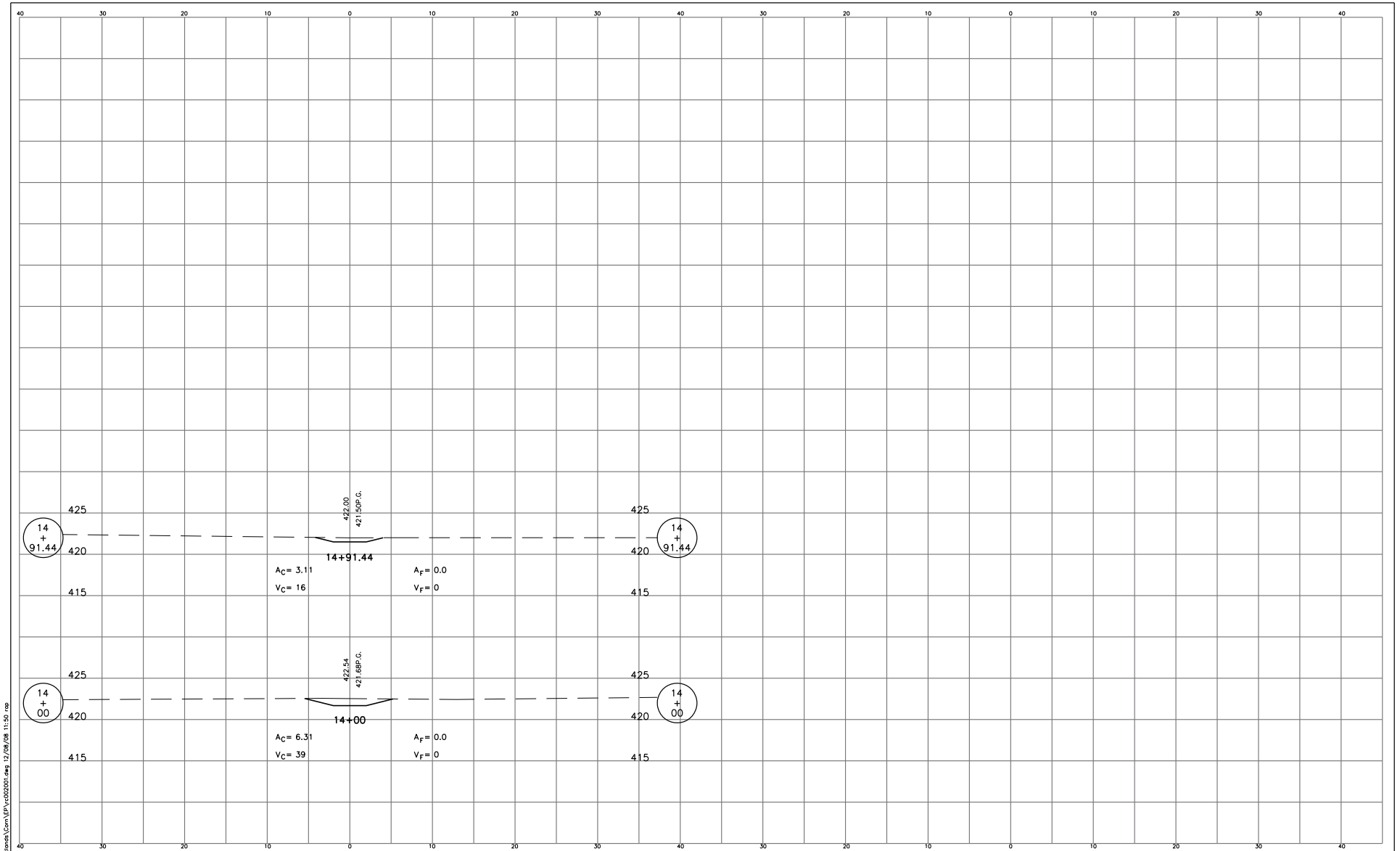
S:\Surveys\103-0001\2008_Wetlands\Com\EP\vc001001.dwg 12/08/08 11:48 rap

INDIANA DEPARTMENT OF TRANSPORTATION

CROSS SECTION
STREAM 1

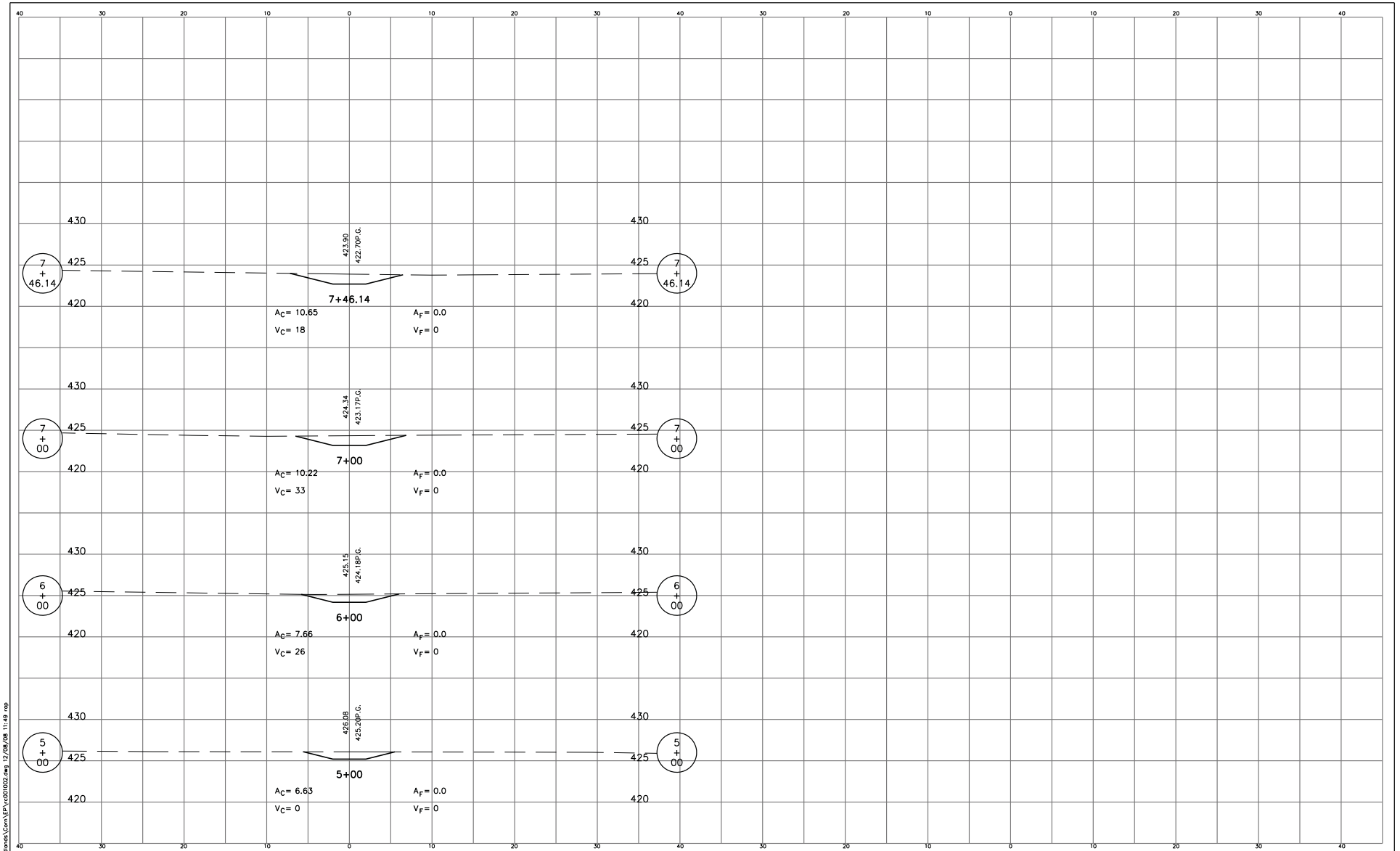
DESIGNED: _____ DRAWN: _____
CHECKED: _____ CHECKED: _____

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	0710905
SURVEY BOOK	
	15 of 25
CONTRACT	PROJECT
IR-30351	0710905



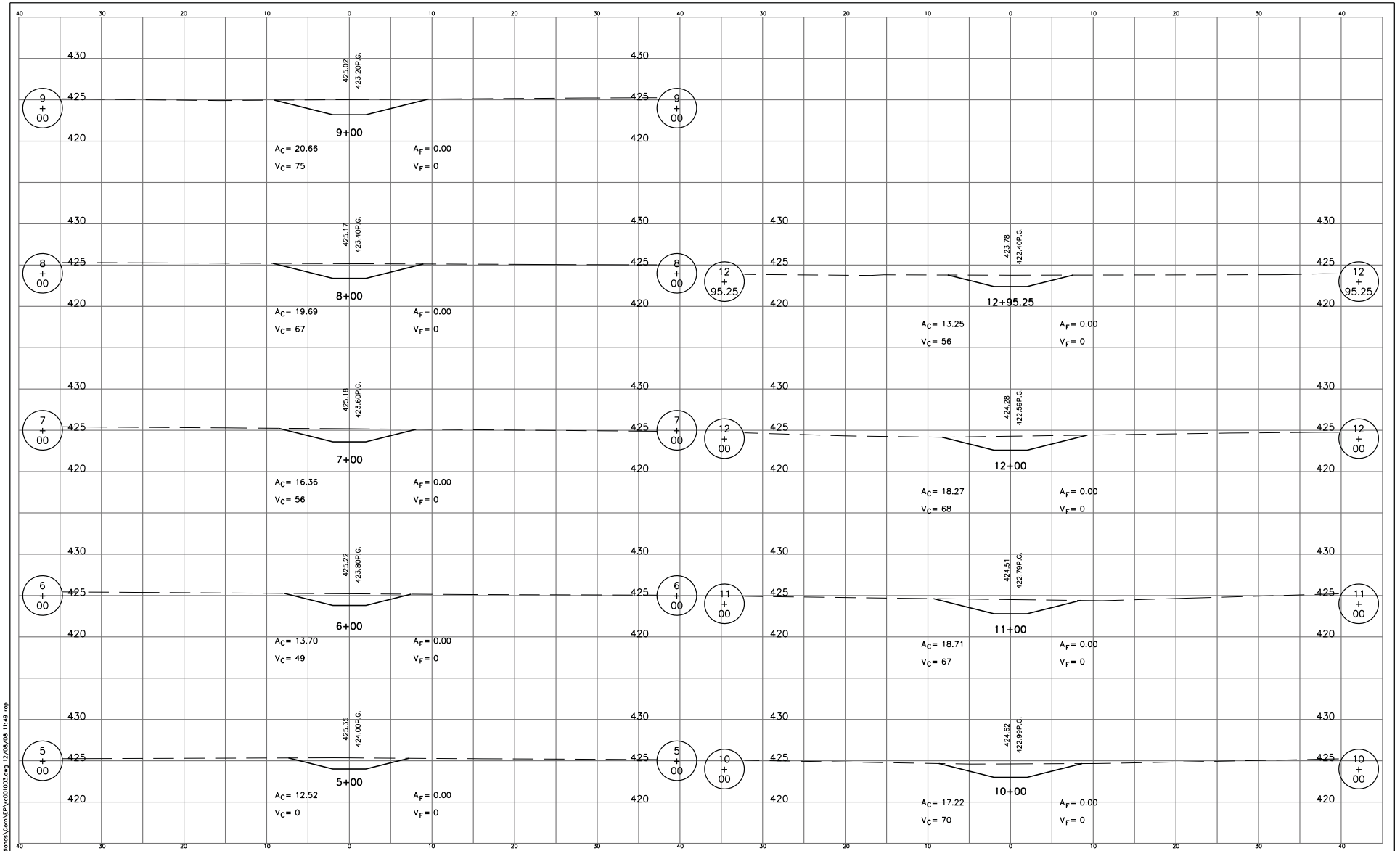
S:\Surveys\103-0001\2008_Wetlands\Cons\EP\rc002001.dwg 12/08/08 11:50 rap

		INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
			VERTICAL SCALE 1"=5' / DESIGNATION 0710905
DESIGNED:	DRAWN:	CROSS SECTION STREAM 1	SURVEY BOOK / 16 of 25
CHECKED:	CHECKED:		CONTRACT IR-30351 / PROJECT 0710905



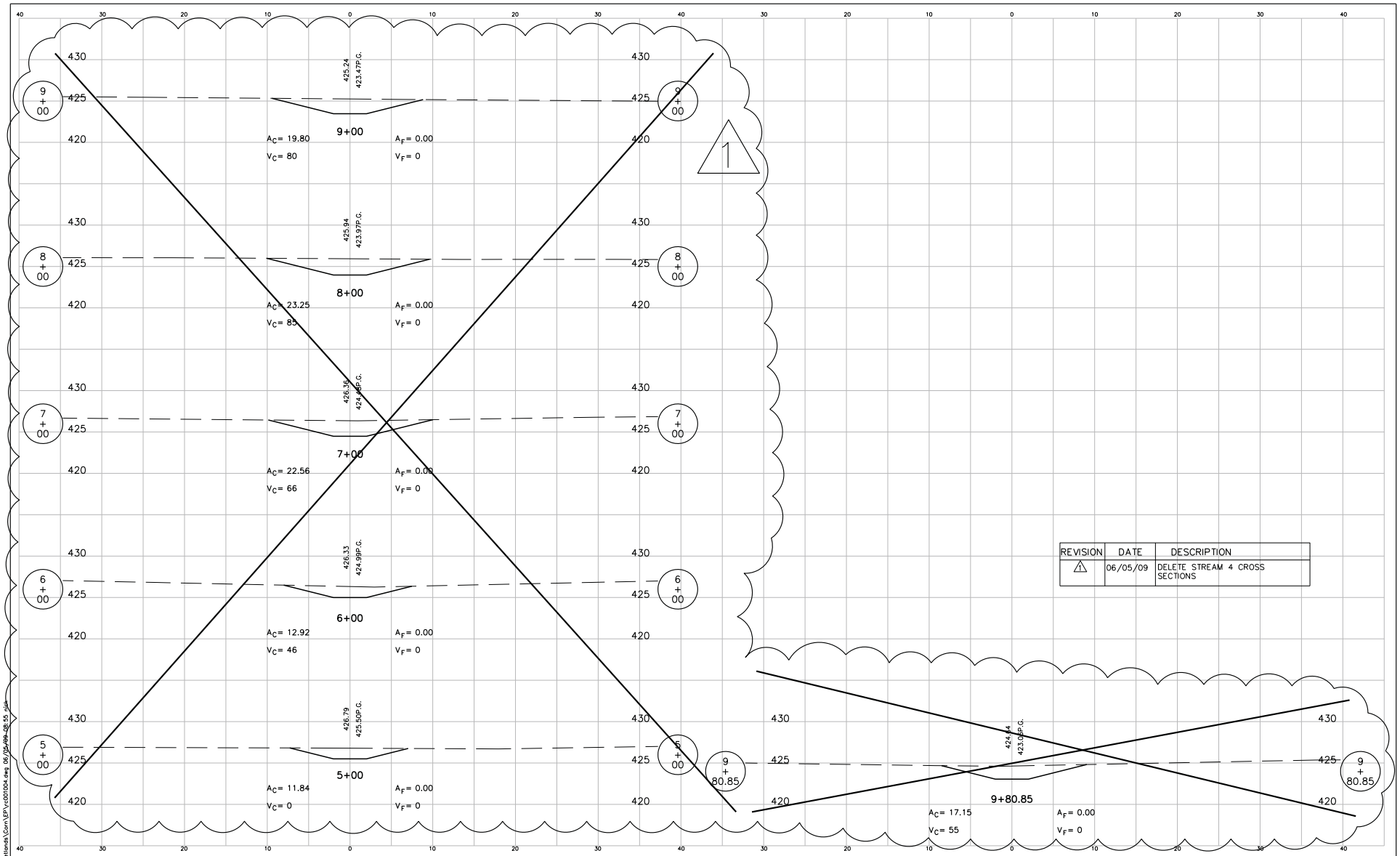
S:\Surveys\103-0001\2008_Wetlands\Cam\EP\vc001002.dwg 12/08/08 11:49 rap

DESIGNED:	DRAWN:	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
CHECKED:	CHECKED:	CROSS SECTION STREAM 2	VERTICAL SCALE 1"=5' / DESIGNATION 0710905
			SURVEY BOOK / 17 of 25
			CONTRACT IR-30351 / PROJECT 0710905



S:\Surveys\103-0001\2008_Wetlands\Com\EP\vc001003.dwg 12/08/08 11:49 rap

DESIGNED:	DRAWN:	**INDIANA DEPARTMENT OF TRANSPORTATION**	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
CHECKED:	CHECKED:	CROSS SECTION STREAM 3	VERTICAL SCALE 1"=5' / DESIGNATION 0710905
			SURVEY BOOK / 18 of 25
			CONTRACT IR-30351 / PROJECT 0710905



REVISION	DATE	DESCRIPTION
1	06/05/09	DELETE STREAM 4 CROSS SECTIONS

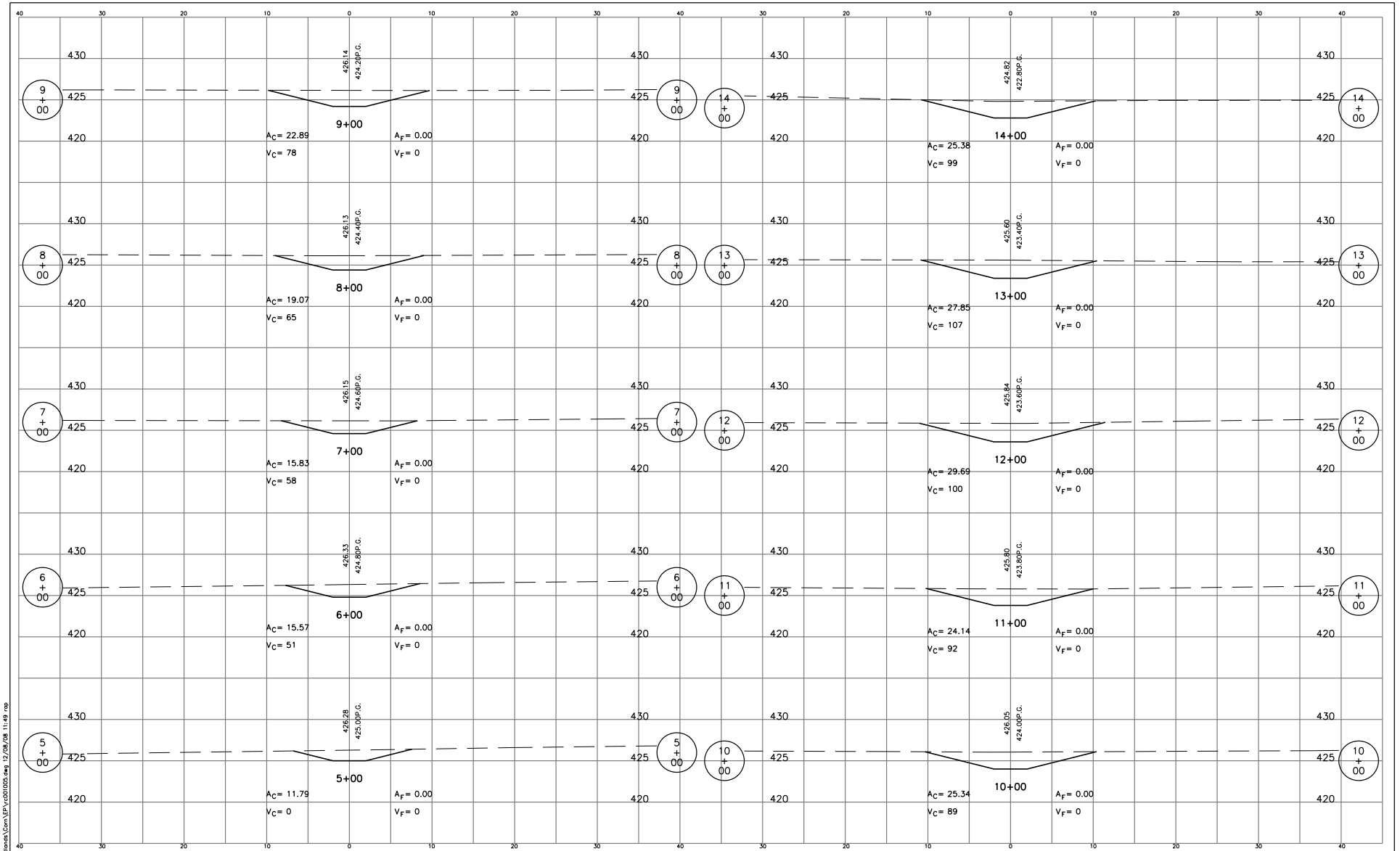
INDIANA
DEPARTMENT OF TRANSPORTATION

CROSS SECTION
STREAM 4

DESIGNED: _____ DRAWN: _____
CHECKED: _____ CHECKED: _____

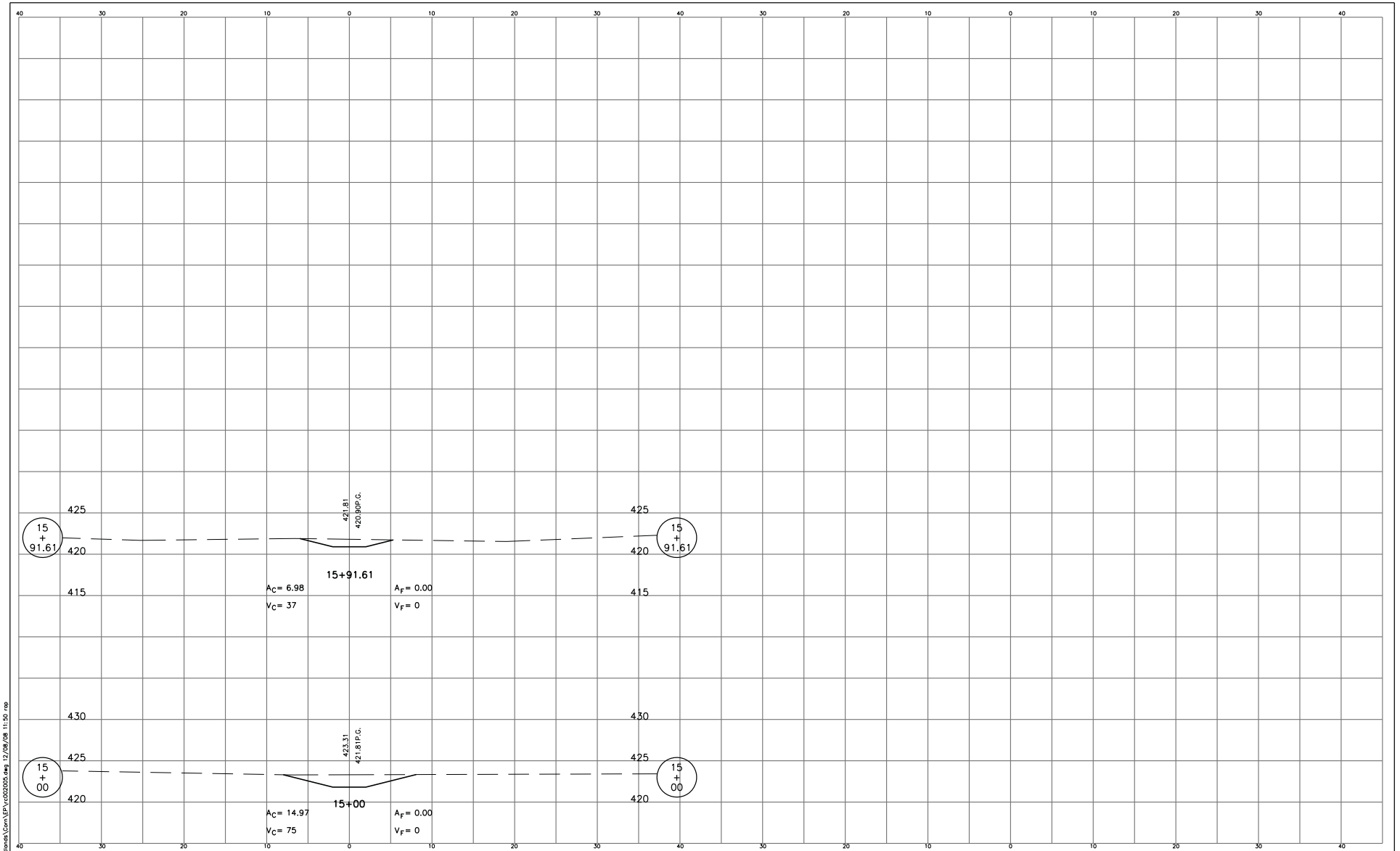
HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	0710905
SURVEY BOOK	
	19 of 25
CONTRACT	PROJECT
IR-30351	0710905

S:\Surveys\103-0001\2008_Wetlands\Corr\EPV\c001004.dwg 06/05/09 08:55 pam



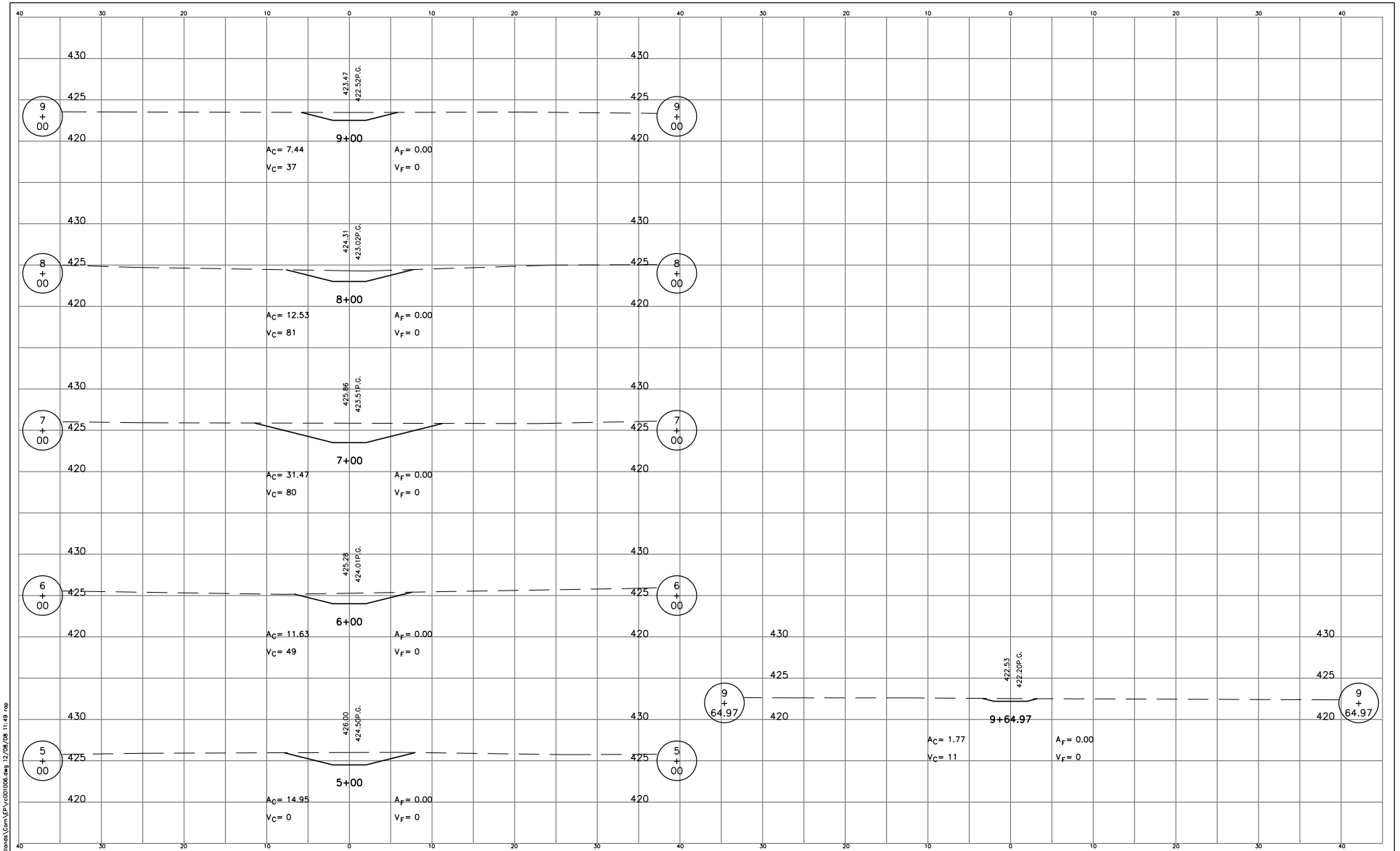
S:\Surveys\103-0001\2008_Wetlands\Com\EP\vc001005.dwg 12/08/08 11:49 rap

DESIGNED:	DRAWN:	**INDIANA DEPARTMENT OF TRANSPORTATION**	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
CHECKED:	CHECKED:	CROSS SECTION STREAM 5	VERTICAL SCALE 1"=5' / DESIGNATION 0710905
			SURVEY BOOK / 20 of 25
			CONTRACT IR-30351 / PROJECT 0710905



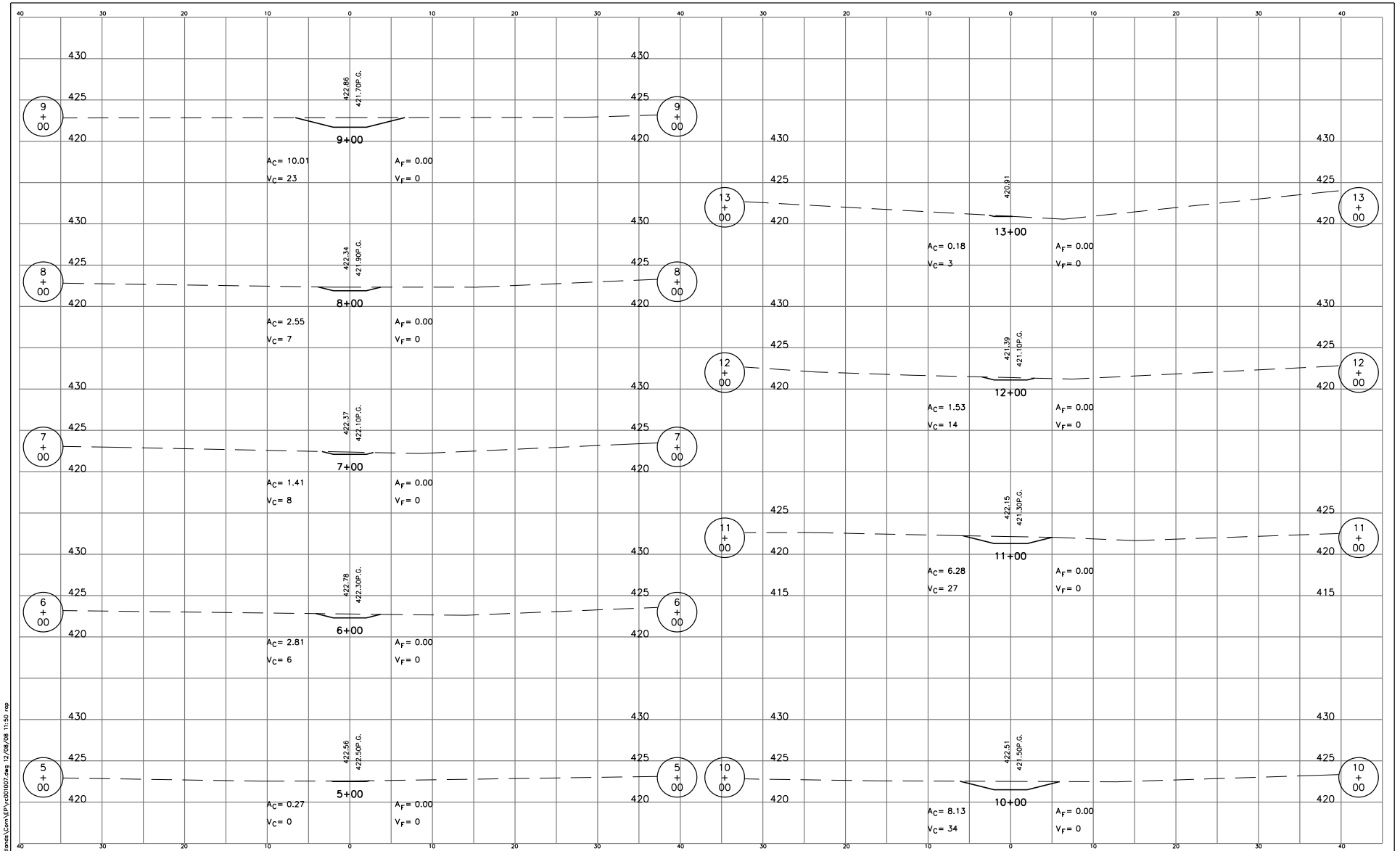
S:\Surprg\103-0001\2008_Wetlands\Corr\EP\rc002005.dwg 12/08/08 11:50 rap

		INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
			VERTICAL SCALE 1"=5' / DESIGNATION 0710905
DESIGNED:	DRAWN:	CROSS SECTION STREAM 5	SURVEY BOOK / 21 of 25
CHECKED:	CHECKED:		CONTRACT IR-30351 / PROJECT 0710905



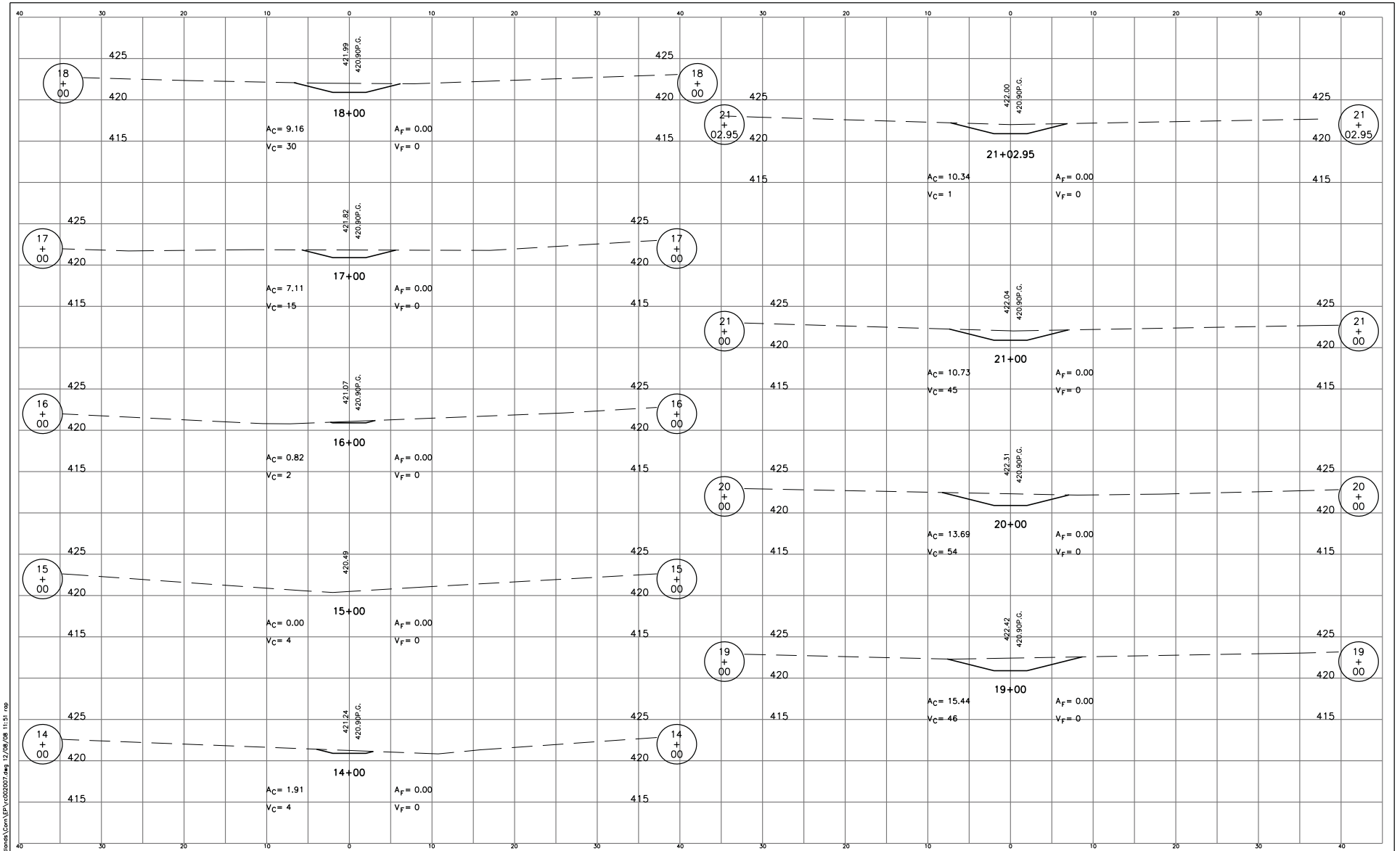
S:\Surveys\103-0001\2008_Wetlands\Com\EP\vc001006.dwg 12/08/08 11:49 rap

DESIGNED:	DRAWN:	**INDIANA DEPARTMENT OF TRANSPORTATION**	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
CHECKED:	CHECKED:	CROSS SECTION STREAM 6	VERTICAL SCALE 1"=5' / DESIGNATION 0710905
			SURVEY BOOK / 22 of 25
			CONTRACT IR-30351 / PROJECT 0710905



S:\Surveys\103-0001\2008_Wetlands\Com\EP\vc001007.dwg 12/08/08 11:50 rap

		INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
			VERTICAL SCALE 1"=5' / DESIGNATION 0710905
DESIGNED:	DRAWN:	CROSS SECTION STREAM 7	SURVEY BOOK / 23 of 25
CHECKED:	CHECKED:		CONTRACT IR-30351 / PROJECT 0710905



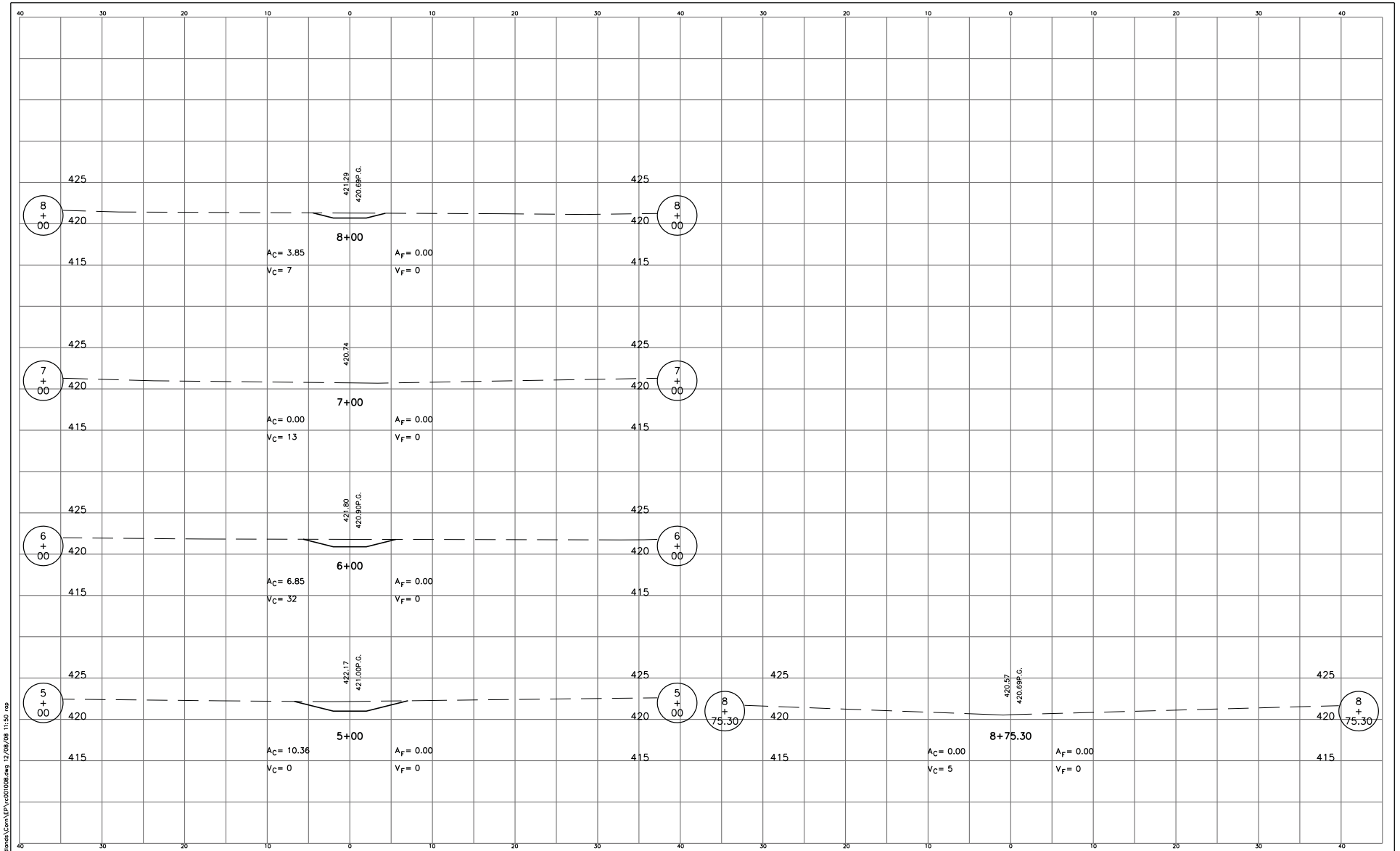
INDIANA
DEPARTMENT OF TRANSPORTATION

DESIGNED: DRAWN:
CHECKED: CHECKED:

CROSS SECTION
STREAM 7

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	0710905
SURVEY BOOK	
	24 of 25
CONTRACT	PROJECT
IR-30351	0710905

S:\Surveys\103-0001\2008_Wetlands\Com\EP\rc002007.dwg 12/08/08 11:51 rap



S:\Surveys\103-0001\2008_Wetlands\Cam\EP\vc001008.dwg 12/08/08 11:50 rap

		INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
			VERTICAL SCALE 1"=5' / DESIGNATION 0710905
DESIGNED:	DRAWN:	CROSS SECTION STREAM 8	SURVEY BOOK / 25 of 25
CHECKED:	CHECKED:		CONTRACT IR-30351 / PROJECT 0710905

Attachment 5

I-69 Section 2
Mitigation Site
Special Provisions

SPECIAL PROVISION

DES 0710905 - MITIGATION SITE
WETLAND, STREAM, FOREST RIPARIAN HABITAT MITIGATION

This mitigation site, known as the Mitigation Site, is being developed as part of the I-69 Sections 2 and 3 Um la Mitigation Bank. This mitigation plan is offered in compensation for a portion of the impacts caused by Section 2 of the I-69 Evansville to Indianapolis Project in Gibson, Pike, and Daviess Counties, Indiana to fulfill commitments identified in the Tier 1 and Tier 2 Environmental Impact Statements addressing impacts to forest, stream, and wetland habitats. This mitigation addresses conditions of Section 7 consultation, Section 404/401 Permits and Construction in a Floodway Permits for Section 2 of I-69 from SR 64 to US 50. This mitigation site meets the criteria for the Wetland Restoration Exemption to the Construction in a Floodway Permit, per 312 IAC 10-5-1. The design plans show the location of the mitigation site and the grading details. Also shown on the plans are the locations of the various zones that will receive special plantings that are covered in this special provision. The provisions of Section 621 and 622 of the INDOT Standard Specifications (2008), where not in conflict with these special provisions, shall be applicable to the special planting requirements of the mitigation plan.

Mitigation site construction shall begin immediately upon receipt of notice to proceed on the contract. Final planting shall take place between September 1 and the following May 25, as specified below. If site preparation concludes, such that planting cannot occur immediately following site preparation, a temporary cover shall be planted using Seed Mix T in accordance with INDOT Standard Specification 621.06(f) and the stormwater pollution prevention plan.

The CONTRACTOR shall submit his schedule of activities to the ENGINEER for approval. The CONTRACTOR shall provide a written notification to the INDOT Ecology Unit Senior Environmental Manager upon initiation of construction activities on the project as well as upon completion of planting of the site. The written notification shall be sent to the Senior Environmental Manager, Indiana Department of Transportation, Ecology Unit, Office of Environmental Services, Government Building North, Room N642, 100 North Senate Avenue, Indianapolis, Indiana 46204-2249. As soon as approved, and as directed by the ENGINEER, the CONTRACTOR shall prepare the site, and plant the species as per this special provision.

A. SITE PREPARATION

Prior to mobilization of equipment to the mitigation site, all mechanical equipment (e.g. trucks, bulldozers, backhoes, etc.) shall be pressure-washed at an off-site location to remove any dirt or soil that may be a potential seed source for invasive or non-native species. Any equipment that leaves the site shall also be pressure-washed at an off-site location prior to returning to the site. All equipment shall be inspected for cleanliness by the ENGINEER before entering the site.

Erosion control measures, including silt fences shall be installed per INDOT 2008 Standard Specification 205.03, and as shown on the plans, to minimize erosion of disturbed soil and prevent runoff from leaving the site during construction. Temporary erosion control features shall be constructed prior to any excavation or land disturbance on the site. Material excavated from the ephemeral stream channels shall be utilized to construct the water retention berms, as shown on the plans. Prior to planting within the flat-bottom channels of Zone A, all surrounding soils shall be stabilized. Channel bottom planting shall occur when the channel is dry. The surface soil shall be scarified by shallow tilling or raking. Bank stabilization shall include revegetation and application of erosion

control matting within the excavated channels and on the water retention berms.

Exploratory trenching along the northern boundary of the Mitigation Site shall be completed as shown on the design plans to disable any drain tiles that may be located within the Mitigation Site. The trench shall be six (6) feet deep with a minimum width of one (1) foot to allow for visual observation of any tiles. If a visual observation indicates the presence of a tile, the tile shall be plugged on the downstream end with a concrete plug and a minimum of 50 feet of the tile shall be removed upstream from the trench. One (1) drainage tile is known to exist within the emergent wetland development area in the northeast portion of the property, as shown on the plans. If the tile downstream from this vertical inlet is not located and disabled during tile exploration, the tile shall be disabled from the inlet, utilizing the same method specified above. All trenches shall be backfilled with excavated material upon completion of the tile exploration. No trenching shall occur in the preservation areas or in the avoidance areas shown on the plans.

Refuse will be removed from the area identified on the design plans as “Refuse Removal Area”. Any refuse shall be removed from the mitigation site property and disposed of in an appropriately permitted landfill. Removal of the refuse in this area should be completed with as little disturbance to the surrounding landscape as possible. Any ground disturbance caused by mechanical equipment used to remove refuse shall be regraded to existing contours, seeded, and mulched.

Areas within Zone A (ephemeral stream channel development areas) are the only areas proposed for excavation at this site. Excess excavated material shall be utilized for the construction of the water retention berms. Any remaining material shall be placed in the designated stream cut disposal area(s) as indicated on the plans at a total maximum depth of 9 inches. Excavation and grading shall be as shown in the plans. Excavation and grading shall be followed by seedbed preparation as specified below.

Site preparation for Planting Zones B and C (the Wooded Riparian Areas along the ephemeral stream channels), Zone D (the emergent wetland areas), Zone E (the scrub/shrub wetland areas), Zone F (the forested wetland area), Zone G (the bottomland forested areas), and Zone H (the upland forested areas) will not require excavation. The existing contours will be preserved and only seedbed preparation shall be performed. The three (3) avoidance areas located within Zone G shall also receive seedbed preparation, however, no excavation shall occur and no trees or shrubs shall be planted within these areas.

Seedbed preparation shall consist of a multiple tillings to eliminate any existing seed source of undesirable volunteer species. Till or plow no more than 6 inches on the first pass. After two weeks, till or disc no more than the upper 3 inches of soil at least two (2) times at two (2) week intervals. This shallow tilling shall be performed when young developing weeds show. After final tilling harrow the upper 3 inches and seed immediately. Alternative tilling schedules may be approved by the INDOT Ecology Unit to adequately eliminate any undesirable seed source.

Areas outside the designated Planting Zones, comprised of a variety of existing wetland, bottomland forest, early-successional forest, upland forest, and riparian habitats, shall be preserved in place and not disturbed during mitigation activities. These preservation areas total 71.6 acres of the 170.9 acre property.

If water levels in the mitigation site are too deep for seeding, planting, proper germination, or establishment, the CONTRACTOR shall be responsible for removal of water to allow for proper seeding, planting, germination, and establishment.

B. PLANTING PLAN

The provisions of Section 621 and 622 of INDOT Standard Specifications (2008), where not in conflict with the Special Provisions for this site, shall be a cable to the special planting requirements of the mitigation plan. The mitigation plan includes eight (8) distinct planting zones (Zones A t gh H) totaling 98.7 acres. An additional 0.3 acres of the site, comprised of water retention berms, are included in this acreage and shall also receive planting. The remaining 72.2 acres (comprised of 71.6 acres of preservation and 0.6 acre of existing right-of-way) of the 170.9 acre property will not be planted. Collectively, 27,497 bare root tree seedlings, 1,548 3-gallon container grown tree seedlings, 9,592 bare root shrub seedlings, and 4,227 lbs of herbaceous ground cover seed mix are called for in the planting plan.

Prior to the planting of tree and shrub seedlings, the seedbed shall be prepared, as specified above, to allow for seeding of the various herbaceous cover seed mixes proposed. Herbaceous ground cover seeding shall occur between September 1 and the following May 25. Bare root and 3-gallon container grown trees and shrubs shall be planted between October 1 and the following April 15, provided that trees are dormant. The term “dormant” is used here to describe seedlings in the late fall to early spring after the trees have lost their leaves and before buds have opened. Planting outside of this specified time window shall only be authorized in writing by the INDOT Ecology Unit Senior Environmental Manager. If site preparation concludes, such that planting cannot occur during these dates, a temporary cover shall be planted using Seed Mix T in accordance with INDOT Standard Specification 621.06(f).

Where herbaceous ground cover is specified, the seed mixes shall be seeded at the rates specified below. All seeding rates identified in this specification are based on pure live seed (PLS). All seed to be used on the site shall be properly tagged to identify PLS percentage.

Seed Mixes for the Mitigation Planting Plan shall be the following:

Planting Zone	Seed Mix Name	Seeding Rate	Amount
A	Swale Seed Mix	27.72 lbs/acre	41.6 lbs
B,C,E,F,G	Wooded Wetland Establishment	44.53 lbs/acre	2,854.4 lbs
D	Emergent Wetland Seed Mix	34.78 lbs/acre	66.1 lbs
H	Annual Rye Grass	40.00 lbs/acre	1,248.0 lbs
Berms	Slope Stabilization Seed Mix	57.63 lbs/acre	17.3 lbs
	Total		**4,227.4 lbs**

The Swale Seed Mix shall be as listed in Table 1, or shall include at least seven (7) native graminoid species and ten (10) native forb species listed in Table 1. If not all species listed in Table 1 are used, each species used must all be at a rate equal to or greater than that listed in Table 1. This mix shall be planted at a rate of 27.72 lbs/acre PLS within planting zone A.

The Wooded Wetland Establishment Seed Mix shall be as listed in Table 2, or a comparable wetland woods herbaceous cover mix consisting of at least twelve (12) native graminoid species and nine (9) native forb species. If not all species listed in Table 2 are used, each species used must all be

at a rate equal to or greater than that listed in Table 2. This mix shall be planted at a rate of 44.53 lbs/acre PLS within planting zones B, C, E, F, and G.

The Emergent Wetland Seed Mix shall be as listed in Table 3, or shall include at least seven (7) native graminoid species and thirteen (13) native forb species listed in Table 3. If not all species listed in Table 3 are used, each species used must all be at a rate equal to or greater than that listed in Table 3. This mix shall be planted at a rate of 34.78 lbs/acre PLS within planting zone D.

The Annual Rye shall be planted at a rate of 40.00 lbs/acre within planting zone H.

The Slope Stabilization Seed Mix shall be as listed in Table 4, or shall include at least five (5) of the native graminoid species listed in Table 4. If not all species listed in Table 4 are used, each species used must all be at a rate equal to or greater than that listed in Table 4. This mix shall be planted at a rate of 57.63 lbs/acre on the water retention berms.

Seeding of all zones shall be by broadcast spreading, followed by mulching. Seeding shall follow immediately after seedbed preparation.

A roller, cultipacker or light raking shall be used on all seeded areas to ensure adequate seed-to-soil contact. Seeds shall not be covered by more than 1/8 (0.125) inch of soil. The seeded areas are to be immediately followed by mulching (see below).

Planting of the bare root and/or 3-gallon container grown seedlings shall occur following the seeding and mulching of the herbaceous ground cover in Zones B, C, E, F, G, and H. Bare root tree and shrub seedlings shall be 1 ½ - 2 feet tall. Seedlings shall have a minimum root collar caliper equal to or greater than 1/4 inch and shall have a well developed fibrous root system. The 3-gallon container grown tree seedlings (Zones B, C, and F) shall be 3 - 6 feet tall and shall have a minimum root collar diameter equal to or greater than 3/4 inch. The 3-gallon container grown seedlings shall have a fibrous root mass sufficient enough to retain its shape and hold together when removed from the container. Seedlings shall be transported, stored, and handled in accordance with 914.08. Storage of bare root seedlings shall be in a cool dark place until the date they are to be installed. Only that number of bare root seedlings which can reasonably be planted during a single day may be removed from storage. They shall be kept moist at all times. Seedling trees and shrubs shall be planted in accordance with sound horticultural practices with respect to moisture, root pruning, planting depth, planting hole size, soil compaction, etc. All bare root tree and shrub seedlings shall be mechanically planted. All 3-gallon container grown seedlings shall be manually planted. Seedlings shall be planted so the root collar is even with the ground surface. Roots shall not be forced into an improper planting hole, which would restrict their ability to grow and support the seedling to permit survival.

Planting of the tree seedlings (bare root and 3-gallon container grown) shall be in a random manner with regard to species composition to avoid clustering with a density of 436 stems/acre (approximately 10 foot spacing) in Zones B, C, and F; and with a density of 303 stems/acre (approximately 12 foot spacing) in Zones G and H. Planting of the bare root shrub seedlings within Zones B, C, G, and H shall be in a random manner with regard to species composition and shall be planted midway between every 4th and 5th tree seedling. Planting of the bare root shrub

seedlings within Zone E shall be in a random manner with regard to species composition with a density of 680 stems/acre (approximately 8 foot spacing). No trees or shrubs shall be planted in the designated avoidance areas within Zone G.

Trees will be planted in rows following the specified pattern in the plans. The beginning point of adjacent rows shall be staggered by approximately 4 to 5 feet to avoid a uniform grid pattern. Each planting row shall be marked by placing a wood lath spaced every 150 feet within the planting row immediately adjacent to the stem of the nearest seedling. The wood laths shall be painted fluorescent orange and shall be a minimum of 4 feet long and placed with a minimum of 3 feet above the ground elevation.

Tree Species for the Mitigation Planting Plan shall be the following:
Zone B – Wooded Riparian Area (0 to 25 feet from Top of Bank)

Common name	Scientific Name	Type of Planting
Tree Species		
American Elm	*Ulmus americana*	514 Bare Root
		172 3-Gallon
Silver Maple	*Acer saccharinum*	514 Bare Root
		172 3-Gallon
Cottonwood	*Populus deltoides*	514 Bare Root
		172 3-Gallon
Sycamore	*Platanus occidentalis*	514 Bare Root
		172 3-Gallon
Shrub Species		
Pale Dogwood	*Cornus obliqua*	229 Bare Root
Common Spicebush	*Lindera benzoin*	229 Bare Root
Elberberry	*Sambucus canadensis*	229 Bare Root
Total		**2,743 Bare Root**
		687 3-Gallon

Zone C – Wooded Riparian Area (25 to 50 feet from Top of Bank)

Common name	Scientific Name	Type of Planting
Tree Species		
Shellbark Hickory	*Carya laciniosa*	**532** Bare Root
		177 3-Gallon
Pin Oak	*Quercus palustris*	**532** Bare Root
		177 3-Gallon
Swamp White Oak	*Quercus bicolor*	**532** Bare Root
		177 3-Gallon
Pecan	*Carya illinoinensis*	**532** Bare Root
		177 3-Gallon
Shrub Species		
Pale Dogwood	*Cornus obliqua*	**236** Bare Root
Common Spicebush	*Lindera benzoin*	**236** Bare Root
Elberberry	*Sambucus canadensis*	**236** Bare Root
Total		**2,836 Bare Root**
		708 3-Gallon

Zone E – Scrub/Shrub Wetland Area

Common name	Scientific Name	Type of Planting
Shrub Species		
Buttonbush	*Cephalanthus occidentalis*	397 Bare Root

Common Spicebush	*Lindera benzoin*	397 Bare Root	
Elderberry	*Sambucus canadensis*	397 Bare Root	
Pale Dogwood	*Cornus obliqua*	397 Bare Root	
Ninebark	*Physocarpus opulifolius*	397 Bare Root	
Indigobush	*Amorpha fruticosa*	397 Bare Root	
Total		**2,382**	**Bare Root**

Zone F – Forested Wetland Area

Common name	Scientific Name	Type of Planting
Tree Species		
Pin Oak	*Quercus palustris*	115 Bare Root
		38 3-Gallon
Swamp White Oak	*Quercus bicolor*	115 Bare Root
		38 3-Gallon
Pecan	*Carya illinoinensis*	115 Bare Root
		38 3-Gallon
River Birch	*Betula nigra*	115 Bare Root
		38 3-Gallon
Total		**460 Bare Root**
		152 3-Gallon

Zone G – Bottomland Forest Area

Common name	Scientific Name	Type of Planting
Tree Species		
Pin Oak	*Quercus palustris*	**1,489** Bare Root
Shumard Oak	*Quercus shumardii*	**1,489** Bare Root
Bur Oak	*Quercus macrocarpa*	**1,489** Bare Root
White Oak	*Quercus alba*	**1,489** Bare Root
Shagbark Hickory	*Carya ovata*	**1,489** Bare Root
Pecan	*Carya illinoinensis*	**1,489** Bare Root
Black Walnut	*Juglans nigra*	**1,489** Bare Root
Cottonwood	*Populus deltoides*	**1,489** Bare Root
American Elm	*Ulmus americana*	**1,489** Bare Root
Shrub Species		
Roughleaf Dogwood	*Cornus drummondii*	**670** Bare Root
Gray Dogwood	*Cornus racemosa*	**670** Bare Root
Common Winterberry	*Ilex verticillata*	**670** Bare Root
Ninebark	*Physocarpus opultfolius*	**670** Bare Root
Nannyberry	*Viburnum lentago*	**670** Bare Root
Total		**16,751 Bare Root**

Zone H – Upland Forest Area

Common name	Scientific Name	Type of Planting
Tree Species		
Red Oak	*Quercus rubra*	2,363 Bare Root
White Oak	*Quercus alba*	2,363 Bare Root
Tuliptree	*Liriodendron tulipifera*	2,363 Bare Root
Black Cherry	*Prunus serotina*	2,363 Bare Root
Shrub Species		
Serviceberry	*Amelancbter arborea*	790 Bare Root
American Hazelnut	*Corylus Americana*	790 Bare Root
Blackhaw	*Viburnum prunifolium*	790 Bare Root
Total		**11,822 Bare Root**

The design plans show the locations of planting zones. Species shall be planted at these zone locations with the quantities shown below. Strict adherence to planting species in the appropriate zone is required. Any substitution of species or seed mix shall be approved by the ENGINEER. The seeding rate for any substituted species or seed mix shall be sufficient to provide a seed count equivalent to that of the specified seed mix.

All seeds, bare root, and 3-gallon container grown plants should be obtained from nurseries within the American National Standards Institute (ANSI) Plant Hardiness Zones 4, 5 or 6. Potential vendors include, but are not limited to:

Indiana
- Indiana Department of Natural Resources
- J.F. New Native Plant Nursery (Walkerton, IN)
- Heartland Restoration Services, Inc. (Fort Wayne, IN)
- Berg Warner Nursery (Lizton, IN)

Illinois
- Lafayette Home Nursery, Inc. (Lafayette, IL)

Kentucky
- Shooting Star Nursery (Georgetown, KY)

Ohio
- Envirotech Consultants, Inc. (Somerset, OH)

Missouri
- Forrest Keeling Nursery (Elsberry, MO)
- Ripley County Farms (Doniphan, MO)

New York
- Southern Tier Consulting, Inc. (West Clarksville, NY)

Virginia
- Bobtown Nursery (Melfa, VA)

Plant Species and Quantities per Zone

Zone A Stream Channel Bottom	**Area:**	1.5 acres	
	Elevations:	Varies, 420.6 to 425.5 feet	
	Ground Cover:	Swale Seed Mix	**Amount:** 41.6 lbs
	Planting Guidelines:	Planting of Swale Seed Mix shall be by broadcast spreading at a rate of 27.72 lbs/acre followed by coconut fiber mat application. Seeding of the Swale Seed Mix and coconut fiber mat application will cover the 4 foot bottom of each stream channel and 4 feet of the 4:1 sideslopes of each stream channel.	
Zone B Wooded Riparian (Top-of-Bank to 25' from Top-of-Bank)	**Area:**	6.3 acres	
	Elevation:	Varies along channels (421 to 427 feet)	
	Trees:	American Elm Silver Maple Cottonwood Sycamore	**Number:** 514 BR/172 CG 514 BR/172 CG 514 BR/172 CG 514 BR/172 CG
	Shrubs:	Pale Dogwood Common Spicebush Elderberry	**Number:** 229 BR 229 BR 229 BR
	Ground Cover:	Wooded Wetland Establishment Seed Mix	**Amount:** 280.5 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast	

		spreading at a rate of 44.53 lbs/acre followed by mulching. Bare root seedlings are to be mechanically planted with 10-foot spacing with manual planting of container grown seedlings to occur between every 3rd and 4th bare root seedling, also with 10-foot spacing. Bare root shrubs seedlings shall be planted with 5-foot spacing between every 4th and 5th tree seedling. All tree and shrub seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.		
Zone C Wooded Riparian **(25' from Top-of-Bank to 50'from Top-of-Bank)**	**Area:**	6.5 acres		
	Elevation:	Varies along channels (421 to 427 feet)		
	Trees:	Shellbark Hickory Pin Oak Swamp White Oak Pecan	**Number:**	532 BR/177 CG 532 BR/177 CG 532 BR/177 CG 532 BR/177 CG
	Shrubs:	Pale Dogwood Common Spicebush Elderberry	**Number:**	236 BR 236 BR 236 BR
	Ground Cover:	Wooded Wetland Establishment Seed Mix	**Amount:**	289.4 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast spreading at a rate of 44.53 lbs/acre followed by mulching. Bare root seedlings are to be mechanically planted with 10-foot spacing with manual planting of container grown seedlings to occur between every 3rd and 4th bare root seedling, also with 10-foot spacing. Bare root shrubs seedlings shall be planted with 5-foot spacing between every 4th and 5th tree seedling. All tree and shrub seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.		
Zone D Emergent Wetland	**Area:**	1.9 acres		
	Elevation:	418 to 422.5 feet		
	Ground Cover:	Emergent Wetland Seed Mix	**Amount:**	66.1 lbs
	Planting Guidelines:	Planting of the Emergent Wetland Seed Mix shall be by broadcast spreading at a rate of 34.78 lbs/acre followed by mulching.		
Zone E Scrub/Shrub Wetland	**Area:**	3.5 acres		
	Elevation:	418 to 422 feet		
	Shrubs:	Buttonbush Common Spicebush Elderberry Pale Dogwood Ninebark Indigobush	**Number:**	397 BR 397 BR 397 BR 397 BR 397 BR 397 BR
	Ground	Wooded Wetland	**Amount:**	155.9 lbs

	Cover:	Establishment Seed Mix	
	Planting Guidelines:	Prior to shrub planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast spreading at a rate of 44.53 lbs/acre followed by mulching. Bare root seedlings are to be mechanically planted with 8-foot spacing. All shrub seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.	
Zone F Forested Wetland	**Area:**	1.4 acres	
	Elevation:	420.5 to 422 feet	
	Trees:	Pin Oak Swamp White Oak Pecan River Birch	**Number:** 115 BR/38 CG 115 BR/38 CG 115 BR/38 CG 115 BR/38 CG
	Ground Cover:	Wooded Wetland Establishment Seed Mix	**Amount:** 62.3 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast spreading at a rate of 44.53 lbs/acre followed by mulching. Bare root seedlings are to be mechanically planted with 10-foot spacing with manual planting of container grown seedlings to occur between every 3rd and 4th bare root seedling, also with 10-foot spacing. All tree seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.	
Zone G Bottomland Forest	**Area:**	46.4 acres	
	Elevation:	Varies, generally 421.5 to 435.5 feet	
	Trees:	Pin Oak Shumard Oak Bur Oak White Oak Shagbark Hickory Pecan Black Walnut Cottonwood American Elm	**Number:** 1,489 BR 1,489 BR 1,489 BR 1,489 BR 1,489 BR 1,489 BR 1,489 BR 1,489 BR 1,489 BR
	Shrubs:	Roughleaf Dogwood Gray Dogwood Common Winterberry Ninebark Nannyberry	**Number:** 670 BR 670 BR 670 BR 670 BR 670 BR
	Ground Cover:	Wooded Wetland Establishment Seed Mix	**Amount:** 2066.2 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast spreading at a rate of 44.53 lbs/acre followed by mulching. Bare root seedlings are to be mechanically planted with 12-foot spacing. Bare root shrubs seedlings shall be planted with 6-foot spacing between every 4th and 5th tree seedling. All tree and shrub seedlings shall be planted randomly and equally throughout the zone in regards to	

		species. The planting pattern shall be as specified in the plans. Only seeding and mulching shall occur within the designated avoidance areas. No seedlings shall be planted within these avoidance areas.	
Zone H Upland Forest	**Area:**	31.2 acres	
	Elevation:	Varies (457 to 505.5 feet)	
	Trees:	Red Oak White Oak Tuliptree Black Cherry	**Number:** 2,363 BR 2,363 BR 2,363 BR 2,363 BR
	Shrubs:	Serviceberry American Hazelnut Blackhaw	**Number:** 790 BR 790 BR 790 BR
	Ground Cover:	Annual Rye Grass Seed	**Amount:** 1,248.0 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Annual Rye Seed shall be by broadcast spreading at a rate of 40.0 lbs/acre followed by mulching. Bare root seedlings are to be mechanically planted with 12-foot spacing. Bare root shrubs seedlings shall be planted with 6-foot spacing between every 4th and 5th tree seedling. All tree and shrub seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.	
Water Retention Berms	**Area:**	0.3 acres	
	Elevation:	427.5 at top of berms	
	Ground Cover:	Slope Stabilization Seed Mix	**Amount:** 17.3 lbs
	Planting Guidelines:	Planting of the Slope Stabilization Seed Mix shall be by broadcast spreading at a rate of 57.63 lbs/acre, followed by application of coconut fiber matting.	

C. FERTILIZERS

Planting Zones A through H will receive an application of 12-12-12 granular fertilizer in accordance with INDOT 2008 Standard Specification 914.03. Fertilizer will be uniformly spread over the mitigation area in Planting Zones A through H at a rate of 400 lbs/acre prior to or during final tilling. A total of 19.62 tons will be required for the mitigation site.

D. HERBICIDES

Since much of the mitigation site will be cleared of vegetation by grading and tilling, the use of herbicides as a pre-planting treatment is not anticipated for the site. Any herbicide utilized, if necessary, shall be per manufacturer’s recommendations.

E. MULCHING

Mulch material for Zones B, C, D, E, F, G, and H will conform to INDOT 2008 Standard Specifications 914.05(a). Material will be applied such that it covers the site at an average rate of 2 tons/acre. The mulch material shall be secured by crimping as per Specification 621.05(c) to

hold the seed in place and prevent removal during periods of high water. Mulch shall be crimped into place immediately upon placement. Mulch will be applied in Planting Zones B, C, D, E, F, G, and H for a total of 194.4 tons.

F. COIR FIBER MATTING

Within Zone A, Coir Fiber Matting shall cover the 4 foot bottom of each stream channel and 4 feet of the 4:1 sideslopes on both sides of each stream channel. In addition, coir fiber matting shall cover the water retention berms proposed for the site. Coir Fiber Matting shall be a 100% coconut fiber (coir) twine woven into a high strength matrix which complies with the following specifications:

Thickness – 0.30 inch minimum (7.6 mm)
Tensile Strength – 1348 x 626 lb/ft minimum (1650.5 x 766.5 kg/m)
Elongation – 34% x 38% maximum
Flexibility (mg-cm) – 6503 x 29590
Flow Velocity Allowable – 11 ft/sec (3.35 m/s)
Weight – 20 oz/SY minimum (678 g/SM)
Open Area (measured) – 50%

Staples used to secure the matting shall be new steel wire of 0.125 inch diameter formed into a “U” shape not less than 12 inches in length with a throat of not less than 1 inch in width.

Coir Fiber Matting shall be installed immediately after the final grading. Prior to installation, the soil surface shall be smooth and free from stones, clods, or debris that will prevent contact of the matting with the soil. Matting shall be applied without stretching such that it will lie smoothly but loosely on the soil surface. The top slope end of each piece of matting shall be anchored in a narrow trench at least 6 inches deep. At the end of each roll and where edges are joined, the overlap shall be a minimum of 1 foot with the upstream roll placed over the downstream roll and the upslope roll placed over the downslope roll. The matting shall be secured using staples spaced according to manufacturer’s specifications.

G. WATERING

1. The Contractor shall conduct watering of the seeded areas (replace “seeded areas” so as to read “reseeded areas” if being conducted under the auspices of G2 of this provision) within the mitigation site at a frequency and duration such as to insure that 60 days after completion of the seeding activities (replace “seeding activities” so as to read “reseeding activities” if being conducted under the auspices of G2 of this provision) that for every square meter of ground there is 80% areal cover by herbaceous species if seeding activities were performed in the spring of the year. If seeding activities occurred in the fall or winter, 80% areal cover, as outlined above, shall be established by June 30 of the summer immediately following seeding. At the end of the specified time periods, should the INDOT ENGINEER, the INDOT Environmental Manager and the INDOT Landscape Architect determine that there is less than 80% areal cover they will determine whether or not the herbaceous species mortality is at least partially a result of inadequate watering.
2. Should the ENGINEER/Environmental Manager and Landscape Architect determine that the mortality is at least partially a result of inadequate watering the Contractor shall be responsible for reseeding the deficient area(s) in accordance with the relevant sections of the planting plans and provisions for the Zone(s) in question. The Contactor shall conduct watering of the reseeded

area(s) in accordance with the measures detailed in G1 of this specification and continue with reseeding of any deficient area(s) until this specification is satisfied. If irrigation is required for watering of this site, it is anticipated that water will be extracted from the East Fork of the White River utilizing a temporary water pump, provided an adequate water supply exists within the river channel at the time of watering. The pump and all necessary attachments/equipment shall be removed from the site immediately upon completion of watering activities.

H. DELINEATOR POSTS

The wetland and riparian mitigation areas will have 4 in x 4 in treated posts eight (8) feet in height placed 150 feet apart along the outside borders of these areas as identified in the plans. In addition, posts will be placed every 150 feet along the east and west boundaries of the property in areas bordering agricultural fields as shown on the plans. The posts shall be placed with two (2) feet buried and six (6) feet above ground level. Post material shall conform to INDOT 2008 Standard Specification 911.02(a). These posts will visually show the edge of the wetland and riparian mitigation areas for monitoring and compliance field inspections. These posts will also define the outside boundaries of the mitigation property to help prevent mowing or spraying. A total of 105 posts will be placed along these borders.

I. SIGNAGE

“Do Not Mow or Spray” signs fashioned in accordance with INDOT 2008 Standard Specification 621.06(h) as per Specification 622.20, will be placed every 300 feet along the east and west boundaries of the mitigation site facing the adjacent parcels in areas bordered by agricultural fields. The plans show the location of these signs. A total of 10 signs will be placed around the east and west property boundary of this mitigation site.

In addition, one (1) sign that identifies this site as a Mitigation Site will be placed near the entrance to the site at the specified location according to the plans. The sign shall be constructed and designed in accordance with Standard Specification Section 802. The sign shall conform to the details as shown on the plans and shall read:

INDOT Mitigation Property
Wetland, Stream, Forest,
and Floodway Habitat
Mitigation Site

J. HABITAT POLE

A utility pole containing bat roosting structures shall be installed at the mitigation site in two (2) separate locations. Prior to installation of each pole, the habitat structures shall be constructed and attached to the poles. The specifications of the habitat poles, details of the individual habitat structures, and locations of the poles shall be as shown on the plans.

J. AS-BUILT PLANS

The CONTRACTOR shall prepare drawings showing the as-built conditions of the mitigation site, noting any deviation from the originally proposed plan and any previously unidentified features, including the locations of any tiles located and plugged during the construction. These drawings

shall be certified by a registered Professional Land Surveyor or Professional Engineer assuring that the information contained on the plans is true and accurate. An electronic CAD version of these plans in Indiana State Plane Coordinates, West Zone shall be furnished to the INDOT Ecology Unit Senior Environmental Manager in addition to the original hard copies.

K. WARRANTY OF WORK

The CONTRACTOR shall guarantee the survival of, and replant if necessary, the plantings within the mitigation site for a period of two (2) years upon completion and acceptance of the mitigation site. The CONTRACTOR shall guarantee 100% ground cover resulting from the planted seed mixes within all planting zones and an overall survival rate of 85% for all planted tree and shrub species at the end of this two (2) year time period. In addition, the CONTRACTOR shall provide any means necessary (e.g. herbicide treatment) to remove any invasive species that may grow within the mitigation site for a period of two (2) years upon completion and acceptance of the mitigation site. Invasive species are defined as any vegetation detrimental to the establishment of desired species planted in the mitigation site.

The determination to implement invasive species control or replanting/reseeding if necessary shall be at the discretion of INDOT or their designated representative. Replacement seed and/or plantings used for over-seeding/replanting shall be the same variety and species installed, unless directed otherwise by INDOT or their designated representative. This work shall be completed in accordance with the INDOT 2008 Standard Specifications and this Special Provision, by the CONTRACTOR, at no additional cost.

The warranty period shall be initiated by the acceptance of the mitigation site. The warranty period shall extend two (2) years from the date of the acceptance. A Warranty Bond shall be required for this two (2) year period and shall be posted by the CONTRACTOR in favor of INDOT. The minimum amount for this warranty bond shall be for 150% of the total cost of the warranted items. The warranty bond shall be provided within 14 days of the acceptance of the mitigation site.

L. BASIS OF PAYMENT

The cost associated with constructing the water retention berms and the ephemeral stream channels will be paid for at the contract unit price per cubic yard of common excavation. The cost associated with installing the construction entrances shall not be paid for directly, but will be included in the cost of common excavation. The cost associated with furnishing and installing the stone needed for the construction entrances will not be paid for directly but will be included in the cost of common excavation. The cost associated with tilling the mitigation site per this special provision will not be paid for directly, but will be included in the cost of common excavation. The cost associated with temporary seeding, if necessary, will not be paid for directly, but will be included in the cost of common excavation.

Payment will be made under:

Common Excavation..... CYS

The cost of furnishing and seeding the mixtures listed below (and as specified above) for permanent ground cover will be paid for as "Seed Mixture, Type" at the contract unit price per pound based on pure live seed. The cost of any watering necessary to ensure adequate ground cover,

as specified above, shall not be paid for directly but will be included in the cost of the seed mixtures. The cost associated with the posting of the warranty bond, as specified above, will not be paid for directly but will be included in the cost of the seed mixtures.

Payment will be made under:

Seed Mixture, Swale..... LBS
Seed Mixture, Wooded Wetland Establishment..... LBS
Seed Mixture, Emergent Wetland..... LBS
Annual Ryegrass Seed..... LBS
Seed Mixture, Slope Stabilization..... LBS

The cost of furnishing and planting the bare root tree and shrub seedling species and the 3-gallon container grown tree species listed below will be paid for at the contract unit price per each seedling. The cost of fertilizer and mulching material needed for the seedlings will not be paid directly but will be included in the cost of the seedlings. The cost of any watering necessary to ensure adequate survival rates, as specified above, shall not be paid for directly but will be included in the cost of the tree and shrub seedlings. The cost associated with the posting of the warranty bond, as specified above, will not be paid for directly but will be included in the cost of the tree and shrub seedlings.

Tree, Shellbark Hickory
Tree, Tuliptree
Tree, Swamp White Oak
Tree, American Elm
Tree, Shumard Oak
Tree, Red Oak
Tree, River Birch
Tree, Pin Oak
Tree, Black Cherry
Tree, Silver Maple
Tree, Cottonwood
Tree, Sycamore
Tree, Pecan
Tree, Bur Oak
Tree, White Oak
Tree, Shagbark Hickory
Tree, Black Walnut
Shrub, Pale Dogwood
Shrub, Common Spicebush
Shrub, Elderberry
Shrub, Buttonbush
Shrub, Serviceberry
Shrub, American Hazelnut
Shrub, Blackhaw
Shrub, Roughleaf Dogwood
Shrub, Gray Dogwood
Shrub, Common Winterberry
Shrub, Ninebark
Shrub, Indigobush
Shrub, Nannyberry

Payment will be made under:

Seedling, Bare Root..... EACH
Seedling, Container Grown..... EACH

The cost of providing and applying the fertilizer to the seeded areas in

Zones A through H as specified above will be paid for at the contract unit price per pound of Fertilizer.

The cost of providing and applying the mulching material as specified above shall be paid for at the contract unit price per ton of Mulching Material.

Payment will be under:

Fertilizer..... LBS
Mulching Material..... TON

The cost of providing and installing the specified “Do Not Mow or Spray” signs shall be paid for at the contract unit price per each sign.

The cost of providing and installing the specified “Mitigation Site” identification sign as stated above shall be paid for at the contract unit price per each sign.

The cost of providing and installing the specified “Delineator Posts” for identification of the mitigation areas and property boundary shall be paid for at the contract unit price per each post.

Payment will be made under:

Sign, Do Not Mow or Spray..... EACH
Sign, Mitigation Site Identification..... EACH
Post, Wetland Delineator, 4 x 4..... EACH

The cost of performing the tile exploration trenching and the removal/disabling of any tiles that are found shall be paid for at the contract unit price per linear foot of trenching.

Payment will be made under:

Tile Intercept Trench Excavation and Location..... LFT

The cost of furnishing and installing the coir fiber matting for erosion control within Zone A and on the water retention berms shall be paid for at the contract unit price per square yard of material.

The cost of furnishing, installing, and maintaining the silt fence for sediment runoff control shall be paid for at the contract unit price per linear feet of silt fence.

Payment will be made under:

Coir Fiber Matting (100% Coconut Fiber)..... SY
Silt Fence..... LFT

The cost of removing the refuse and appropriate disposal as specified above shall be paid for at the contracted lump sum amount.

Payment will be made under:

Refuse Removal..... LS

The cost of constructing and installing the habitat poles as shown in the plans shall be paid for at the contract unit price per each pole assembly.

Payment will be made under:

Habitat Pole..... EACH

The cost of providing the As-Built Plans as specified above shall be

included in the cost of the Construction Engineering for the site and paid for at the contracted lump sum amount.

Payment will be made under:

Construction Engineering..... LS

The cost associated with the pressure-washing of equipment prior to use on the site, as specified above, shall be included in the cost of Mobilization and Demobilization.

Payment will be made under:

Mobilization and Demobilization..... LS

Table 1: Swale Seed Mix (Zone A) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Andropogon gerardii	big bluestem	FAC-	12.00
Carex comosa	bristly sedge	OBL	2.00
Carex cristatella	crested oval-sedge	FACW+	2.00
Carex lurida	bottlebrush sedge	OBL	2.50
Carex sparganioides	rough-clustered sedge	FAC	3.00
Carex vulpinoidea	brown fox sedge	OBL	3.00
Elymus virginicus	Virginia wild rye	FACW-	8.00
Glyceria striata	fowl manna grass	OBL	1.00
Panicum virgatum	switch grass	FAC+	2.00
Scirpus atrovirens	dark green rush	OBL	2.00
Scirpus cyperinus	wool grass	OBL	0.50
Spartina pectinata	prairie cord grass	FACW	2.50
Temporary Cover			
Avena sativa	common oat	*NL	360.00
Lolium multiflorum	annual rye	FACU	28.00
Forbs			
Alisma spp.	water plantain (various mix)	NL	1.00
Asclepias incarnate	swamp milkweed	OBL	2.00
Aster novae-angliae	New England aster	FACW	0.50
Coreopsis tripteris	tall coreopsis	FAC	2.00
Eupatorium maculatum	spotted joe-pye weed	OBL	0.25
Iris virginica	blue flag iris	OBL	3.00
Liatris spicata	marsh blazing star	FAC	2.00
Lobelia cardinalis	cardinal flower	OBL	0.25
Lobelia siphilitica	great blue lobelia	FACW+	0.50
Sagittaria latifolia	broad-leaved arrowhead	OBL	0.75
Silphium terebinthinaceum	prairie dock	FAC-	1.00
Verbena hastate	blue vervain	FACW+	1.00
Zizia aurea	golden alexanders	FAC+	0.75
Total			**443.5 oz/acre 27.72 lbs/acre**

Table 2: Wooded Wetland Establishment Seed Mix (Zones B, C, E, F, and G) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Calamagrostis Canadensis	bluejoint grass	OBL	1.00
Carex crinita	fringed sedge	FACW+	2.00
Carex lupulina	common hop sedge	OBL	4.00
Carex lurida	bottlebrush sedge	OBL	1.50
Carex squarrosa	narrow-leaved cattail sedge	OBL	2.00
Carex sparganioides	rough-clustered sedge	FAC	1.50
Carex typhina	common cattail sedge	OBL	2.00
Carex vulpinoidea	brown fox sedge	OBL	4.00
Elymus virginicus	Virginia wild rye	FACW-	20.00
Glyceria striata	fowl manna grass	OBL	2.00
Leersia oryzoides	rice cut grass	OBL	2.00
Scirpus atrovirens	dark green rush	OBL	2.00
Spartina pectinata	prairie cord grass	FACW+	1.00
Temporary Cover			
Avena sativa	common oat	*NL	537.00
Lolium multiflorum	annual rye	FACU	112.00
Forbs			
Alisma spp.	water plantain (various mix)	NL	3.00
Angelica altropurpurea	great alngelica	OBL	1.00
Aster puniceus	bristly aster	OBL	0.75
Aster umbellatus	flat-top aster	FACW	0.25
Bidens cernua	nodding bur marigold	OBL	2.50
Campanula americanus	tall bellflower	NL	0.25
Cephalanthus occidentalis	buttonbush	OBL	0.50
Helenium autumnale	sneezeweed	FACW+	2.00
Heracleum lanatum	cow parsnip	NL	0.75
Hibiscus moscheutos	swamp rose mallow	OBL	2.00
Lobelia siphilitica	great blue lobelia	FACW+	1.50
Mimulus ringens	monkey flower	OBL	1.25
Rudbeckia laciniata	wild golden glow	FACW+	0.75
Verbesina alternifolia	wingstem	FACW	2.00
Total			**712.50 oz/acre 44.53 lbs/acre**

Table 3: Emergent Wetland Seed Mix (Zone D) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Carex comosa	bristly sedge	OBL	2.50
Carex lacustris	common lake sedge	OBL	0.25
Carex lurida	bottlebrush sedge	OBL	4.00
Carex vulpinoidea	brown fox sedge	OBL	6.00
Eleocharis ovata	blunt spike rush	OBL	1.00
Juncus effusus	common rush	OBL	1.00
Leersia orzyoides	rice cut grass	OBL	3.00
Scirpus acutus	hard-stemmed bulrush	OBL	2.50
Scirpus pungens	chairmaker's rush	NO	4.00
Scirpus validus	great bulrush	OBL	6.00
Temporary Cover			
Avena sativa	common oat	*NL	360.00
Lolium multiflorum	annual rye	FACU	104.00
Forbs			
Acorus calamus	sweet flag	OBL	1.00
Asclepias incarnata	swamp milkweed	OBL	1.50
Alisma spp.	water plantain (various mix)	NL	2.00
Cephalanthus occidentalis	buttonbush	OBL	1.00
Decodon verticillatus	swamp loosestrife	OBL	1.25
Eupatorium maculatum	spotted joe-pye weed	OBL	0.50
Hibiscus spp.	rosemallow (various mix)	*NL	3.00
Iris virginica	blue-flag iris	OBL	6.00
Lobelia cardinalis	cardinal flower	OBL	0.25
Lobelia siphilitica	great blue lobelia	FACW+	1.50
Ludwigia alternifolia	seedbox	OBL	0.25
Mimulus ringens	monkey flower	OBL	1.00
Peltandra virginica	arrow arum	OBL	16.00
Pontederia cordata	pickerel weed	OBL	10.00
Sagittaria latifolia	broad-leaved arrowhead	OBL	2.00
Sparganium americanum	American bur reed	OBL	2.00
Sparganium eurycarpum	common bur reed	OBL	4.00
Verbena hastata	blue vervain	FACW+	1.00
Zizania aquatica	wild rice	OBL	8.00
Total			**556.50 oz/acre 34.78 lbs/acre**

Table 4: Slope Stabilization Seed Mix (Berms) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Andropogon gerardii	Big Bluestem	FAC-	48.00
Bouteloua curtipendula	Side-Oats Gramma	*NL	32.00
Carex sparganioides v. cephaloidea	Rough-Clustered Sedge	FAC	4.00
Elymus canadensis	Canada Wild Rye	FAC-	32.00
Panicum virgatum	Switch Grass	FAC+	8.00
Schizachyrium scoparium	Little Bluestem	FACU-	32.00
Sorghastrum nutans	Indian Grass	FACU+	32.00
Temporary Cover			
Avena sativa	common oat	*NL	512.00
Lolium multiflorum	annual rye	FACU	222.00
Total			**734.00 oz/acre 57.63 lbs/acre**

Appendix O

Mitigation Site Documentation

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-008

Tract Name 1

Tract Name 2 N/A

Owner INDOT

Manager INDOT

Property Location

County	Section	Township	Range	Indiana Bat Maternity Colony
Daviess				
Political Township Veale	11	2N	7W	None

Mitigation Summary

Total Property Acres 147.3*

Wetlands

Anticipated Credits	8.1	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	135.8	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	101.8	Acres
Preserved	34	Acres

Streams

Anticipated Credits	7,310	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	2.3	0	0	Acres
Forested	5.8	0	0	Acres
Scrub-Shrub	0	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White **8-Digit HUC** 05120208 **14-Digit HUC** 05120208170070

Current Status

Project Phase Construction **Purchased** Yes **Purchase Type** Fee Simple **Constructed** No **Begin Construction Date** 9/3/2009

Designed Yes **End Construction Date** N/A

Comment Project under construction under the same contract as the mitigation site.

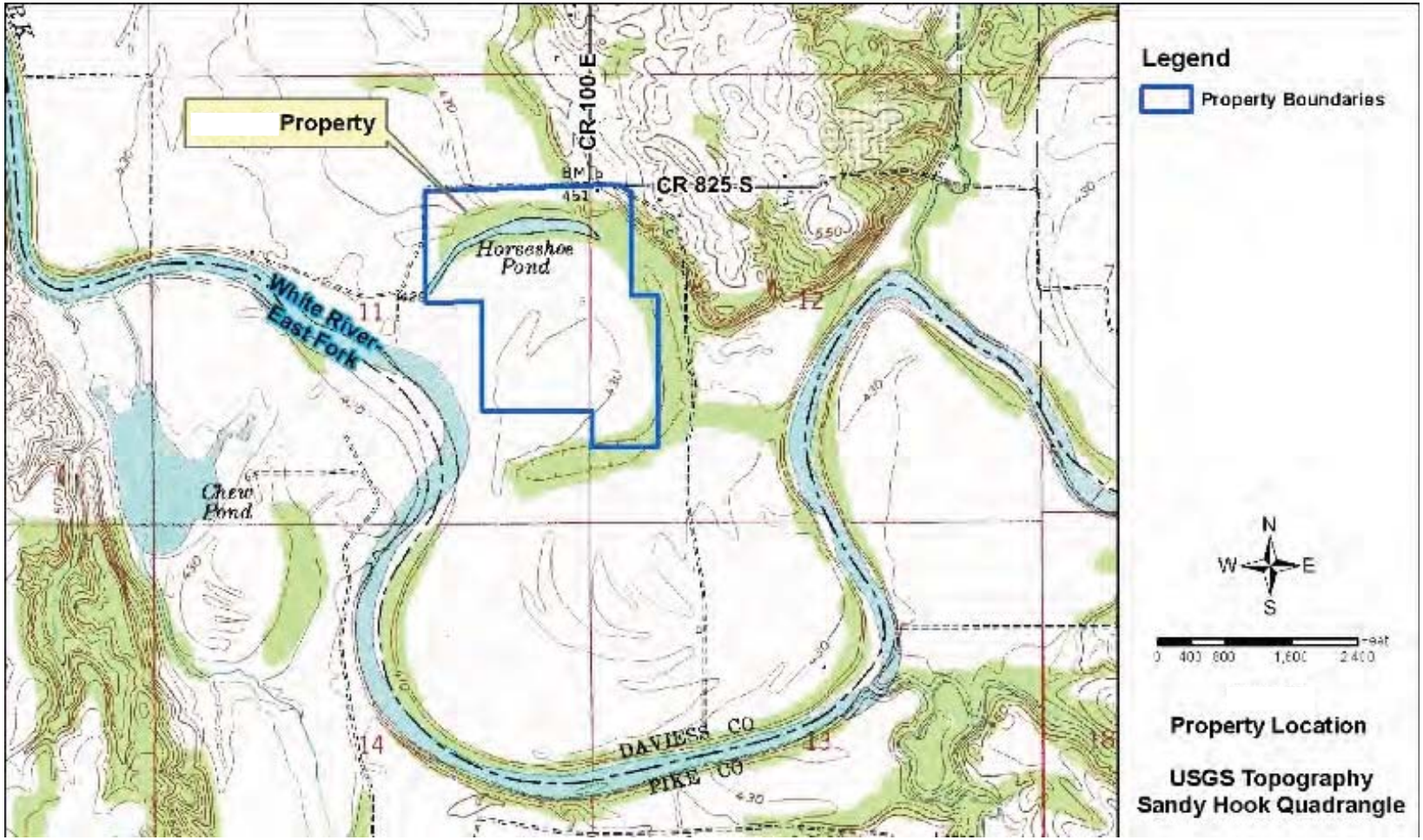
*Balance of property acreage other than wetland and forest mitigation consists of approximately 1.4 acres of existing county road right-of-way and 2.0 acres of stream channel development.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-008 **Tract Name**

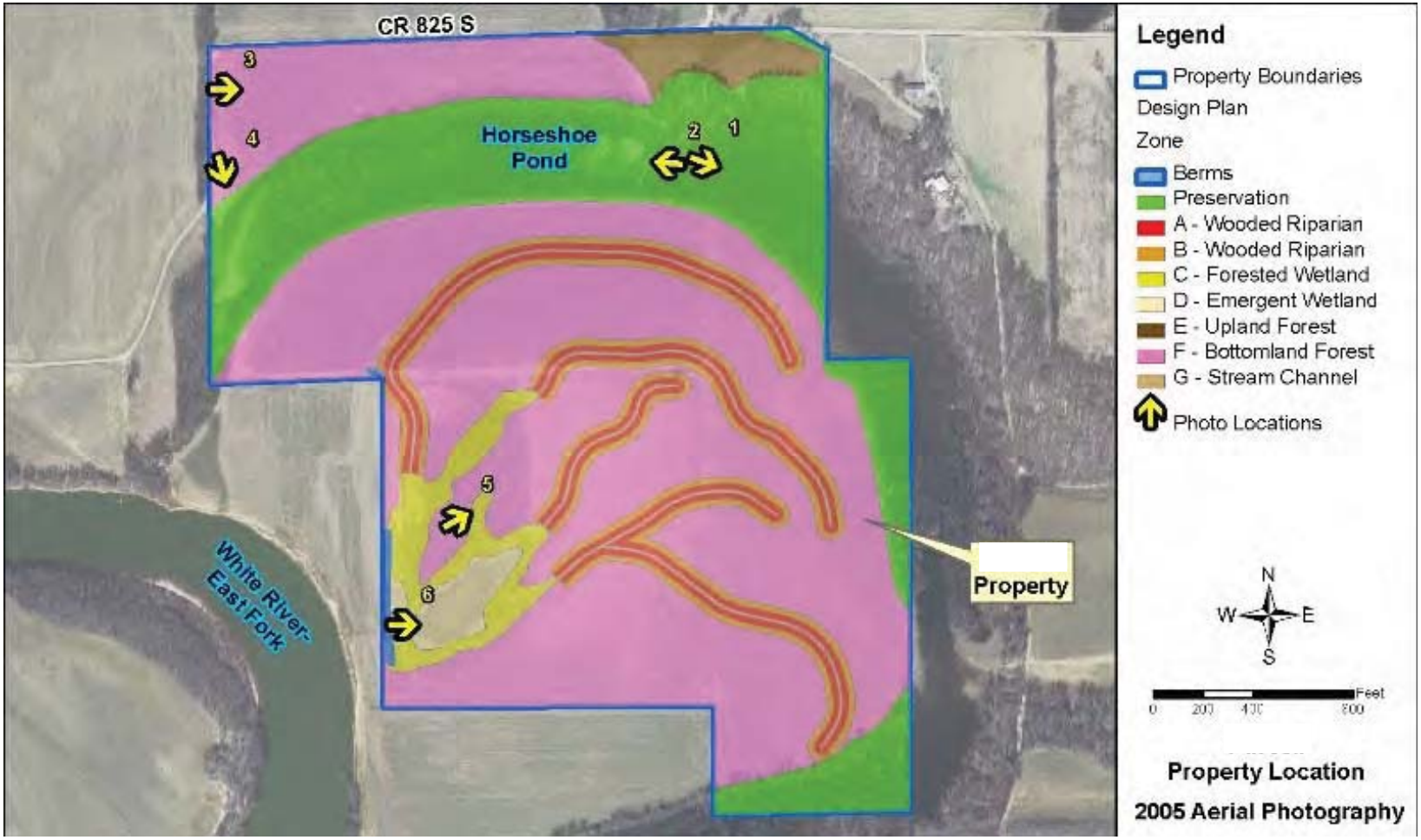


Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-008 **Tract Name**



Note: Planting Zones shown reflect final design plans for this site.

Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-008
Tract Name

Phase Pre-Construction
Year 2008

1

View of Preservation Area, facing E - 4/25/08

2

View of Horshoe Pond Preservation Area, facing W - 4/25/08

3

View of Northern Forested Planting Area, facing E - 9/12/08

4

View of Preservation Area, facing SE - 9/12/08

5

View of Bottomland Forest Planting Area, facing NE - 9/12/08

6

View of Wetland Planting Area, facing E - 9/12/08

Form WD-1
Rev. 7-1-07

WARRANTY DEED

Project: 0710903;
I-69 Wetland Mitigation
Code: 5136
Parcel: 1

THIS INDENTURE WITNESSETH, That [redacted]

the Grantor(s), of Daviess County, State of Indiana Convey(s) and Warrant(s) to the **STATE OF INDIANA**, the Grantee, for and in consideration of the sum of Five Hundred Sixty Thousand and NO/100 Dollars ($ 560,000.00) (of which said sum $ 560,000.00 represents land and improvements acquired and $ 0.00 represents damages) and other valuable consideration, the receipt of which is hereby acknowledged, certain Real Estate situated in the County of **Daviess**, State of Indiana, and being more particularly described in the legal description(s) attached hereto as Exhibit "A" which exhibit is incorporated herein by reference.

This conveyance is subject to any and all easements, conditions and restrictions of record.

The Grantor(s) hereby specifically acknowledge(s) and agree(s) that the Real Estate conveyed herein is conveyed in fee simple and that no reversionary rights whatsoever shall remain with the Grantor(s), or any successors in title to the abutting lands of the Grantor(s), notwithstanding any subsequent abandonment, vacation, disuse, nonuse, change of use, conveyance, lease and/or transfer by the Grantee or its successors in title, of a portion or all of the said Real Estate or any right of way, roadway or roadway appurtenances established thereupon. This acknowledgment and agreement is a covenant running with the land and shall be binding upon the Grantor(s) and all successors and assigns.

"As an inducement for the State to close this real estate transaction, the grantor(s) assume(s) and agrees to pay the 2008 payable 2009 real estate taxes and assessments on the above described real estate. This obligation to pay shall survive the said closing and shall be enforceable by the State in the event of any non-payment."

Interests in land acquired by the Indiana
Department of Transportation
Grantee mailing address:
100 North Senate Avenue
Indianapolis, IN 46204-2219
I.C. 8-23-7-31

This Instrument Prepared By _____
Attorney at Law

I affirm under the penalties of perjury, that I have taken reasonable care to redact each Social Security number in this document unless required by law.

Name (printed) Gina M. Hansen
Signature _____

IN WITNESS WHEREOF, the said Grantor(s) has executed this instrument this 20th day of February, 2009.

Signature

Printed Name

Signature

Printed Name

STATE OF Indiana :

SS:

COUNTY OF Daviess :

Before me, a Notary Public in and for said State and County, personally appeared Keith Purcell and Marv E. Purcell. life estate interest only. the Grantor(s) in the above conveyance. and acknowledged the execution of the same on the date aforesaid to be their (his, her, their) voluntary act and deed and who, being duly sworn, stated that any representation contained therein are true.

Witness my hand and Notarial Seal this 20th day of February, 2009.

Gina M Hansen

Signature

Gina M. Hansen

Printed Name

My Commission expires SEPT 8, 2016

I am a resident of Marion County.

NOTARY PUBLIC SEAL STATE OF INDIANA

GINA M. HANSEN
Marion County
My Commission Expires
September 8, 2016

EXHIBIT "A"

Project 0710903
Code 5136
Parcel 1 Fee
Form WD-1

The Northeast Quarter of the Southeast Quarter of Section Eleven (11), Township 1 North, Range 7 West, containing 40 acres.

Also 33 1/3 acres in a parallel strip of equal width off the West end of a one-hundred-eight and one-half (108 ½) acre tract which is taken off the North side of the Southwest Quarter of North Fractional Section Twelve (12) in Township 1 North, Range 7 West.

Said one-hundred-eight and one-half (108 ½) acre tract of land is the aggregate of the two following tracts, viz: - 1st. A tract of land described as eighty-six and one-half (86 ½) acres off the North side of the said Southwest Quarter, which, in a certain partition proceeding in the Daviess Court of Common Pleas between the heirs-at-law of William Jones, Sr., deceased, was ordered to be sold and conveyed by John C. Steen, a commission appointed by said court for the purpose, to Joseph Jones, as will more fully appear by reference to partition Record No. 1 of said court, from page 21 to 26. 2nd. A tract containing twenty-two (22) acres described as twenty-two (22) acres off the North side of the South half of said Southwest Quarter, which, in a certain other partition proceeding had in said Daviess Court of Common Pleas at the April term, 1858, was set off to Timothy Jones and Elizabeth Jones, his wife, as will more fully appear by reference to Order Book 21 of said court, on page 445.

The said thirty-three and one-third (33 1/3) acres hereby conveyed being the same tract conveyed to John Arthur by James E. Jones and Mary Jones, his wife, by deed dated October 18, 1885, and recorded in Deed Record 9, page 501 and 502, of the Deed Records of Daviess County, Indiana.

Also, a tract of ground sixteen (16) rods and three (3) feet wide off the West side of all that part of the Southwest Quarter of the Northwest Quarter lying south of the Highbanks Road, that remains after taking six (6) acres off the West side of a forty (40) acre tract, containing eight (8) acres in the part hereby conveyed, and being in Section 12, Township 1 North, Range 7 West.

Also, Six (6) acres off the West side of the Southwest Quarter of the Northwest Quarter of Section Twelve (12), Township One (1) North, Range Seven (7) West, being eighty (80) rods North and South and twelve (12) rods East and West.

The above tracts containing 87 1/3 acres, more or less.

EXHIBIT "A"

Project 0710903
Code 5136
Parcel 1 Fee
Form WD-1

ALSO, A part of the South half of the Northeast Quarter of Section Eleven (11), Township One (1) North, Range Seven (7) West, described as follows: Beginning 40 rods East of the Northwest corner of the Southwest Quarter of the Northeast of said Section Eleven (11) and running thence East 120 rods to the East line of said Section Eleven (11); thence South 80 rods to the Southeast corner of said Northeast Quarter; thence West 120 rods to a point South of the place of beginning; thence North 80 rods to the place of beginning, containing 60 acres, more or less.

Containing in all [in the above-described tracts] 147 1/3 acres, more or less.

RIGHT–OF–WAY PARCEL PLAT

Prepared for Indiana Department of Transportation
by Bernardin Lochmueller & Associates, Inc. (Job No. 207–0014–ZES)

0 200 400 800
SCALE 1" = 800ft.

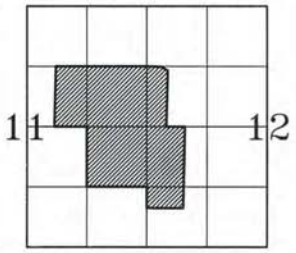
N

This plat was prepared using information obtained from the County records. It does not represent a survey of the owner's property.

RICHARD F. LEWIS
REGISTERED
NO. LS 80040353
STATE OF INDIANA
LAND SURVEYOR

Richard F Lewis 3/12/08
Richard F. Lewis Date
Reg. Land Surveyor No. LS80040353
State of Indiana

Sections 11 & 12



HATCHED AREA IS THE APPROXIMATE MITIGATION TRACT

PARCEL:	1 OWNER:
CODE:	5136
Des. No.:	0710903
ROAD:	I–69
COUNTY:	Daviess
SECTION:	11 and 12
TOWNSHIP:	1 N.
RANGE:	7 W.

DRAWN BY: C.E. Jordan 3/10/08
CHECKED BY: R. Lewis 3/12/08

INSTRUMENT NO.: 05–0359
RECORDED: 1/28/2005

Mitigation and Monitoring Plan
for the
I-69 Sections 2 and 3 "Draft" Umbrella Mitigation Bank

Project# 0710903
Contract# IR-30351

Date:
June 3, 2009

Prepared For:

Government Building North, Room N848
100 North Senate Avenue
Indianapolis, Indiana 46204-2249

Prepared By:

BERNARDIN · LOCHMUELLER & ASSOCIATES, INC.
6200 Vogel Road · Evansville · Indiana 47715-4006
PHONE (812) 479-6200 · TOLL FREE (800) 423-7411 · FAX (812) 479-6262

Table of Contents

Section I Introduction 1

Section II Objectives 1

Section III Site Selection 3

Section IV Site Protection Instrument 4

Section V Baseline Information 4

Section VI Determination of Credits 5

Section VII Mitigation Work Plan 6

Section VIII Maintenance Plan 15

Section IX Performance Standards 15

Section X Monitoring Requirements 18

Section XI Long-Term Management Plan 20

Section XII Adaptive Management Plan 20

Section XIII Financial Assurances 21

Attachments

Attachment 1 USGS Map Showing Location of Compensatory Mitigation Site
Attachment 2 2005 Aerial Photograph Showing Location of Compensatory Mitigation Site
Attachment 3 Photographs of Existing Conditions at Compensatory Mitigation Site
Attachment 4 Compensatory Mitigation Site Design Plans
Attachment 5 Compensatory Mitigation Site Special Provisions

Site
Mitigation and Monitoring Plan

I. Introduction

The Mitigation Site is being developed as part of the I-69 Sections 2 and 3 Umbrella Mitigation Bank. This mitigation plan is being developed to offset a portion of the wetland, stream and forest impacts caused by construction of Section 2 of the I-69 project. Additional mitigation sites will be developed to offset the remaining portion of impacts to wetlands, streams, and forests caused by Section 2.

II. Objectives

The mitigation concept for unavoidable impacts to wetlands, open water habitats, and streams determined to be "Waters of the U.S." involves ephemeral stream channel development, upland and bottomland forest development, along with emergent and forested wetland development within existing agricultural fields to the north and east of the East Fork of the White River, south of CR 825 S, and west of CR 125 E. In addition, mitigation will include preservation of a backwater slough (old East Fork White River channel) and the existing bottomland forest habitat located on the property. A habitat pole containing bat roosting opportunities will also be installed on the site. The mitigation plan will meet the needs of the Construction in a Floodway permit requirements through planting of bottomland forest species within the floodway, while at the same time address the Clean Water Act Section 404/401 permitting requirements through expansion of existing wetlands and preservation of existing wetland and bottomland forest habitats. The mitigation plan also addresses conditions resulting from Section 7 consultation through the preservation and development of forested habitat.

A. Functions and Values:

1. Impacted Water Resources

The wetlands impacted by I-69 Section 2 have varying levels of functions and values due to their variations in size, as well as wide ranges of animal habitat, botanical, and hydrologic quality measures. The largest wetland impact site is 5.10 acres in size and the smallest is 0.01 acre in size. Because of the varying size and quality of the wetland impact sites they all have different abilities to provide (1) storm/floodwater storage, (2) food and cover for wildlife, (3) hydrological support for adjacent communities, (4) peak floodwater reduction, (5) groundwater recharge, and/or (6) water purification.

The streams impacted by I-69 Section 2 are located within the Patoka, Lower White, and Lower East Fork White Watersheds. These watersheds have been severely impacted in the past due to agricultural practices and coal mining. Many of the streams impacted by this project have been channelized and the overbank riparian areas are often cultivated to the top of the banks and planted in row crops. These streams have a high potential for erosion and are susceptible to herbicide and pesticide runoff from adjacent farm fields. In general, the QHEI and HHEI scores for these streams were extremely low for the most part indicating a stressed condition.

2. Proposed Mitigation Site

The 34.0 acres of existing wetland and bottomland forest habitats that occur on the Mitigation Site property currently perform functions such as flood storage, retention of sediment particles transported by the East Fork of the White River, water purification, food and cover for wildlife, and groundwater recharge. The proposed functions for the Mitigation Site will essentially remain the same, but will be expanded in size (i.e., storm water detention via the water control structures) and enhanced in quality for wildlife habitat through diversified woody species plantings and the installation of a habitat pole structure.

B. Functional Losses on Proposed Impact Site vs. Functional Gains on Proposed Mitigation Site:

The functional losses that will be incurred through the placement of fill within the wetlands and streams within the I-69 Section 2 project area are considered to be minimal in comparison to the functional gains that will be realized through the construction of the proposed Section 2 Mitigation Sites. The anticipated functional gains of the proposed Mitigation Site, namely flood/storm water storage, water purification, groundwater recharge and improved wildlife habitat, will exceed the functional losses identified at the impact sites in terms of quality of resource. Over time, the functional loss of wildlife habitat will also be offset when the newly created Mitigation Site develops into a more mature bottomland forest. Table 1 compares the functions of the wetlands and streams being impacted by I-69 Section 2 compared to the functions that will be gained by the construction of the proposed Section 2 Mitigation Site.

Table 1. Comparison of Functions for Impact Sites and the Mitigation Site

Function	**I-69 Section 2 Wetland and Stream Impact Areas**	**Mitigation Site**	
		Existing	**Proposed**
Storm / Flood Water Retention	minor	moderate	expanded capacity
Water Purification	minor	moderate	expanded capacity
Groundwater Recharge	minor	moderate	expanded capacity
Wildlife Food and Cover	minor	moderate	notably improved

C. Functional Replacement:

The Mitigation Site plan offers in-kind wetland replacement for a portion of the impacts resulting from the I-69 Section 2 roadway project. A 3:1 ratio was used for forested wetland mitigation at this mitigation site. A ratio of 2:1 for impacted palustrine emergent wetlands was used to compensate for emergent wetlands impacted by the project. Similarly, a ratio of 3:1 was used for impacted upland forest areas to compensate for the upland forests impacted by the project. The Mitigation Site will compensate for a portion of I-69 Section 2 forested and emergent wetland impacts through the development of additional wetland habitat and will compensate for a portion of the I-69 Section 2 upland forest impacts through preservation of the existing wetland and bottomland forested areas and the reforestation of agricultural land to bottomland and upland forest habitat. In addition, stream impacts will be mitigated at this site in the form of ephemeral stream channel development and riparian buffer habitat development at a 1:1 ratio. There are no scrub/shrub wetlands

proposed for development at this mitigation site; therefore, all scrub/shrub wetland impacts caused by Section 2 will be mitigated at other mitigation sites. Mitigation for aquatic bed and open water impacts will be offered by way of out-of-kind replacement through the development of additional emergent and forested wetland habitats, which will provide greater functional values than the impacted water resources.

The Mitigation Site will include the development of approximately 2.3 acres of emergent wetlands, 5.8 acres of forested wetlands, 98.8 acres of bottomland forest (of which 17.1 acres will be riparian habitat mitigation), 3.0 acres of upland forest, and 2.0 acres (7,310 linear feet) of ephemeral stream channels, as well as, preservation of 34.0 acres of existing wetland and bottomland forest habitat. In addition, this mitigation site includes approximately 1.4 acres of existing roadway easements. The entire Mitigation Site is approximately 147.3 acres.

III. Site Selection

The Mitigation Site property is within the Lower East Fork White River USGS 8-digit watershed (05120208) and the majority of the site is located within the 100-year floodplain of the East Fork of the White River. Existing elevations on the property range from approximately 423 feet at the lowest point in the proposed emergent wetland mitigation area to approximately 465 feet at the top of the slope in the proposed upland forest mitigation area. The areas to receive wetland habitat development are generally flat, ranging from approximately 423 to 425.25 feet above mean sea level.

The majority of the 147.3 acre Mitigation Site property has been disturbed through land clearing and agricultural practices (See Photographs in Attachment 3). Land use adjacent to the mitigation site includes agricultural fields to the north, south, and west. The eastern boundary of the site is surrounded by existing bottomland and upland forests. There is a small amount of residential land adjacent to the site in the northeastern corner. In addition, there are no airports located within 10,000 feet of the site.

Existing wetlands located on and adjacent to the Mitigation Site are primarily classified in the National Wetland Inventory (NWI) as palustrine forested wetlands (PFO), with inclusions of palustrine emergent (PEM) and palustrine scrub/shrub (PSS) wetland areas. The mitigation site is to be designed such that additional palustrine forested (PFO) and palustrine emergent (PEM) wetland habitat areas will be created.

Hydrology for the Mitigation Site will be provided primarily via East Fork of the White River floodwaters. The channel of the East Fork of the White River runs within 20 feet of the southwestern boundary of the Mitigation Site. Communication with the land owners indicates that this area frequently is inundated by floodwaters from the East Fork of the White River. In addition, the existing wetland habitat areas (aka, Horseshoe Pond) located within this property, comprised of 34.0 acres at approximately the same elevations as the proposed wetland mitigation site, indicates that this mitigation site will have sufficient hydrology to support a wetland community. Horseshoe Pond is a backwater slough of the East Fork of the White River and was formerly the East Fork of the White River channel. As water levels in the East Fork of the White River rise, floodwater first flows into the backwater slough, then inundates the lowest areas of the site. Under typical flood conditions associated with multiple annual rain events, floodwaters will inundate the entire mitigation site, with the exception of the highest elevations located along the northern boundary of the site. As the floodwater recedes, water is retained in local depressions within the site and within the existing wetland habitat areas. Currently, approximately 34.0 acres of the site consist of existing wetland and

bottomland forest habitat. The design plans found in Attachment 4 provide a site plan illustrating existing conditions.

Data showing daily river gage heights were obtained for the previous 20-years from the Shoals and Petersburg gages, which are the nearest White River gages upstream and downstream from the mitigation site that record historic gage readings. Utilizing the daily water level elevation at each river gage, an estimated daily water level elevation was computed for the mitigation site. It is estimated that all areas of the mitigation site at or below 425 feet above mean sea level were inundated by floodwaters for an average of 7.0% of the growing season (April 1 to September 30) over the past 20 years. This includes nearly all areas proposed for wetland mitigation at this site.

The climate data for the Mitigation Site is based on the climate in the City of Evansville, which is the nearest city that records climate data to the impact sites. Mean temperature normals (1971-2000) in Evansville range from 31 (Evansville Airport) or 33 deg F (Evansville Museum) in January to 79 deg F (Evansville Airport) to 80 deg F (Evansville Museum) in July. Precipitation occurs throughout the year with an annual mean of 44 to 46 inches (1971-2000). May is generally the wettest month, receiving on average 4.8 to 5 inches. The Mitigation Site is located within Plant Hardiness Zone 6a, where minimum temperatures are mild at -5 to -10 deg F.

IV. Site Protection Instrument

The current land owner of the Mitigation Site is Mary The property will be purchased by way of fee simple title from the current landowner for the construction of this mitigation site by the Indiana Department of Transportation (INDOT). INDOT will be responsible for the construction and post construction monitoring of this mitigation site for success. After 10 years of post construction monitoring have been completed on the mitigation site, INDOT or an approved consultant will conduct InWRAP assessments on the wetland mitigation areas to identify if this Mitigation Site has sufficiently replaced the functions and values of the impacted wetlands. Proof will be provided that a restrictive covenant for the 147.3 acre mitigation site (legal description boundary) has been recorded for the property. These assessments will be required prior to approval of the Mitigation Site as part of the I-69 Sections 2 and 3 Umbrella Mitigation Bank.

V. Baseline Information

The responsible parties for the Mitigation Site are listed below:

Mitigation Site Developer/Owner:
Indiana Department of Transportation
Ecology and Waterway Permitting Section
Office of Environmental Services
Government Building North, Room N642
100 North Senate Avenue
Indianapolis, Indiana 46204-2249

Contact Person for Applicant:
INDOT Ecology Unit - Senior Environmental Manager - (317) 232-5206

Consultant Preparing Permit Application:
Bernardin, Lochmueller and Associates, Inc.
6200 Vogel Road
Evansville, Indiana 47715

Contact Person for Consultant:
Jeremy Kieffner – (800) 423-7411

Current Property Owner(s):
Mary
6568 South 100 East
Washington, Indiana 47501

The Mitigation Site consists of approximately 147.3 acres. The location of the mitigation site is as follows: Indiana: Daviess County, Sandy Hook Quadrangle, Veale Township, T2N, R7W, Eastern Half of Section 11 and Western Half of Section 12. Attachments 1 and 2 show the proposed Mitigation Site on the USGS Topographic Map and 2005 Aerial Photograph respectively.

Soils/Substrate:
The majority of the soils at the Mitigation Site consist of frequently flooded Haymond silt loam, which has experienced tilling for agricultural row crop plantings for many years. Petrolia silt loam is located within the existing wetland preservation areas on the site. In addition, Wakeland silt loam, Bloomfield loamy fine sand, and Princeton fine sandy loam soils comprise a portion of the property, but to lesser extents. Trenching and recompaction along of the western boundary of the mitigation site and along a portion of the southern edge of the backwater slough will be completed to disable any tiles that may be located in the mitigation site area. This plan does not involve the importation of soils from off-site to function as a seed bank. Flooding from the East Fork of the White River does deposit silt on the surface of the Mitigation Site.

Detailed baseline information for the I-69 Section 2 impact sites will be provided as a part of the I-69 Section 2 and 3 permit applications.

VI. Determination of Credits

Through minor excavation and grading at the Mitigation Site, an additional area of 8.1 acres of jurisdictional wetland will be added to the existing 34.0 acres of wetland and bottomland forest habitats. At 8.1 acres of wetland development, the wetland areas to be gained satisfy a portion of the total I-69 Section 2 target mitigation. In addition, 2.0 acres (7,310 linear feet) of stream channel development and 17.1 acres of riparian habitat development will mitigate for a portion of the stream impacts caused by Section 2 of the I-69 project. A total of 98.8 acres of bottomland and upland forest habitat (including the 17.1 acres of riparian habitat development) will be developed at this mitigation site to mitigate for a portion of the non-wetland forest impacts caused by Section 2. This plan will also preserve the 34.0 acres of existing wetland and bottomland forest habitat to compensate for additional portions of the upland forest impacts.

Table 2 shows the portions of the impacted resources in the I-69 Section 2 project and required mitigation for these impacts that will be mitigated at the Mitigation Site, and the mitigation being offered at this mitigation site. Table 3 summarizes the total I-69 Section 2 impacts and required mitigation, as well as, the percentage of overall Section 2 impacts to be mitigated at this mitigation site.

Table 2. I-69 Section 2 Impact and Target Mitigation Summary (Site)		
Wetland Type	**I-69 Section 2 Impacts to be Mitigated at this Site**	**Mitigation Required**
Palustrine Forest	1.9 acres	5.8 acres
Palustrine Emergent	1.1 acres	2.3 acres
Stream Channel	2.0 acres 7,310 Linear feet	2.0 acres 7,310 Linear Feet
Non-Wetland Forest Habitat Development	49.4 acres	101.8 acres*
Wetland/Bottomland Habitat Preservation	34.0 acres	34.0 acres
Existing Easements	------	1.4 acres
Total	**86.4 acres 7,310 Linear Feet**	**147.3 acres**

*****This area included 17.1 acres of riparian habitat development

Table 3. I-69 Section 2 Total Impacts and Required Mitigation Summary					
Resource Type	**I-69 Section 2 Total Impacts**	**Req'd Ratio**	**Total Mitigation Required**	**Mitigation Offered**	**Percent of Mitigation Being Completed at This Mitigation Site**
Palustrine Forested	21.63 acres	3:1	64.89 acres	5.8 acres	8.9%
Palustrine Emergent	4.49 acres	2:1	8.98 acres	2.3 acres	25.6%
Palustrine Scrub-Shrub	0.55 acres	3:1	1.65 acres	----	0%
Palustrine Aquatic Bed	0.79 acres	2:1	1.58 acres	----	0%
Open Water	3.83 acres	1:1	3.83 acres	----	0%
Streams	69,471 feet	1:1	69,471 feet	7,310 feet 2.0 acres	10.5 %
Bottomland/Upland Forest	234.2 acres	3:1	702.6 acres	135.8 acres	19.3%
Total	**265.5 acres 69,471 feet**		**783.5 acres 69,471 feet**	**145.9 acres 7,310 feet**	**18.1% 10.5%**

VII. Mitigation Work Plan

The following implementation plan addresses the mitigation commitments to take place on the Mitigation Site property.

A. Site Preparation:

1. Plans:

   a. Grading:
   Grading at the Mitigation Site property will be required to create the water retention berms and the ephemeral stream channels (Attachment 4). Material to be utilized for the construction of the berms will be taken from the excavated stream channels located on the property. Grading will only occur within existing agricultural fields, therefore, no trees will be removed as a result of the grading activities. Exploratory trenching will be performed along the western boundary of the mitigation site adjacent to the East Fork of the White River

channel and along a portion of the southern edge of the backwater slough. The material will be placed back in the trenches and recompacted once exploration is complete.

b. Hydrologic Changes:
Excavation within the ephemeral stream channel development areas are the only areas proposed for excavation at this mitigation site. The construction of the water retention berms will allow for inundation/saturation of a greater area than that which is currently realized for wetland development. The berms will be placed in two (2) areas as identified on the design plans in Attachment 4. The removal of material and retention of water within these portions of the East Fork of the White River floodway will allow for the development of ephemeral stream channels and inundation/saturation of a greater area than that which is currently realized for wetland development. The site will continue to receive floodwater from the East Fork of the White River under the same hydrologic conditions (i.e., bank overflow conditions) that currently fuel the existing wetland areas. However, this hydrology will be enhanced with the development of the mitigation site by retaining more flood water within the site following flood events, as well as following rain events that do not generate overbank flow.

c. Water Control Structures:
Water retention berms will be placed in two (2) locations near the western boundary of the Mitigation Site to enhance the hydrology of the wetland mitigation areas. The locations and specifications of these berms will be as identified in the design plans in Attachment 4. These water retention berms will be constructed as overflow structures, which will allow water to flow into the wetland development areas during high water events and prevent the water from flowing entirely out of the wetland development areas when the water recedes. The purpose for these water control structures is to allow the wetland development areas to retain water for a longer duration following rain events and elevate the local groundwater levels to enhance the overall hydrology of the site.

d. Erosion Control:
Silt fences will be used to minimize erosion of disturbed soil surfaces and runoff into the East Fork of the White River and the existing wetland areas during construction. The ephemeral stream channels will be seeded with a swale seed mix and a coconut fiber mat will be placed within the ephemeral stream channels to prevent the seed from being washed out and prevent soil erosion until the seed is established. The water retention berms will be seeded and a coir fiber matting (coconut fiber) will be placed over the berms to prevent the seed from being washed out and prevent soil erosion until the seed is established.

e. Bank Stabilization:
Bank stabilization will be limited to revegetation and installation of coir fiber matting (coconut fiber) on the water retention berms and within the channel and on the banks of the excavated ephemeral stream channels. The remainder of the site that will be disturbed is essentially flat; therefore, no other bank stabilization is anticipated.

f. Equipment:
Excavation and final grading will be accomplished using mechanized equipment (e.g., bulldozer, backhoe, dump truck, etc.). Seedbed preparation will utilize a tiller, harrow or other suitable machinery. A roller or cultipacker will be used to lightly compact seeded areas following seed application. All bare root tree seedlings shall be mechanically planted with a tree planting machine.

All mechanized equipment will be pressure-washed at an off-site location to remove any dirt or soil that may be a potential seed source for invasive or non-native plant species prior to entering the site. Any equipment that leaves the site will also be pressure-washed at an off-site location before returning to the site.

g. Site Access Control:
Access to the mitigation site during and after construction will be via CR 825 S that is located adjacent to the north and west sides of the mitigation site (Attachment 4). Construction entrances will be installed at all entrances off of CR 825 S. The proposed field markings will help to prevent unauthorized access to the site.

h. The forested wetland and riparian mitigation areas will have 4x4 treated posts placed 150 feet apart along the outside borders, as identified on the plans in Attachment 4. These posts will visually show the edge of the wetland and riparian mitigation areas for monitoring and compliance field inspections. Posts will also be placed along the north, south and west boundary of the site between the "Do Not Mow or Spray Signs" as identified on the design plans (Attachment 4). A total of 160 posts will be placed on these borders.

"Do Not Mow or Spray" signs fashioned in accordance with INDOT 2008 Standard Specification 621.06(h) as per Specification 622.20, will be placed every 400 feet along the north, south, and west boundary of the Mitigation Site facing the adjacent parcels. The mitigation design plans in Attachment 4 show the location of these signs. A total of 18 signs will be placed around the property boundary of this mitigation site. These signs will identify the border of the mitigation site and prevent any accidental human disturbance from adjacent landowners.

In addition, three (3) signs that identify this site as a mitigation site will be placed at specified locations according to the design plan in Attachment 4. The signs shall be constructed and designed in accordance with Standard Specification Section 802. These signs shall read:

INDOT Mitigation Property
Wetland, Stream, Forest,
and Floodway Habitat
Mitigation Site

and shall conform to the details provided in the Special Provision (see Attachment 5).

2. Planting Plan:

The planting plan for the Mitigation Site has been developed in accordance with INDOT 2008 Standard Specifications Sections 621 and 622 and the unique special provisions in Attachment 5. The mitigation site includes 7 planting zones which collectively will consist of 19 canopy tree species, 3 woody shrub species, and 3 seed mixes. An additional seed mix will be applied to the water retention berms. Zone A includes the wooded riparian buffer area from the top of bank to 25 feet from the top of bank. Zone B includes the wooded riparian buffer area 25 feet from the top of bank to 50 feet from the top of bank. Zone C includes the forested wetland area at elevations between 424.25 and 425.25 feet. Zone D includes the emergent wetland area at elevations between 423 and 424.25 feet. Zone E includes the upland forested mitigation area at elevations between 432 and 465. Zone F includes the bottomland forested areas at elevations

between 425 and 432. Zone G includes the ephemeral stream channel development areas. Attachment 4 contains the design plans showing the planting zone locations and water retention berm locations. Strict adherence to planting the trees, shrubs, and seed mix species in the appropriate zones is required.

Seedbed Preparation:
Following final grading, seedbed preparation shall consist of multiple tilling as detailed in the Special Provisions (Attachment 5) to eliminate any existing vegetation prior to seeding and tree/shrub planting. An alternative tilling schedule may be approved, provided it adequately eliminates any undesirable plant material.

Herbicide:
Since much of the Mitigation Site will be cleared of vegetation by grading and tilling, the use of herbicides as a pre-planting treatment is not anticipated for the entire site.

Fertilizer:
All Planting Zones A through G will receive an application of 12-12-12 granular fertilizer in accordance with INDOT 2008 Standard Specification 914.03. Fertilizer will be uniformly spread over the planting zones at a rate of 400 lb/acre prior to or during final tilling. A total of 22.38 tons of fertilizer will be required for the mitigation site.

Seeding and Planting:
All seeds and bare root plants should be obtained from nurseries within American National Standards Institute (ANSI) Plant Hardiness Zones 4, 5 or 6. Potential vendors include, but are not limited to:

Indiana
- Indiana Department of Natural Resources
- J.F. New Native Plant Nursery (Walkerton, IN)
- Heartland Restoration Services, Inc. (Fort Wayne, IN)
- Berg Warner Nursery (Lizton, IN)

Illinois
- Lafayette Home Nursery, Inc. (Lafayette, IL)

Kentucky
- Shooting Star Nursery (Georgetown, KY)

Ohio
- Envirotech Consultants, Inc. (Somerset, OH)

Missouri
- Forrest Keeling Nursery (Elsberry, MO)
- Ripley County Farms (Doniphan, MO)

New York
- Southern Tier Consulting, Inc. (West Clarksville, NY)

Virginia
- Bobtown Nursery (Melfa, VA)

Seeding and planting shall take place between March 1 and July 1. If possible, seeding and planting shall take place immediately after the site has been prepared. In the event this is not possible, a temporary cover shall be established using Seed Mix T in accordance with INDOT Standard Specification 621.06(f) until such time as the permanent seeding and planting can take

place. Alternative planting times must be approved by the INDOT Administration of Ecology & Waterways Permitting Section.

Herbaceous Cover:
All planting zones shall be planted with herbaceous ground cover to reduce weed competition and provide soil stabilization. The herbaceous cover for Zones A, B, C, and F will consist of a wooded wetland establishment seed mix as indicated in Table 1 in Attachment 5, or a comparable wetland woods herbaceous cover mix consisting of at least nine (9) native graminoid species and six (6) native forb species. Zone D will consist of an emergent wetland seed mix as indicated in Table 2 in Attachment 5, or a comparable mix of at least seven (7) native graminoid species and thirteen (13) native forb species. Zone E will be seeded with annual rye seed. Zone G will consist of a swale seed mix as indicated in Table 3 in Attachment 5, or a comparable mix of at least seven (7) native graminoid species and ten (10) native forb species. The water retention berms will consist of a slope stabilization seed mix as indicated in Table 3 in Attachment 5, or a comparable mix of at least five (5) native graminoid species. Seeding shall be by broadcast spreading at a rate of 44.53 lbs/acre for the wooded wetland establishment seed mix, 34.78 lbs/acre for the emergent wetland seed mix, 27.72 lbs/acre for the swale seed mix, 40.00 lbs/acre for the annual rye, and 57.63 lbs/acre for the slope stabilization seed mix. Seeding rates are based on pure live seed (PLS). Seeding should take place immediately following seedbed preparation. A roller, cultipacker or light raking shall be used on all seeded areas to ensure adequate seed-to-soil contact. Seeds shall not be more than 1/8 (0.125) inch deep. The seeded areas are to be immediately followed by mulching (see below) and watering (see below), if necessary. Table 4 summarizes the seeding requirements for the project.

Table 4. Mitigation Site Herbaceous Cover Seeding Plan

Planting Zone	Seed Mix	Seeding Rate	Area	Quantity
A, B, C, and F	Wooded Wetland Establishment	44.53 lbs/acre	104.6 ac.	4,658 lbs
D	Emergent Wetland Seed Mix	34.78 lbs/acre	2.3 ac.	80 lbs
E	Annual Rye	40.00 lbs/acre	3.0 ac.	120 lbs
G	Swale Seed Mix	27.72 lbs/acre	2.0 ac.	55 lbs
Water Retention Berms	Slope Stabilization Seed Mix	57.63 lbs/acre	0.3 ac.	17.3 lbs

Trees and Shrubs:
Planting of the bare root tree and shrub seedlings and 3-gallon container grown tree seedlings is to be completed following seeding of the herbaceous cover. The seedlings will be transported, stored and handled in accordance with INDOT Specifications 914.08. All seedlings shall be kept moist during transportation. Storage of these plants shall be in a cool dark place until the date they are to be installed. The roots shall not be allowed to dry out before they are planted. Planting shall follow immediately after site preparation. Only that number of seedlings which can reasonably be planted during a single day may be removed from storage. Seedling trees will be planted in accordance with sound horticultural practices with respect to moisture, root pruning, planting depth, planting hole size, soil compaction, etc. All bare root tree and shrub seedlings shall be mechanically planted. All 3-gallon container grown tree seedlings shall be manually planted. Seedlings shall be planted so the root collar is even with the ground surface.

A total of 7,456 tree seedlings and 1,863 shrub seedlings shall be planted within Zones A and B. Of these tree seedlings, 5,592 shall be bare root and 1,864 shall be 3-gallon container grown tree seedlings. This will provide an approximate ratio of bare root to 3-gallon container grown seedlings of 3:1. A total of 1,863 shrub seedlings shall also be planted throughout Zones A and

B. All shrub species shall be bare root seedlings. A total of 2,530 tree seedlings shall be planted within Zone C. Of these tree seedlings, 1,900 shall be bare root and 630 shall be 3-gallon container grown tree seedlings. This will provide an approximate ratio of bare root to 3-gallon container grown seedlings of 3:1. A total of 25,622 bare root tree seedlings will be planted in Zones E and F. In addition a total of 6,438 bare root shrub seedlings shall be planted throughout Zones E and F. The Mitigation Site will have a total of 35,608 tree seedlings and 8,301 shrub seedlings planted in all proposed forested development zones.

Mechanical planting of the bare root tree seedlings shall be in a random manner with regard to species composition within Zones A, B, and C to avoid clustering at approximately 10-foot spacing between seedlings and between planting rows. A 20-foot gap shall remain between every third and fourth mechanically-planted bare root tree seedling to allow space for manual planting of a 3-gallon container grown seedling with 10-foot spacing between the adjacent seedlings. The tree seedling density following the planting of the bare root and 3-gallon container grown seedlings will be approximately 436 stems/acre. Mechanical planting of the bare root shrub seedlings in Zones A and B shall also be in a random manner with regard to species composition to avoid clustering with a density of approximately 109 stems per acre. Shrubs shall be planted midway between every fourth and fifth tree seedling and within each planting row. This will provide a 4:1 tree to shrub ratio and prevent an overly dense understory layer. Shrubs will be planted within the planting rows rather than between the rows to allow enough space between each row for future maintenance or mowing, if necessary.

Mechanical planting of the bare root tree seedlings shall be in a random manner with regard to species composition within Zones E and F to avoid clustering at approximately 12-foot spacing between seedlings and between planting rows. The tree seedling density following the planting of the bare root seedlings will be approximately 302 stems/acre. Mechanical planting of the bare root shrub seedlings in Zones E and F shall also be in a random manner with regard to species composition to avoid clustering with a density of approximately 76 stems per acre. Shrubs shall be planted midway between every fourth and fifth tree seedling and within each planting row. This will provide a 4:1 tree to shrub ratio and prevent an overly dense understory layer. Shrubs will be planted within the planting rows rather than between the rows to allow enough space between each row for future maintenance or mowing, if necessary.

Tree and shrub planting specifications shall be as outlined in the Special Provisions located in Attachment 5. Table 5 indicates the tree species, wetland status, quantities, planted form (e.g., bare root), on-centering spacing and grouping arrangements for each planting zone.

Table 5 Mitigation Site Tree Planting Plan

Species	Indicator Status	Count	Form	On-Center Spacing	Grouping
Zone A Wooded Riparian Area from Top-of-Bank back to 25 feet from Top-of-Bank Area: 8.5 acres					
Tree Species					
Ulmus americana American Elm	FACW-	695	bare root	10' x 10'	Equal and random species distribution throughout the planting zone. A 20-foot gap shall remain between every 3rd and 4th bare root tree seedling to allow for manual planting of 3-gallon container
		232	3-gallon		
Acer saccharinum Silver maple	FACW	695	bare root		
		232	3-gallon		
Populus deltoides	FAC+	695	bare root		

Species	Indicator Status	Count	Form	On-Center Spacing	Grouping
Cottonwood		232	3-gallon		grown seedling.
Platanus occidentalis Sycamore	FACW	695	bare root		Planting rows shall follow the patterns identified in Attachment 4.
		232	3-gallon		
Shrub Species					
Cornus obliqua Pale Dogwood	FACW+	309	bare root	10' x 40'	Equal and random species distribution throughout the planting zone. Shrubs shall be planted midway between every 4th and 5th tree seedling within each planting row.
Lindera benzoin Common Spicebush	FACW-	309	bare root		
Sambucus canadensis Elderberry	FACW-	309	bare root		
Zone B Wooded Riparian Area 25 feet from Top-of-Bank to 50 feet from Top-of-Bank Area: 8.6 acres					
Tree Species					
Carya laciniosa Shellbark Hickory	FACW	703	bare root	10' x 10'	Equal and random species distribution throughout the planting zone. A 20-foot gap shall remain between every 3rd and 4th bare root tree seedling to allow for manual planting of 3-gallon container grown seedling. Planting rows shall follow the patterns identified in Attachment 4.
		234	3-gallon		
Quercus palustris Pin Oak	FACW	703	bare root		
		234	3-gallon		
Quercus bicolor Swamp White Oak	FACW+	703	bare root		
		234	3-gallon		
Carya illinoensis Pecan	FACW	703	bare root		
		234	3-gallon		
Shrub Species					
Cornus obliqua Pale Dogwood	FACW+	312	bare root	10' x 40'	Equal and random species distribution throughout the planting zone. Shrubs shall be planted midway between every 4th and 5th tree seedling within each planting row.
Lindera benzoin Common Spicebush	FACW-	312	bare root		
Sambucus canadensis Elderberry	FACW-	312	bare root		
Zone C Forested Wetland Area Area: 5.8 acres					
Quercus palustris Pin Oak	FACW	380	bare root	10' x 10'	Equal and random species distribution throughout the planting zone. A 20-foot gap shall remain between every 3rd and 4th bare root tree seedling to allow for manual planting of 3-gallon container grown seedling. Planting rows shall follow the patterns identified in Attachment 4. Planting rows shall follow the patterns identified in Attachment 4.
		126	3-Gallon		
Quercus bicolor Swamp White Oak	FACW+	380	bare root		
		126	3-Gallon		
Carya illinoinensis Pecan	FACW	380	bare root		
		126	3-Gallon		
Betula nigra River Birch	FACW	380	bare root		
		126	3-Gallon		
Liquidambar styraciflua Sweetgum	OBL	380	bare root		
		126	3-Gallon		
Zone E Upland Forest Area Area: 3.0 acres					
Tree Species					
Quercus rubra Red Oak	FACU	227	bare root	12' x 12'	Equal and random species distribution throughout the planting zone. Planting rows shall follow the patterns identified in Attachment 4.
Quercus alba White Oak	FACU	227	bare root		
Liriodendron tulipifera Tuliptree	FACU+	227	bare root		

Species	Indicator Status	Count	Form	On-Center Spacing	Grouping
Prunus serotina Black Cherry	FACU	227	bare root		
Shrub Species					
Amelancbter arborea Serviceberry	FACU	76	bare root	12' x 48'	Equal and random species distribution throughout the planting zone. Shrubs shall be planted midway between every 4th and 5th tree seedling within each planting row.
Corylus Americana American Hazelnut	FACU	76	bare root		
Viburnum prunifolium Blackhaw	FACU	76	bare root		
Zone F Bottomland Forest Area Area: 81.7 acres					
Tree Species					
Quercus palustris Pin Oak	FACW	2,746	bare root	12'x 12'	Equal and random species distribution throughout the planting zone. Planting rows shall follow the patterns identified in Attachment 4.
Quercus shumardii Shumard Oak	FACW-	2,746	bare root		
Quercus macrocarpa Bur Oak	FAC-	2,746	bare root		
Quercus alba White Oak	FACU	2,746	bare root		
Carya ovata Shagbark Hickory	FACU	2,746	bare root		
Carya illinoinensis Pecan	FACW	2,746	bare root		
Juglans nigra Black Walnut	FACU	2,746	bare root		
Populus deltoides Cottonwood	FAC+	2,746	bare root		
Ulmus americana American Elm	FACW-	2,746	bare root		
Shrub Species					
Cornus drummondii Roughleaf Dogwood	FAC	1,242	bare root	12' x 48'	Equal and random species distribution throughout the planting zone. Shrubs shall be planted midway between every 4th and 5th tree seedling within each planting row.
Cornus racemosa Gray Dogwood	NL	1,242	bare root		
Ilex verticillata Common Winterberry	FACW+	1,242	bare root		
Physocarpus opultfolius Ninebark	FACW-	1,242	bare root		
Viburnum lentago Nannyberry	FAC+	1,242	bare root		

Mulching:

Mulch material for Zones A, B, C, D, E, and F will conform to INDOT 2008 Standard Specifications 914.05(a). Material will be applied such that it covers the site at an average rate of 2 tons/acre. The mulch material shall be secured by crimping as per Specification 621.05(c) to hold the seed in place and prevent removal during periods of high water. Mulch shall be crimped into place immediately upon placement. Mulch will be applied in Planting Zones A, B, C, D, E, and F for a total of 220 tons. Zone G will receive a coconut fiber mat to stabilize the stream channels and prevent the seed from being washed out of the stream channels prior to establishment.

Watering:
The seeded and planted areas (Zones A through G) will be watered at a frequency and duration sufficient enough to ensure that 80% aerial coverage of herbaceous species are established 60 days after completion of seeding activities. If sufficient coverage of herbaceous ground cover is not established after 60 days, all deficient areas shall be reseeded and watered until 80% coverage is achieved. If irrigation is required for watering of this site, it is anticipated that water will be extracted from the East Fork of the White River channel utilizing a temporary water pump that will be removed upon completion of watering. The special provisions in Attachment 5 provide a detailed specification outlining watering requirements for the Mitigation Site.

Exotic and Undesirable Species Control:
While volunteer woody and herbaceous species will undoubtedly become established within this mitigation site, the potential for exotic and/or native invasive species of concern to Indiana Department of Natural Resources (such as purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), reed grass (*Phragmites spp.*), garlic mustard (*Alliaria petiolata*), autumn olive (*Elaeagnus umbellata*), crown vetch (*Coronilla varia*) or cattails (*Typha sp.*)) is minimal. If a threatening infestation is identified during monitoring, an appropriate control method shall be recommended to remove the invading species and/or prevent further encroachment.

Given the current progression of succession evident throughout much of the Mitigation Site, it is reasonable to expect that creating similar hydrologic conditions near the existing wetland areas may promote additional high density colonization by voluntary tree species. The establishment of native volunteer woody species will be allowed within the mitigation site, provided their presence does not adversely affect the viability potential of the planted species to the extent that success criteria cannot be met. If it is foreseen that such native establishment poses a threat to the planted woody species, corrective measures in the form of mechanical clearing or herbicide application may be necessary.

Schedule:
The Mitigation Site is proposed for construction in the Spring of 2009 pending the approval of the I-69 Sections 2 and 3 Umbrella Mitigation Bank Agreement.

Construction Monitoring:
Monitoring of the construction activities associated with the Mitigation Site project (including grading, pre-seeding/planting site preparation, planting and post-planting treatments) are to be conducted by personnel contracted by INDOT. Construction monitoring will include on-site management of all activities associated with construction including maintenance of records (i.e., bill of lading for seed and planting materials, fertilizer, herbicides, etc.), documentation of dates of completed activities and documented approval of decisions concerning deviations from the proposed design plan.

B. As-Built Conditions:

1. Post-construction Documentation:

Within six weeks of completion of site preparation and planting, a report documenting the as-built conditions of the site will be submitted to the United States Army Corps of Engineers (USACE) and the Interagency Review Team (IRT). The IRT is comprised of representatives from the Indiana Department of Environmental Management (IDEM), the United States Fish and Wildlife

Service (USFWS), the Indiana Department of Natural Resources (IDNR), the United States Environmental Protection Agency (USEPA), and the Natural Resources Conservation Service (NRCS). The report should provide evidence through a bill of lading or invoice that the proper mitigation plant species were delivered in the correct numbers and were viable at the time of planting. If it was necessary to retain the delivered plants in storage for a period of time prior to planting, a sufficient description of the duration, conditions under which they were stored and nursery attention provided to ensure viability should be included. A brief description of the methods used to plant the bare root plants including verification of grouping and spacing should be provided. The report will document any and all notable deviations from the plan and reasons for such deviations. The report will also include documentation that the required erosion control measures were implemented and maintained.

Photo documentation of the tree plantings and post planting mulch application should also be submitted. At this time, permanent photographic stations that document each of the planting zones should be established. The station location should be identified on a set of plans, including the direction in which the photos were taken. These stations will become the reference sites for future monitoring report photographs.

2. As-built Plans:

A set of as-built plans will be submitted with the post-construction documentation to either confirm that the site was graded and planted according to the plan, or to document any deviations that took place.

VIII. Maintenance Plan

No maintenance is planned for the Mitigation Site. Should it be determined through monitoring and consultation with the USACE and the IRT that maintenance is required, INDOT will be responsible for implementing maintenance or remedial activities. These activities may include but are not limited to herbicide treatment to eliminate invasive species, mowing, reseeding, or replanting.

IX. Performance Standards

A. Minimum Success Criteria:

1. Wetlands:

Wetland Delineation Report:
Prior to final approval of the Mitigation Site as part of the Umbrella Mitigation Bank, a wetland delineation report must be completed on the mitigation site and submitted to the USACE for approval. This report must include a survey of the wetland delineation boundary. The final credited acres of the mitigation area shall be adjusted based on the delineated boundary. The wetland delineation shall follow the most recently adopted USACE Wetland Delineation Manual.

Vegetation:
Through monitoring report documentation, it should be demonstrated that at the end of the 10-year monitoring period, the following vegetative success criteria are met.

a. At least 240 stems/acre must be maintained within Zone C. Volunteer tree species may be counted if they appear to be generally similar in age and condition to the planted seedlings. Volunteer tree species must either be one of the planted species or be included in the

following list: Shellbark Hickory (*Carya laciniosa*), Bitternut Hickory (*Carya cordiformis*), Silver Maple (*Acer saccharinum*), Green Ash (*Fraxinus pennsylvanica*), Eastern Cottonwood (*Populus deltoides*), Slippery Elm (*Ulmus rubra*), or American Elm (*Ulmus Americana*).

b. Greater than 50% (percent of aerial cover) of the dominant vegetation species for Zones C and D are hydrophytic, thus meeting the current federal criteria for vegetation.
c. No single species within the wetland mitigation planted zones (Zones C and D) should constitute more than 25% of the surviving species. This criteria does not apply to the existing wetland, bottomland forest, upland forest and riparian areas.
d. The combined surface area coverage of reed canary grass (*Phalaris arundinacea*) and cattail (*Typha spp.*) shall not cover more than 15% of the mitigation wetland areas (Zones C and D).
e. The mitigation wetland areas (Zones C and D) are free of the following exotic species: purple loosestrife (*Lythrum salicara*) and common reed (*Phragmites australis*).
f. Native vegetation excluding cattails (*Typha spp.*) must cover at least 70% of the Zones C and D.
g. No more than 10% of the surface area coverage of the mitigation wetland areas may be open water, bare ground or a combination of the two.

Hydrology:
Through monitoring report documentation, it should be demonstrated that at the end of the 10-year monitoring period, the following hydrology success criteria are met.

a. The hydrology of the site should match the proposed hydrology in Section III of this mitigation and monitoring plan with regards to source, frequency and duration. At a minimum, the wetland should be inundated and/or saturated within the upper 12" of the soil for a duration greater than or equal to 5% of the growing season under normal conditions. Since the mitigation plan is essentially at the same elevations as the existing wetland areas, the newly constructed wetland areas will experience the same hydrologic flooding cycle that the existing wetland area does.
b. The site hydrology should be self-sustaining. The long term hydrologic requirements of the site do not require seasonal or episodic manipulations of water levels to ensure success. The frequency and duration of flooding from the East Fork of the White River is sufficient to maintain minimum hydrologic conditions.

2. Streams:

Success criteria for compensatory mitigation for streams shall be based on the functional/bio-assessment of the stream being mitigated and address the following elements:

a. The channel length of mitigation will be equal to the channel length identified in the Mitigation Work / Implementation Plan section above.
b. The mean channel width, depth, channel slope, sinuosity, bankfull dimensions, and bank characteristics of the stream channel mitigation area shall match the mitigation design plans in Attachment 4 with the range of natural variablity.
c. Riparian buffers (Zones A and B) shall be planted along all developed stream channel mitigation areas (Zone G) as identified on the plans in Attachment 4. The vegetation success criteria within these zones should match the following.
    1. At least 240 stems/acre must be maintained (Zones A and B). Volunteer tree species may be counted if they appear to be generally similar in age and condition to the planted seedlings. Volunteer tree species must either be one of the planted species or be included in the following list: Shagbark Hickory (*Carya ovata*), Shellbark Hickory (*Carya*

laciniosa), Bitternut Hickory (*Carya cordiformis*), Silver Maple (*Acer saccharinum*), Sugar Maple (*Acer saccharum*), Green Ash (*Fraxinus pennsylvanica*), White Ash (*Fraxinus Americana*), Eastern Cottonwood (*Populus deltoides*), Red Oak (*Quercus rubra*), Post Oak (*Quercus stallata*), White Oak (*Quercus alba*), Slippery Elm (*Ulmus rubra*), American Elm (*Ulmus Americana*), or Black Locust (*Robinia pseudoacacia*).

2. No single species within the riparian mitigation planted zones (Zones A and B) should constitute more than 40% of the surviving species.
3. The combined surface area coverage of reed canary grass (*Phalaris arundinacea*) and cattail (*Typha spp.*) shall not cover more than 15% of the mitigation area.
4. The mitigation area is free of the following exotic species: purple loosestrife (*Lythrum salicara*) and common reed (*Phragmites australis*).
5. Native vegetation excluding cattails (*Typha spp.*) must cover at least 70% of the Zones A, B, and G.

d. Overall stream mitigation should be self-sustaining.

3. Bottomland / Upland Forests:

Success criteria for the bottomland and upland forested mitigation areas at the end of the 10-year monitoring period shall be as follows:

Vegetation:

a. At least 240 stems/acre (approximately 80% survival of the planted tree species) must be maintained (Zone E and F). Volunteer tree species may be counted if they appear to be generally similar in age and condition to the planted seedlings. Volunteer tree species must either be one of the planted species or be included in the following list: Shagbark Hickory (*Carya ovata*), Shellbark Hickory (*Carya laciniosa*), Bitternut Hickory (*Carya cordiformis*), Silver Maple (*Acer saccharinum*), Sugar Maple (*Acer saccharum*), Green Ash (*Fraxinus pennsylvanica*), White Ash (*Fraxinus Americana*), Eastern Cottonwood (*Populus deltoides*), Red Oak (*Quercus rubra*), Post Oak (*Quercus stallata*), White Oak (*Quercus alba*), Slippery Elm (*Ulmus rubra*), American Elm (*Ulmus Americana*), or Black Locust (*Robinia pseudoacacia*).
b. No single tree species within the forested mitigation planted zones should constitute more than 25% of the 240 stems within the bottomland forested mitigation area (Zone F) and no more than 40% of the 240 stems within the upland forested mitigation areas (Zones E). If it is determined that a dense stand of voluntary tree species has developed, but is not posing a threat to the survival of the planted tree species, the percent of stems of a single tree species criteria shall not apply.
c. The combined surface area coverage of reed canary grass (*Phalaris arundinacea*) and cattail (*Typha spp.*) shall not cover more than 15% of the mitigation area.
d. The bottomland / upland mitigation areas (Zones E and F) are free of the following exotic species: purple loosestrife (*Lythrum salicara*) and common reed (*Phragmites australis*).
e. Native vegetation excluding cattails (*Typha spp.*) must cover at least 70% of Zone E and F.

B. <u>Project Specific Success Criteria:</u>

1. Function and Value Measurements:

The targeted function of providing wetland and woodland wildlife habitat within the East Fork of the River floodplain is directly associated with the continual growth and survival of the planted tree and shrub species. Monitoring of the survival and growth of the planted species on an annual

basis will be the primary means of measuring the functional success of the Mitigation Site. The target wildlife habitat functions are to be considered successful if the minimum success criteria outlined above have been met and show signs of sustainability at the end of the ten (10) year monitoring period. The ability of the mitigation site to temporarily store surface water when the East Fork of the White River floods, will be assessed through direct observation of this mitigation site during monitoring following flood events.

2. Achievability:

The target functions of the Mitigation Site are considered to be achievable over time. The establishment of additional habitat within the East Fork of the White River floodplain will be realized in a short period of time once the additional wetland and riparian acreage is exposed to a frequent and sufficiently long hydroperiod. Achieving the goal of a mature wetland/floodplain/upland forest capable of providing shelter and food for wildlife will not begin to be fully realized for 10 or more years until the planted trees have grown substantially. In the intervening time period, this site will provide successional habitat for a variety of species dependent upon such habitat.

X. Monitoring Requirements

A. Monitoring Reports:

Annual monitoring reports will be prepared for the Mitigation Site until it has been approved as part of the I-69 Sections 2 and 3 Umbrella Mitigation Bank. A tracking system will be developed using GIS to track the success of this mitigation site.

1. Timing:

Annual inspections will be completed each year at any time during the 1st, 2nd, 3rd, 5th, 7th, and 10th growing seasons following planting. In any year planting was conducted, monitoring shall take place no sooner than the end of the growing season following planting. Wetland delineations shall be conducted during the 3rd, 5th, 7th, and 10th growing seasons to determine the actual boundaries of established and restored wetlands within the mitigation site. The monitoring reports will be submitted to the USACE and the IRT by December 31 of each year in which monitoring was conducted for the 10 year monitoring period.

2. Methods:

a. Data collection points:
Each assessment period shall include randomly established data collection points within the planted portions of the mitigation area designated as Zones A, B, C, D, E, F and G. Each data collection point should measure 0.25 acre in size and include a count of planted alive and dead tree species for the purposes of determining overall survival rates. The number of volunteer tree species should also be documented within each of the data collection points. Each of the data points established within the wetland portion of the Mitigation Site (Zones C and D) should also be documented using the routine wetland determination data forms from the most recently adopted USACE Wetland Delineation Manual.

b. Photography:
A single photograph should be taken at each data collection point to visually record the conditions at the time of data collection. Photographs should also be taken from the permanent stations establish as part of the post-construction documentation.

3. Documentation:

a. Each mitigation report should include a copy of the mitigation plan sheet with any annotations that spatially illustrate conditions observed (e.g., areas of high plant mortality, areas of volunteer dominance, exotic encroachment, unique wildlife habitat usage).
b. A brief description of the following features of the mitigation area should be provided.
(1) Indicate which areas within the wetland mitigation area (Zones C and D) show soil conditions that are inundated, saturated or not subject to hydric conditions under normal circumstances.
(2) Determine and document whether the vegetation within the entire Mitigation Site (Zones A, B, C, D, E, F and G) meets both the minimum criteria and performance standards established in Section IX. Include survival rates of planted species, composition and extent of volunteer species, presence of any exotic/undesirable species, and overall percent cover based on information from the data collection points.
c. Provide a brief description of any remedial measures taken to ensure the site meets the minimum criteria, performance standards, and overall goals and objectives of the mitigation project (i.e., invasive species removal, replanting, additional measures to protect against specific wildlife damage).

4. Responsible Parties:

INDOT or a designated agent will be responsible for submitting the required annual monitoring reports.

B. Assessment of Function/Value Replacement:

Functional assessments should be documented based on qualitative observations related to the sites ability to store flood waters and provide habitat for wildlife.

C. Release From Monitoring:

1. The site will be monitored for a minimum of ten (10) years as outlined above. In order to be approved as part of the Umbrella Mitigation Bank, it must be demonstrated that the success criteria for the wetland and stream mitigation areas have been met at the end of the ten (10) year period. A final monitoring report should be submitted to the USACE and the IRT requesting the site be approved. If the appropriate agencies confirm that the success criteria for the wetland, stream, and forested mitigation areas have been met, then the credits for the entire Mitigation Site may be released.

If the appropriate agencies determine that the success criteria for the wetland, stream, and forested mitigation areas have not been met at the end of this ten (10) year monitoring period, the credits will be suspended until remedial actions have been developed and implemented to correct the problems. A monitoring report shall be required for each consecutive year until two (2) sequential reports indicate that all success criteria have been met. Following the approval of the mitigation site, coordination with USACE and the IRT will be conducted to establish continual

management practices.

2. The proposed final monitoring report should include the required documentation from the previous year's monitoring effort, as well as a formal wetland delineation for the wetland and stream mitigation areas (Zones A, B, C, D and G) of the site. This report should also provide evidence that the goals of mitigation have been met and that the site generally represents a self-sustaining ecosystem. Results of InWRAP assessments performed on the wetland mitigation areas during the final monitoring should be included in the report to identify if this mitigation site has sufficiently replaced the functions and values of the impacted wetlands. If requested, INDOT, or their designated agent, will meet with USACE and IRT personnel to confirm the mitigation plan has been executed and is successful.

3. Provide proof that a restricted covenant for the 147.3 acre Mitigation Site (legal description boundary) has been recorded for the property.

XI. Long-Term Management Plan

A short-term management and maintenance plan will be submitted to the USACE and the IRT following construction and planting of the site if it is deemed necessary to implement such measures to assure woody plant survival and control of exotics and invasive species. Long-term management and maintenance of the Mitigation Site will be completed by INDOT until an agency or organization has been identified and approved by the USACE and the IRT to assume control and/or ownership of the mitigation site for long-term management and maintenance.

XII. Adaptive Management Plan

The primary challenge anticipated with the Mitigation Site will be the control of volunteer grass and weed species and prevention of such species competing with the planted tree and shrub seedlings. The other challenge anticipated with this mitigation site is the amount of flooding that may occur on the site after planting has been completed causing the seed mixes and tree seedlings to be washed away. There are no other identified challenges with the use of this site as mitigation for the I-69 Section 2 project.

A. Reporting Protocol:

If a success criteria stated above is not met for all or any portion of the Mitigation Site in any year, INDOT, or their designated agent, shall prepare an analysis of the cause(s) of failure and, if determined necessary by the USACE and the IRT, propose remedial action for pre-approval.

B. Response to Unsuccessful Remediation:

In the event that the USACE and the IRT determine the mitigation cannot be successfully achieved at the intended site, INDOT will coordinate with these agencies to discuss an alternative mitigation strategy on-site, or investigate the need to propose suitable mitigation at other eligible sites.

XIII. Financial Assurances

A. Construction:

All property within the Mitigation Site will be owned by the State of Indiana prior to construction. INDOT will be responsible for securing the necessary funding through state and/or federal sources to purchase the property and construct the Mitigation Site according to plan.

B. Monitoring:

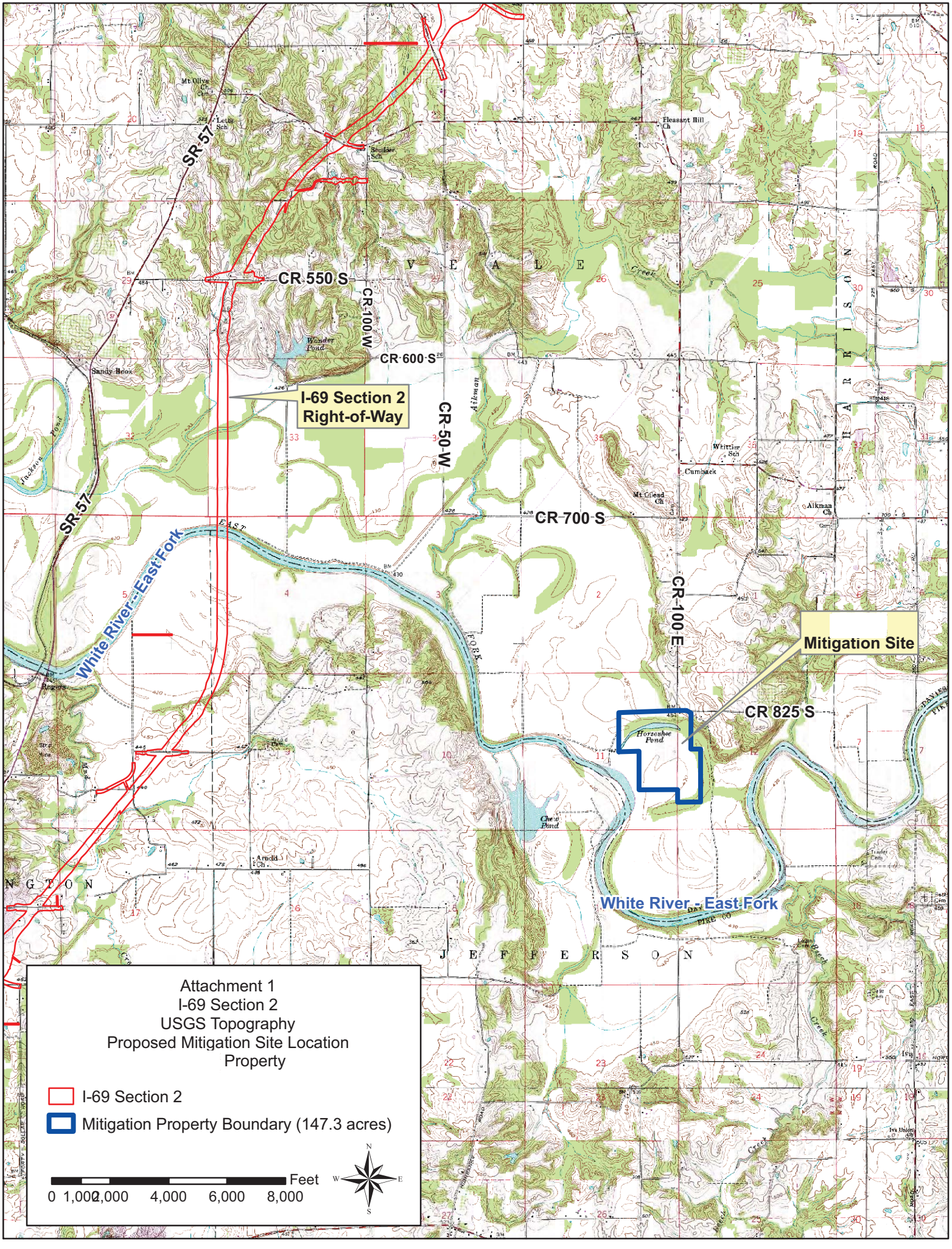
INDOT will be responsible for securing the necessary funding to conduct post-construction monitoring activities including preparation and filing of the required annual monitoring report.

C. Contingency:

The contractor will be responsible for guaranteeing the establishment of the planted seed mixes and the survival of the planted tree and shrub species for a period of two years following completion of the planting as warranted in the special provision (Attachment 5). In the event that replanting is required or mowing and/or herbicide treatment is needed to control invasive species, the contractor will be responsible for such activities for a period of two years following completion of the planting. The contractor will be held to a two year warranty period and will be required to post a Warranty Bond in favor of INDOT for a minimum of 150% of the total cost of the warranted items. The warranty bond shall be provided within 14 days of acceptance of the Mitigation Site.

Attachment 1

I-69 Section 2
USGS Map Showing the Mitigation Site Location


SR 57
CR 550 S
CR 100 W
CR 600 S
I-69 Section 2
Right-of-Way
CR 50 W
SR 57
CR 700 S
White River - East Fork
CR 100 E
Mitigation Site
CR 825 S
White River - East Fork
Attachment 1
I-69 Section 2
USGS Topography
Proposed Mitigation Site Location
Property
I-69 Section 2
Mitigation Property Boundary (147.3 acres)
Feet
0 1,000 2,000 4,000 6,000 8,000
N
S
E
W

Attachment 2

I-69 Section 2
2005 Aerial Photograph showing the Mitigation Site Location

Attachment 1
I-69 Section 2
2005 Aerial Photograph
Proposed Mitigation Site Location
Property

Mitigation Property Boundary (147.3 acres)

0 500 1,000 2,000 Feet

N W E S

Attachment 3

I-69 Section 2
Mitigation Site Photographs

Property Photos

Photo 1: Looking west at northern boundary of mitigation site

Photo 2: Looking southwest at Horse Shoe Pond Oxbow

Photo 3: Looking south at Horse Shoe Pond Oxbow

Photo 4: Looking southwest at Horse Shoe Pond Oxbow

Photo 5: Looking southwest at Horse Shoe Pond Oxbow

Photo 6: Looking east at Horse Shoe Pond Oxbow

Property Photos (continued)

Photo 7: Looking south at field in mitigation site during flood

Photo 8: Looking south at field in mitigation site during flood

Photo 9: Looking southwest at Horse Shoe Pond Oxbow outfall

Photo 10: Looking west at northern part of mitigation site

Photo 11: Looking south at Horse Shoe Pond outfall

Photo 12: Looking east at western boundary of mitigation site

Attachment 4

I-69 Section 2
Mitigation Site
Design Plans

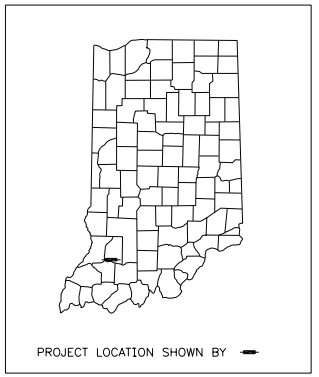
PROJECT	DESIGNATION
0710903	0710903
CONTRACT	
IR-30351	

INDIANA DEPARTMENT OF TRANSPORTATION

MITIGATION PLANS

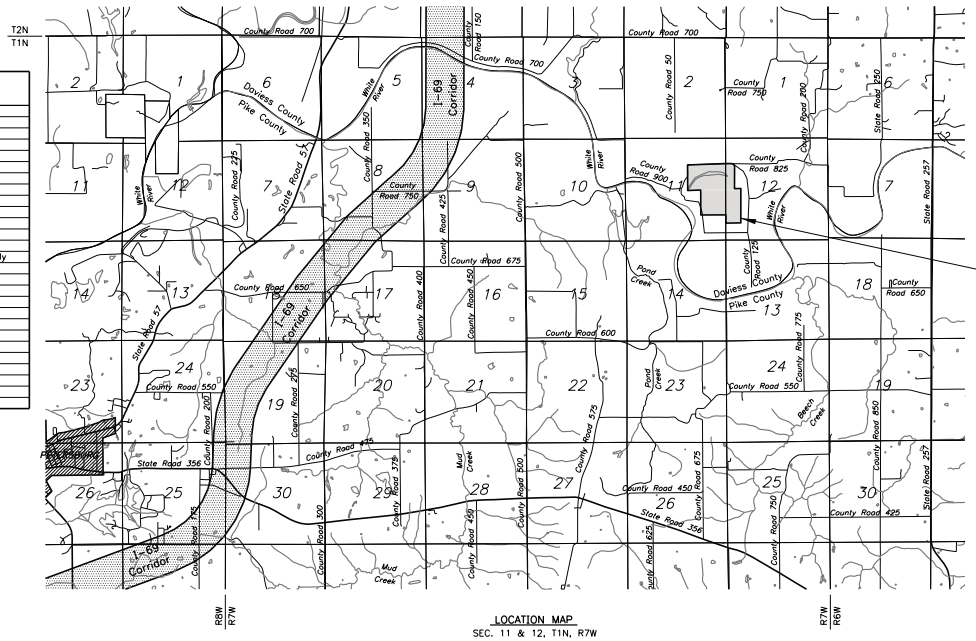
PROJECT NO. 0710903 P.E.
PROJECT NO. 0710903 R/W
PROJECT NO. 0710903 CONST.

TRAFFIC DATA	
A.A.D.T. (2002)	V.P.D.
A.A.D.T. (2022)	V.P.D.
D.H.V. (2022)	V.P.H.
DIRECTIONAL DISTRIBUTION	%
TRUCKS	% A.A.D.T.
	% D.H.V.
DESIGN DATA	
DESIGN SPEED	mph
PROJECT DESIGN CRITERIA	
FUNCTIONAL CLASSIFICATION	
RURAL/URBAN	
TERRAIN	
ACCESS CONTROL	



INDEX

ITEM NO.	DESIGNATION	PLAN SHEET NO.
A1	PLAN INDEX	1
A2	PLAT	3
A3	PROJECT NARRATIVE	13
A4	VICINITY MAP	1
A5	PROJECT SITE LEGAL DESCRIPTION	13
A6	LOT LOCATIONS & SITE IMPROVEMENTS	4
A7	HYDROLOGIC UNIT CODE	13
A8	WATER QUALITY PERMITS	13
A9	STORM WATER DISCHARGE POINTS	4
A10	ADJACENT WETLANDS, LAKES AND WATER COURSES	3
A11	RECEIVING WATERS	13
A12	GROUNDWATER DISCHARGES	13
A13	FLOODPLAIN, FLOODWAYS, AND FLOODWAY FRINGES	3
A14	PEAK DISCHARGE	Attached Separately
A15	ADJACENT LANDUSE	13
A16	LOCATIONS OF DISTURBED AREAS	8
A17	EXISTING VEGETATIVE COVER	13
A18	SOIL MAPS	3
A19	PROPOSED STORM WATER SYSTEM	13
A20	OFF-SITE CONSTRUCTION ACTIVITIES	13
A21	SOIL STOCKPILES, BORROW AND/OR DISPOSAL AREAS	4
A22	EXISTING SITE TOPOGRAPHY	4
A23	PROPOSED FINAL TOPOGRAPHY	4-8
B1-B15	CONSTRUCTION COMPONENT	13
C1-C5	POST-CONSTRUCTION COMPONENT	13



LOCATION MAP
SEC. 11 & 12, T1N, R7W

SCALE: 1"=3000'
0 1500 3000 6000

NOTE: THESE PLANS ARE PREPARED USING ENGLISH DIMENSIONS

[INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS DATED 2008 TO BE USED WITH THESE PLANS]

BERNARDIN · LOCHMUELLER & ASSOC., INC.
6200 Vogel Road Evansville, Indiana 47715
(812)479-6200 / fax: (812)479-6262

PLANS PREPARED BY: BERNARDIN LOCHMUELLER & ASSOC. (812)479-6200
6200 Vogel Road, Evansville, IN 47715 PHONE NUMBER

CERTIFIED BY: 12/08/08 DATE

APPROVED FOR LETTING: CHIEF, DIVISION OF DESIGN DATE

JASON A. DUPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

HORIZONTAL SCALE	BRIDGE FILE
AS SHOWN	
VERTICAL SCALE	DESIGNATION
---	0710903
SURVEY BOOK	SHEETS
	1 of 25
CONTRACT	PROJECT
IR-30351	0710903

S:\Surveys\103-0001\2008_Wetlands\Purcell\MIT-DWGS\title_sheet.dwg 12/08/08 13:47 mrielle

UTILITIES

NO UTILITIES IN PROJECT LIMITS

GENERAL NOTES

	All earth shoulders, median areas, and cut and fill slopes shall be plain or mulch seeded except where sodding is specified.
	The final cross section of the grading contract will be the original cross sections of the paving contract. However, partial or complete cross sections shall be taken if necessary to determine the actual excavation quantities.
	The paper relocation will be cross sectioned by the Engineer before construction.
	Existing asphalt pavement located outside the construction limits, between Sta. ___ and Sta. ___, shall be removed as directed.
	The quantity of peat excavation shown of the plans has been estimated on the basis of theoretical cross sections by using treatment of existing fills, treatment by removal, or treatment by displacement, where each treatment applies.
	Sheet Signs and Posts shall not be ordered until the exact number of signs and length of each post has been determined upon field investigation.
	All Signs shall be marked for identification. The Marking Material shall be either Scotch Lite, Seibulite, Reflexite or approved equal. The identifying message shall consist of INDOT and the Month and Year the sign is installed. The Message Copy shall consist of White or Black Lettering (of a minimum of 25mm in height) on Black or White Background respectively. The Marking for Sheet Signs shall be placed on the lower corner closest to the center-line of the road. The Marking for Panel Signs shall be placed on the bottom panel on the end closest to the centerline of the roadway. The Marking shall not be covered by the Sign's support after installation of the sign.
	Existing Exit Direction Signs and Stop Signs shall not be removed until the new ones are at the job site and ready to install. These two signs shall be seen by traveling motorists at all times. At least one Advance Guide Sign is required in advance of the Exit Point.
	All design shall be in accordance with the Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Latest Edition.
	The Contractor will have an Option of Either Using our Standard Installation or Transpo's Break-Safe Type A and Type B Couplings for Sign Supports (Wide Flange)

** REPRESENTS GENERAL NOTES REQUIRED

INDEX

SHEET NO.	DESIGNATION
1	TITLE SHEET
2	INDEX & GENERAL NOTES
3	SOILS / WETLAND INFORMATION
4	OVERALL SITE LAYOUT
5	STREAMS 1-3 LAYOUT
6	STREAMS 4-5 LAYOUT
7	WETLAND SOUTH LAYOUT
8	PLANTING NORTH LAYOUT
9	STREAM PROFILE STREAM 1-2
10	STREAM PROFILE STREAM 3-5
11	DETAILS AND ALIGNMENT TABLES
12	HABITAT POLE DETAILS
13	STORM WATER POLLUTION PREVENTION INDEX SHEET
14	STORM WATER POLLUTION PREVENTION LAYOUT
15	STORM WATER POLLUTION PREVENTION DETAILS
16-25	CROSS SECTIONS STREAMS 1-5

REVISIONS

SHEET NO.	DATE	REVISED
12	2/23/09	Remove Raptor Platform & Add Raptor Exclusion Cone

RECOMMENDED FOR APPROVAL _____ 09/25/08
DESIGN ENGINEER DATE

DESIGNED: JAD DRAWN: RAP
CHECKED: DJR CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

INDEX & GENERAL NOTES

HORIZONTAL SCALE	BRIDGE FILE
VERTICAL SCALE	DESIGNATION
	0710903
SURVEY BOOK	SHEETS
	2 of 25
CONTRACT	PROJECT
IR-30351	0710903

S:\Seymore\1101-0001\0006_Wetlands\Parcel\WETLANDS\Index.dwg 02/24/09 11:25 rap

0 100 200 400 600

USDA Soil Survey Characteristics

BIF–Bloomfield loamy fine sand, 18 to 35 percent slopes

This component is on dunes. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink–swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil does not meet hydric criteria.

Hd–Haymond silt loam, frequently flooded, 0 to 2 percent slopes

This component is on flood plains. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink–swell potential is low. This soil is frequently flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria.

Pa–Petrolia silty clay loam, frequently flooded, 0 to 1 percent slopes

This component is on backswamps. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink–swell potential is moderate. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March. Organic matter content in the surface horizon is about 2 percent. This soil meets hydric criteria.

PrA–Princeton fine sandy loam, 0 to 2 percent slopes

This component is on dunes. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink–swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil does not meet hydric criteria.

PrD2–Princeton fine sandy loam, 12 to 18 percent slopes, eroded

This component is on dunes. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink–swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil does not meet hydric criteria.

Wo–Wakeland silt loam, frequently flooded, 0 to 2 percent slopes

This component is on flood plains. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink–swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, March. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria.

LEGEND

- Denotes NWI Mapped Wetlands
- Denotes IDNR Mapped Floodplain
- XX NRCS Soil Type

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

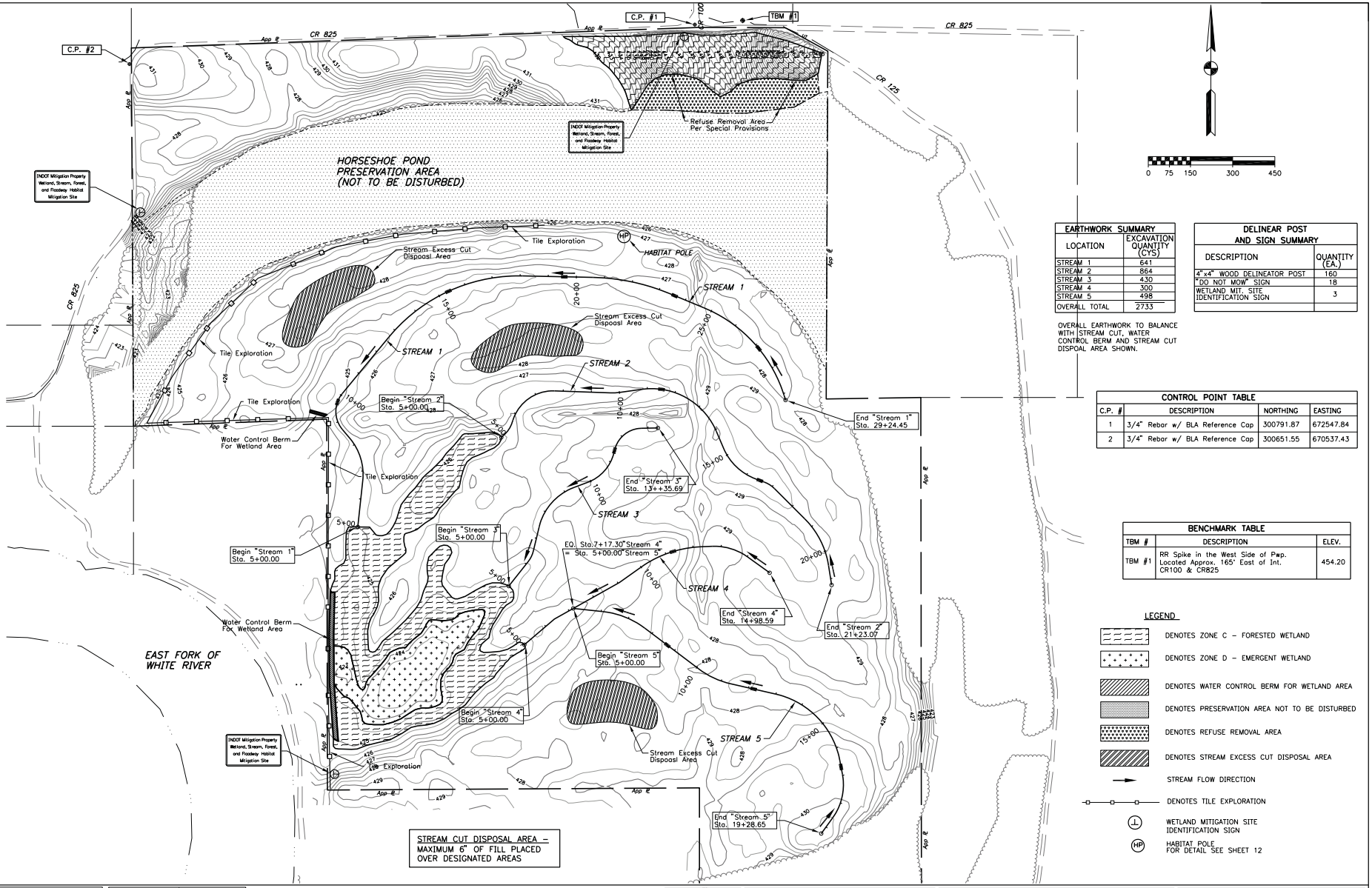
DESIGNED: JAD | DRAWN: RAP

CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

SOILS / WETLANDS INFDORMATION

HORIZONTAL SCALE	BRIDGE FILE
1"=200'	
VERTICAL SCALE	DESIGNATION
--	0710903
SURVEY BOOK	SHEETS
	3 of 25
CONTRACT	PROJECT
IR-30351	0710903



EARTHWORK SUMMARY	
LOCATION	EXCAVATION QUANTITY (CYS)
STREAM 1	641
STREAM 2	864
STREAM 3	430
STREAM 4	300
STREAM 5	498
OVERALL TOTAL	2733

OVERALL EARTHWORK TO BALANCE WITH STREAM CUT, WATER CONTROL BERM AND STREAM CUT DISPOAL AREA SHOWN.

DELINEAR POST AND SIGN SUMMARY	
DESCRIPTION	QUANTITY (EA.)
4"x4" WOOD DELINEATOR POST	160
"DO NOT MOW" SIGN	18
WETLAND MIT. SITE IDENTIFICATION SIGN	3

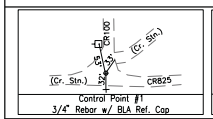
CONTROL POINT TABLE			
C.P. #	DESCRIPTION	NORTHING	EASTING
1	3/4" Rebar w/ BLA Reference Cap	300791.87	672547.84
2	3/4" Rebar w/ BLA Reference Cap	300651.55	670537.43

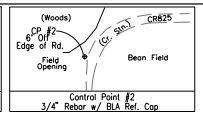
BENCHMARK TABLE		
TBM #	DESCRIPTION	ELEV.
TBM #1	RR Spike in the West Side of Pwp. Located Approx. 165' East of Int. CR100 & CR825	454.20

LEGEND

- DENOTES ZONE C – FORESTED WETLAND
- DENOTES ZONE D – EMERGENT WETLAND
- DENOTES WATER CONTROL BERM FOR WETLAND AREA
- DENOTES PRESERVATION AREA NOT TO BE DISTURBED
- DENOTES REFUSE REMOVAL AREA
- DENOTES STREAM EXCESS CUT DISPOSAL AREA
- STREAM FLOW DIRECTION
- DENOTES TILE EXPLORATION
- WETLAND MITIGATION SITE IDENTIFICATION SIGN
- HP HABITAT POLE FOR DETAIL SEE SHEET 12

STREAM CUT DISPOSAL AREA – MAXIMUM 6" OF FILL PLACED OVER DESIGNATED AREAS





JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL Jason A DuPont 10/06/08
DESIGN ENGINEER DATE

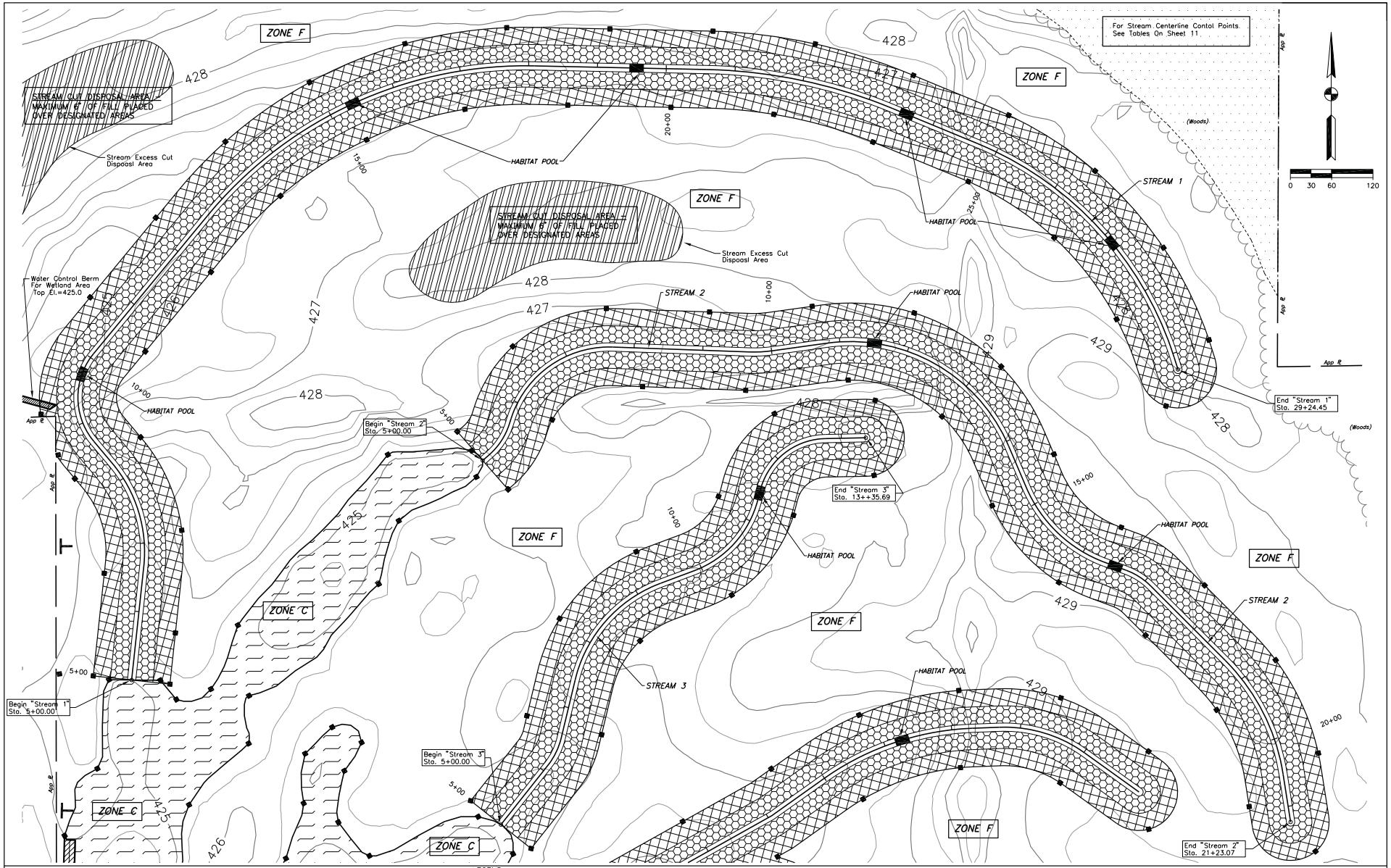
DESIGNED: JAD DRAWN: RAP
CHECKED: DJR CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

OVERALL SITE LAYOUT

HORIZONTAL SCALE	BRIDGE FILE
1" = 150'	
VERTICAL SCALE	DESIGNATION
--	0710903
SURVEY BOOK	SHEETS
	4 of 25
CONTRACT	PROJECT
IR-30351	0710903

S:\Survey\103-0001\2008_Metronet\Parcel\MT-DWGS\OVERALL_SITEPLAN.dwg 12/08/08 13:19 rap



ZONE LEGEND

ZONE A – WOODED RIPARIAN AREA (FROM END OF ZONE G BACK 25')
ZONE B – WOODED RIPARIAN AREA (FROM END OF ZONE A BACK 25')
ZONE C – FORESTED WETLAND AREA
ZONE D – EMERGENT WETLAND AREA
ZONE E – UPLAND FOREST MITIGATION
ZONE F – BOTTOMLAND FOREST MITIGATION
ZONE G – STREAM BOTTOM MITIGATION AREA

LEGEND

DENOTES ZONE "A"
DENOTES ZONE "B"
DENOTES ZONE "C" FORESTED WETLAND
DENOTES PRESERVATION AREA NOT TO BE DISTURBED
DENOTES STREAM EXCESS CUT DISPOSAL AREA
DO NOT MOW SIGN (200' SPACING)
4"X4" WOOD DELINEATOR POST (150' SPACING)

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — DATE 12/08/08

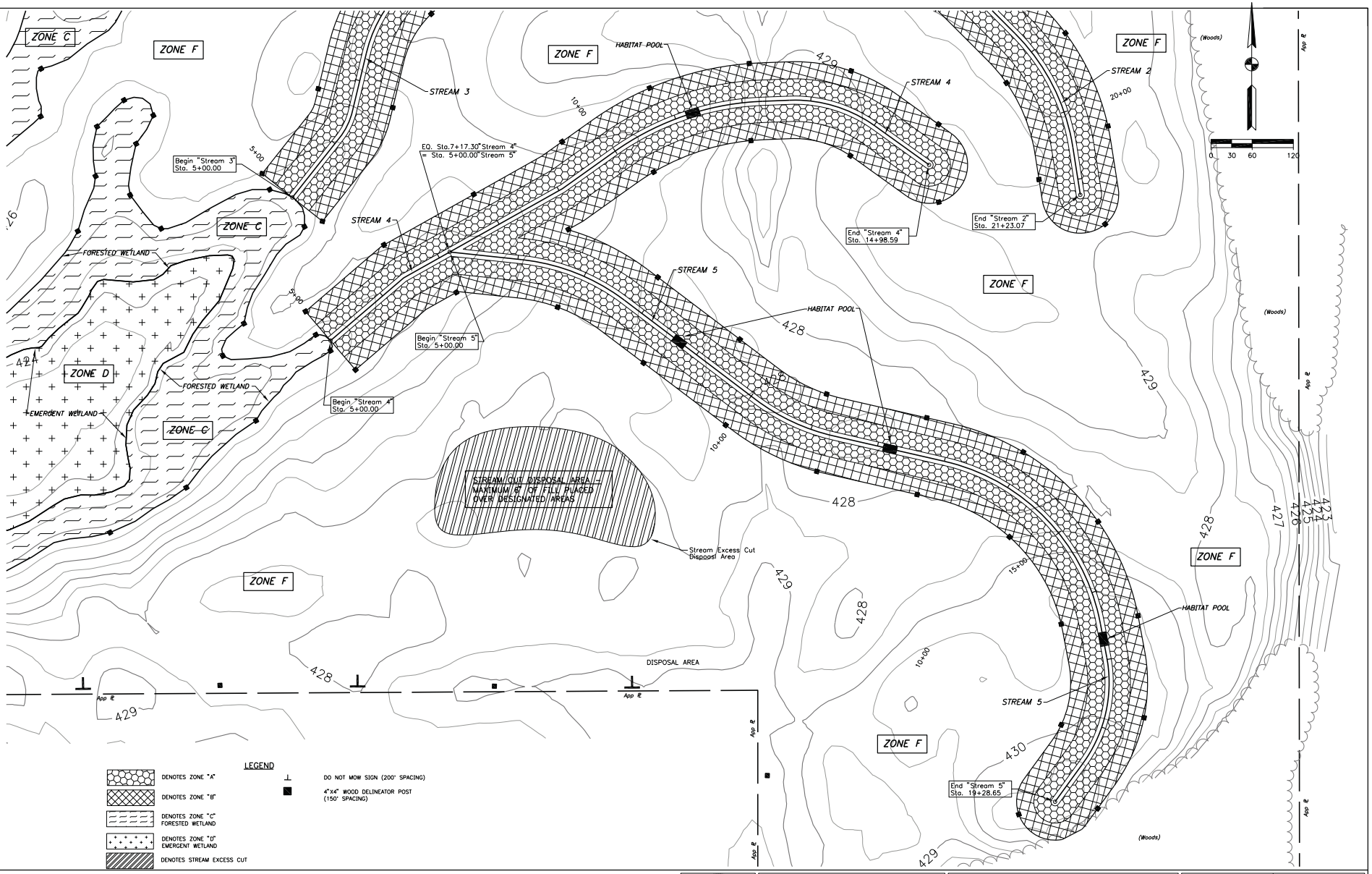
DESIGNED: JAD	DRAWN: RAP
CHECKED: DJR	CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

STREAMS 1–3 LAYOUT

HORIZONTAL SCALE	BRIDGE FILE
1"=60'	
VERTICAL SCALE	DESIGNATION
--	0710903
SURVEY BOOK	SHEETS
	5 of 25
CONTRACT	PROJECT
IR-30351	0710903

S:\Scenery\103-0001\2008_Mentone\Parcel\MT-DWGS\STREAM_1-3.dwg 12/08/08 13:20 rap



ZONE LEGEND

ZONE A – WOODED RIPARIAN AREA (FROM END OF ZONE G BACK 25')
ZONE B – WOODED RIPARIAN AREA (FROM END OF ZONE A BACK 25')
ZONE C – FORESTED WETLAND AREA
ZONE D – EMERGENT WETLAND AREA
ZONE E – UPLAND FOREST MITIGATION
ZONE F – BOTTOMLAND FOREST MITIGATION
ZONE G – STREAM BOTTOM MITIGATION AREA

For Stream Centerline Contol Points See Tables On Sheet 11

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

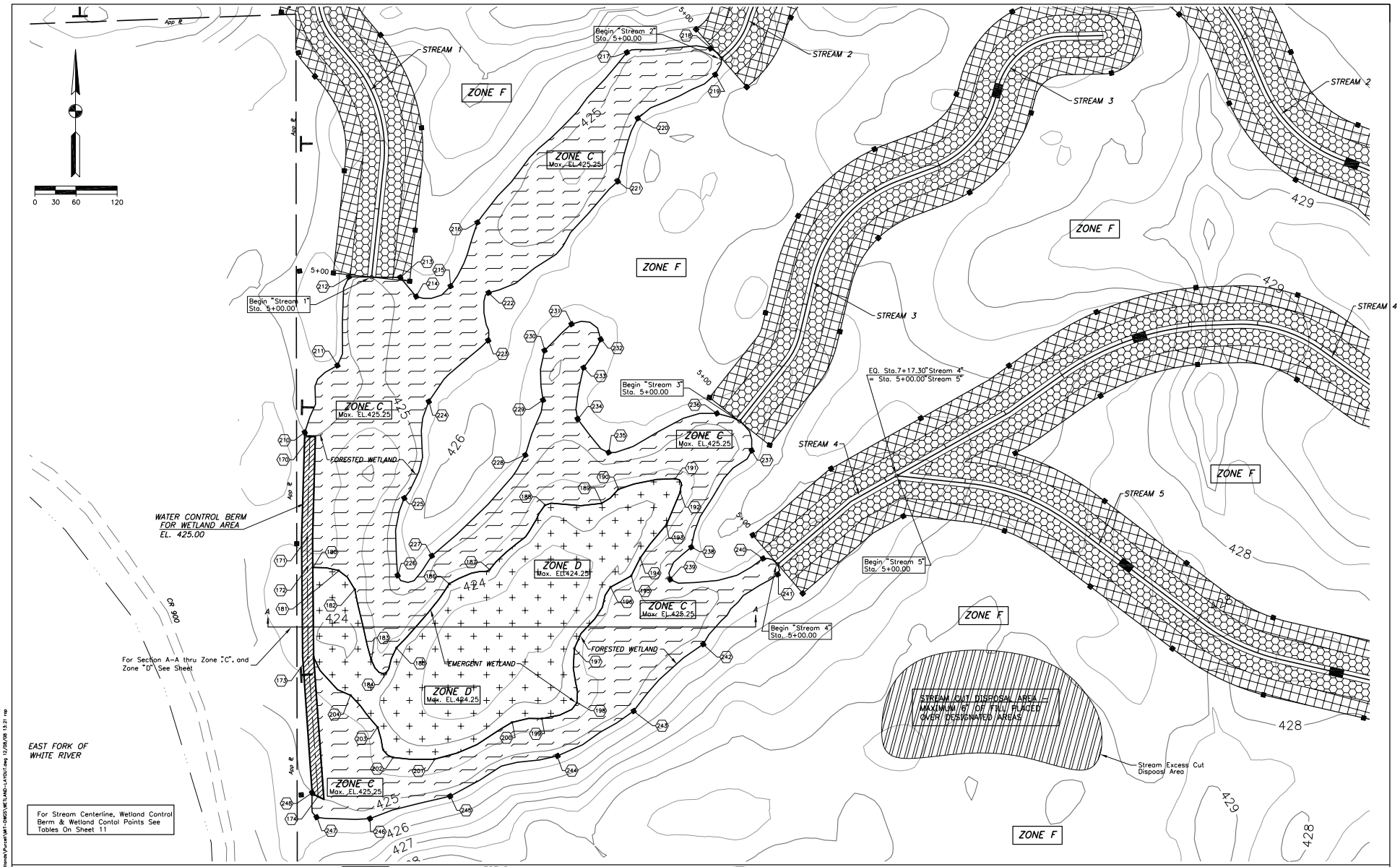
DESIGNED: JAD | DRAWN: RAP | CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

STREAMS 4–5 LAYOUT

HORIZONTAL SCALE	BRIDGE FILE
1"=60'	
VERTICAL SCALE	DESIGNATION
--	0710903
SURVEY BOOK	SHEETS
	6 of 25
CONTRACT	PROJECT
IR-30351	0710903

S:\Surveys\0501-0001\2008_Wetlands\Parcel\MIT-DWGS\STREAM_4-5.dwg 12/08/08 13:20 rap



ZONE LEGEND

ZONE A – WOODED RIPARIAN AREA (FROM END OF ZONE G BACK 25')
ZONE B – WOODED RIPARIAN AREA (FROM END OF ZONE A BACK 25')
ZONE C – FORESTED WETLAND AREA [El. 425]
ZONE D – EMERGENT WETLAND AREA [El. 424.25]
ZONE E – UPLAND FOREST MITIGATION
ZONE F – BOTTOMLAND FOREST MITIGATION
ZONE G – STREAM BOTTOM MITIGATION AREA

LEGEND

DENOTES ZONE "A"
DENOTES ZONE "B"
DENOTES ZONE "C" FORESTED WETLAND
DENOTES WATER CONTROL BERM
DENOTES STREAM EXCESS CUT CUT DISPOSAL AREA
DO NOT MOW SIGN (200' SPACING)
4"x4" WOOD DELINEATOR POST (150' SPACING)
XX WETLAND CONTROL POINT NO. (SEE NOTE THIS SHEET)

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL Jason A DuPont 12/08/08
DESIGN ENGINEER DATE

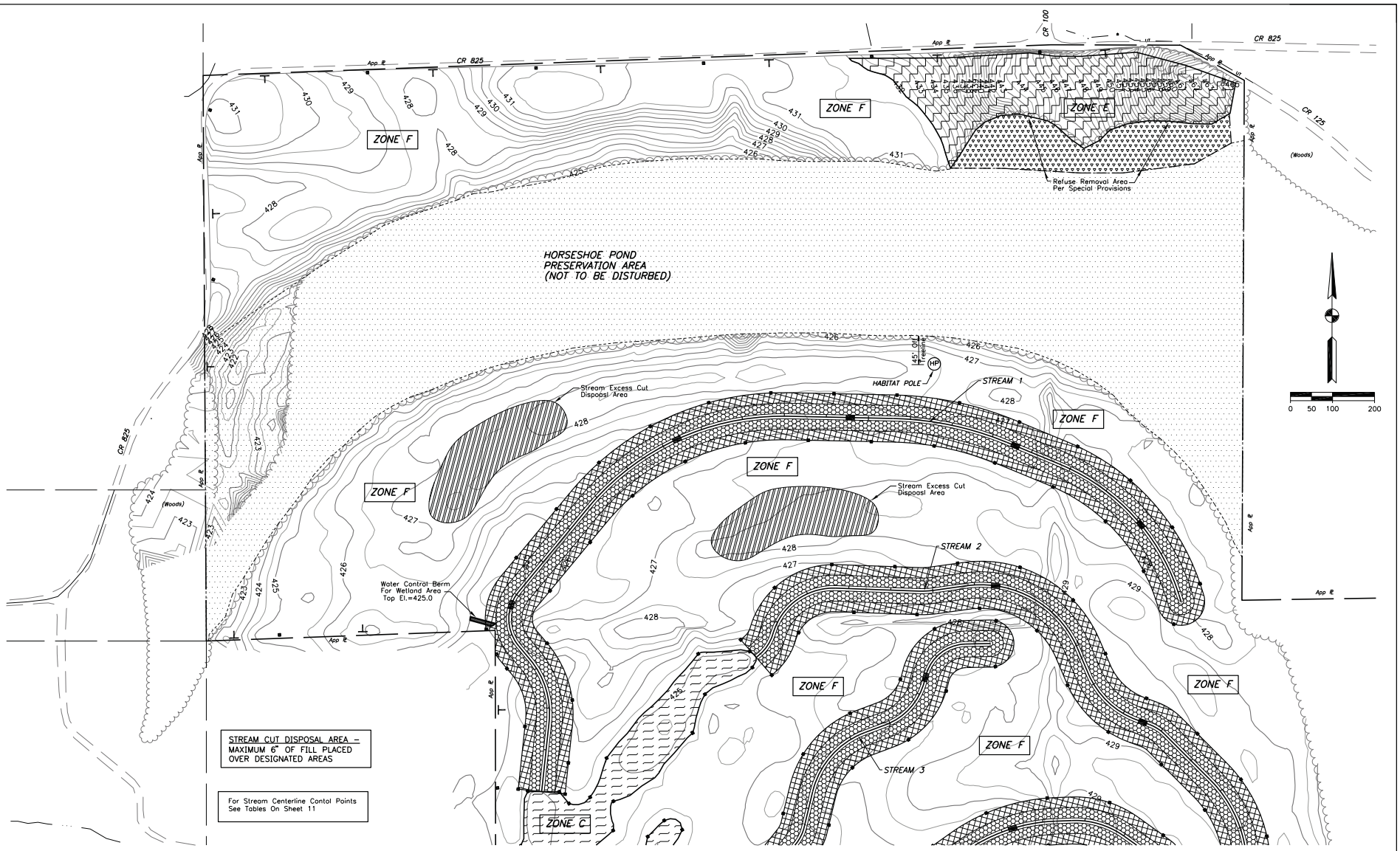
DESIGNED: JAD DRAWN: RAP
CHECKED: DJR CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

WETLAND SOUTH LAYOUT

HORIZONTAL SCALE	BRIDGE FILE
1"=60'	
VERTICAL SCALE	DESIGNATION
--	0710903
SURVEY BOOK	SHEETS
	7 of 25
CONTRACT	PROJECT
IR-30351	0710903

S:\Survey\USS-0001\0008_Mitchell\Parcel\MT-DWGS\WETLAND-LAYOUT.dwg 12/08/08 13:21 rap



ZONE LEGEND

ZONE A – WOODED RIPARIAN AREA (FROM END OF ZONE G BACK 25')
ZONE B – WOODED RIPARIAN AREA (FROM END OF ZONE A BACK 25')
ZONE C – FORESTED WETLAND AREA
ZONE D – EMERGENT WETLAND AREA
ZONE E – UPLAND FOREST MITIGATION
ZONE F – BOTTOMLAND FOREST MITIGATION
ZONE G – STREAM BOTTOM MITIGATION AREA

LEGEND

DENOTES ZONE "A"
DENOTES ZONE "B"
DENOTES ZONE "C" FORESTED WETLAND
DENOTES PRESERVATION AREA NOT TO BE DISTURBED
DENOTES REFUSE REMOVAL AREA
DENOTES STREAM EXCESS CUT DISPOSAL AREA
DO NOT MOW SIGN (200' SPACING)
4"X4" WOOD DELINEATOR POST (150' SPACING)

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL Jason A DuPont 12/08/08
DESIGN ENGINEER DATE

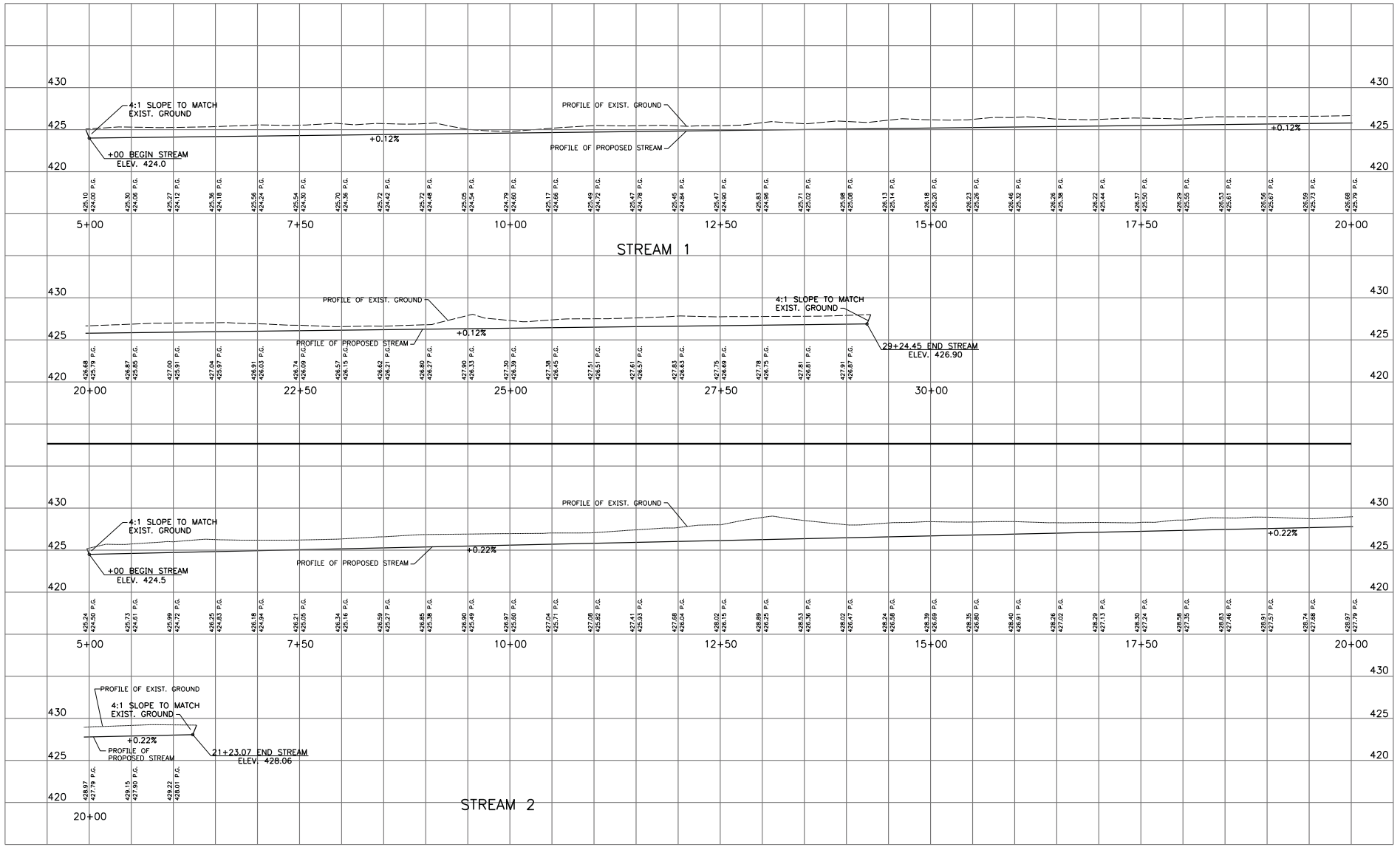
DESIGNED: JAD DRAWN: RAP
CHECKED: DJR CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

PLANTING NORTH LAYOUT

HORIZONTAL SCALE	BRIDGE FILE
1" = 100'	
VERTICAL SCALE	DESIGNATION
--	0710903
SURVEY BOOK	SHEETS
	8 of 25
CONTRACT	PROJECT
IR-30351	0710903

S:\Survey\103-0001\2008_Mitigation\Parcel\MT-DWGS\PLANTING-NORTH.dwg 12/08/08 13:25 rap



S:\Surveys\103-0001\2008_Wetlands\Parcel\MAT-DWGS\PROFILE_STREAM_1_2.dwg 12/08/08 13:25 rap

JASON A. DUPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — DATE 12/08/08

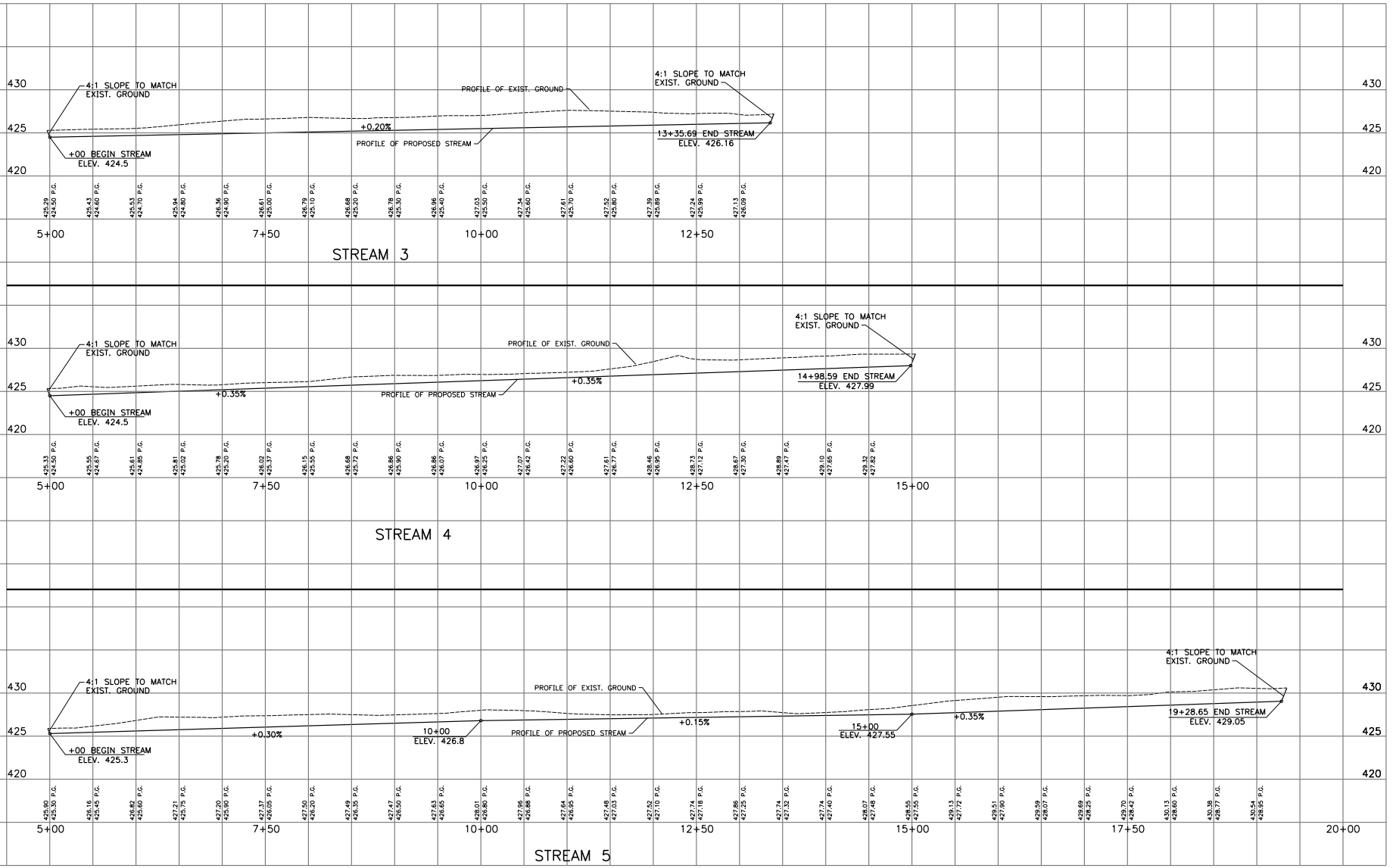
DESIGNED: JAD | DRAWN: RAP

CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

STREAM PROFILE
STREAM 1-2

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	
VERTICAL SCALE	DESIGNATION
1"=5'	0710903
SURVEY BOOK	
	9 of 25
CONTRACT	PROJECT
IR-30351	0710903



S:\Surveys\103-0001\2008_Wetlands\Parcel\MIT-DWGS\PROFILE_STREAM_3_4_5.dwg 12/08/08 13:26 rap

JASON A. DUPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

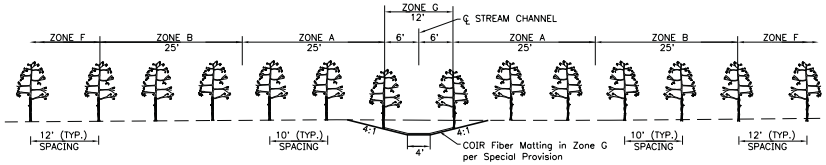
RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

DESIGNED: JAD | DRAWN: RAP | CHECKED: DJR | CHECKED: DJR

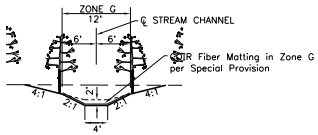
INDIANA DEPARTMENT OF TRANSPORTATION

STREAM PROFILE
STREAM 3 / 4 / 5

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	
VERTICAL SCALE	DESIGNATION
1"=5'	0710903
SURVEY BOOK	
	10 of 25
CONTRACT	PROJECT
IR-30351	0710903



TYPICAL STREAM CHANNEL PLANTING ZONE SECTION
NOT TO SCALE

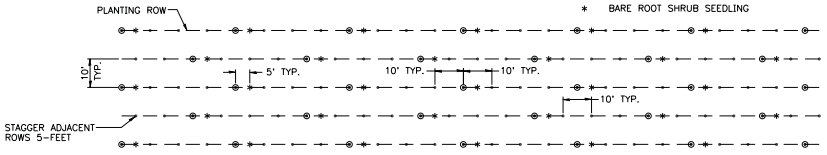


TYPICAL HABITAT POOL SECTION
NOT TO SCALE

STREAM 1 ALIGNMENT POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
100	299004.91	671349.37	P.O.T.
101	299191.31	671168.20	R.P. (200'R)
102	299254.75	671376.15	P.I.
103	299415.92	671371.31	R.P. (100'R)
104	299415.33	671241.17	P.I.
105	299298.14	671922.34	R.P. (600'R)
106	299904.18	671644.49	P.I.
107	299142.86	672169.30	R.P. (750'R)
108	299889.71	672325.92	P.I.
109	299322.83	672388.29	R.P. (500'R)
110	299695.84	672794.62	P.I.
111	299456.59	672870.40	P.O.T.

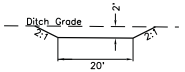
WATER CONTROL BERM CENTERLINE POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
170	298772.32	671259.37	P.O.T.
171	298624.24	671255.42	P.O.T.
172	298581.50	671255.71	P.O.T.
173	298450.29	671256.87	P.O.T.
174	298247.32	671271.55	P.O.T.

LEGEND
◎ 3-GALLON CONTAINER GROWN TREE SEEDLING
◦ BARE ROOT TREE SEEDLING
✱ BARE ROOT SHRUB SEEDLING



PLANTING TREE & SHRUB LAYOUT (ZONES A & B)
NOT TO SCALE

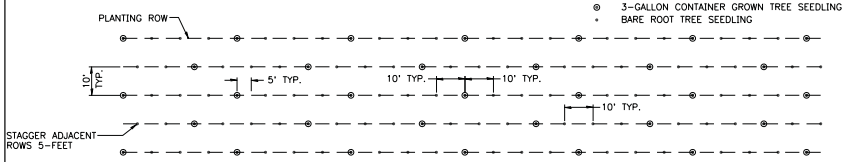
STREAM 2 ALIGNMENT POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
120	299324.15	671859.76	P.O.T.
121	299407.47	671803.10	R.P. (100'R)
122	299350.54	671889.86	P.I.
123	299339.17	672043.74	R.P. (150'R)
124	299493.12	671935.61	P.I.
125	299681.88	672253.99	R.P. (200'R)
126	299481.39	672264.31	P.I.
127	299247.08	672394.27	R.P. (250'R)
128	299521.08	672549.17	P.I.
129	299363.40	672833.89	R.P. (200'R)
130	299205.68	672683.73	P.I.
131	299070.76	672760.30	R.P. (100'R)
132	299156.96	672815.52	P.I.
133	298821.35	672726.88	R.P. (300'R)
134	298964.44	673008.07	P.I.
135	298798.50	673034.16	P.O.T.



HABITAT POOL PROFILE
NOT TO SCALE

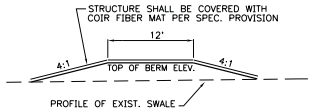
ZONE D EMERGENT WETLAND CONTROL POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
180	298581.56	671263.71	WETLAND
181	298577.09	671301.25	WETLAND
182	298549.40	671325.04	WETLAND
183	298446.80	671348.93	WETLAND
184	298427.69	671370.55	WETLAND
185	298464.31	671385.68	WETLAND
186	298557.72	671462.61	WETLAND
187	298578.07	671521.36	WETLAND
188	298672.26	671602.27	WETLAND
189	298674.93	671684.70	WETLAND
190	298695.35	671709.21	WETLAND
191	298710.94	671792.02	WETLAND
192	298691.57	671799.58	WETLAND
193	298644.34	671779.75	WETLAND
194	298595.36	671741.24	WETLAND
195	298569.11	671728.12	WETLAND
196	298552.86	671698.01	WETLAND
197	298463.35	671645.22	WETLAND
198	298384.12	671648.93	WETLAND
199	298361.09	671597.88	WETLAND
200	298355.55	671554.14	WETLAND
201	298301.79	671440.77	WETLAND
202	298304.41	671380.39	WETLAND
203	298348.23	671358.36	WETLAND
204	298394.95	671318.93	WETLAND
205	298450.62	671264.87	WETLAND

LEGEND
◎ 3-GALLON CONTAINER GROWN TREE SEEDLING
◦ BARE ROOT TREE SEEDLING



PLANTING TREE LAYOUT (ZONE C)
NOT TO SCALE

STREAM 3 ALIGNMENT POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
140	298794.63	671886.21	P.O.T.
141	298943.52	671876.49	R.P. (100'R)
142	298898.75	671968.58	P.I.
143	298958.39	672188.58	R.P. (200'R)
144	299108.53	672018.95	P.I.
145	299304.28	672114.37	R.P. (150'R)
146	299191.19	672240.30	P.I.
147	299256.08	672360.08	R.P. (100'R)
148	299354.50	672282.01	P.I.
149	299357.25	672416.63	P.O.T.

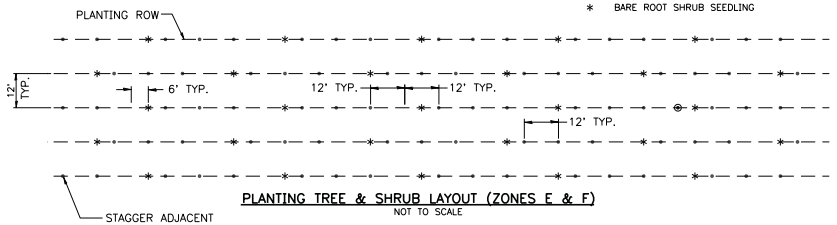


WATER CONTROL BERM SECTION
NOT TO SCALE

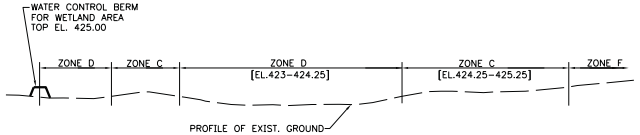
ZONE C FORESTED WETLAND CONTROL POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
210	298778.64	671251.96	WETLAND
211	298876.08	671299.64	WETLAND
212	299005.36	671316.45	WETLAND
213	299004.59	671391.18	WETLAND
214	298976.57	671414.50	WETLAND
215	298991.78	671464.73	WETLAND
216	299084.60	671503.83	WETLAND
217	299332.63	671721.86	WETLAND
218	299338.52	671843.97	WETLAND
219	299300.30	671850.64	WETLAND
220	299236.43	671737.71	WETLAND
221	299144.54	671708.63	WETLAND
222	298982.10	671520.07	WETLAND
223	298912.67	671519.53	WETLAND
224	298823.43	671432.85	WETLAND
225	298682.56	671397.09	WETLAND
226	298569.91	671387.45	WETLAND
227	298598.39	671437.22	WETLAND
228	298745.50	671573.70	WETLAND
229	298825.59	671599.52	WETLAND
230	298897.77	671601.63	WETLAND
231	298936.33	671640.98	WETLAND
232	298914.07	671683.67	WETLAND
233	298872.79	671658.61	WETLAND
234	298798.17	671649.87	WETLAND
235	298749.19	671695.02	WETLAND
236	298806.14	671853.25	WETLAND
237	298752.01	671903.85	WETLAND
238	298611.08	671815.73	WETLAND
239	298563.88	671785.00	WETLAND
240	298594.60	671920.42	WETLAND
241	298571.45	671941.80	WETLAND
242	298469.60	671833.26	WETLAND
243	298372.13	671731.73	WETLAND
244	298306.65	671620.66	WETLAND
245	298247.87	671464.02	WETLAND
246	298215.21	671347.02	WETLAND
247	298217.25	671269.23	WETLAND
248	298252.94	671262.74	WETLAND

NOTE:
Wetland Planting Control Points Provided For General Definition Of Wetland Planting. Actual Limits Are Defined By Specified Contours.

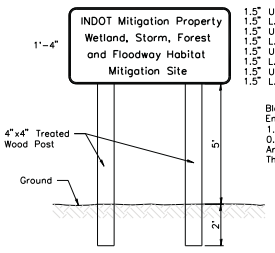
LEGEND
✱ BARE ROOT TREE SEEDLING
✱ BARE ROOT SHRUB SEEDLING



PLANTING TREE & SHRUB LAYOUT (ZONES E & F)
NOT TO SCALE



SECTION A-A
NOT TO SCALE
(SEE SHEET 7)



1.5" U.C.; "C" Series
1.5" L.C.; "C" Series
1.5" U.C.; "C" Series
1.5" L.C.; "C" Series
1.5" U.C.; "C" Series
1.5" L.C.; "C" Series
1.5" U.C.; "C" Series
1.5" L.C.; "C" Series

Black Legend on White Background
Encapsulated Lens w/ Legend
1.5" Radius
0.3" Border
Area = 3.78ft²
Thickness = 0.100"

Sign B
Not To Scale

JASON A. DuPONT
REGISTERED
No. PE10303058
STATE OF INDIANA
PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL
DESIGN ENGINEER — DATE 12/08/08

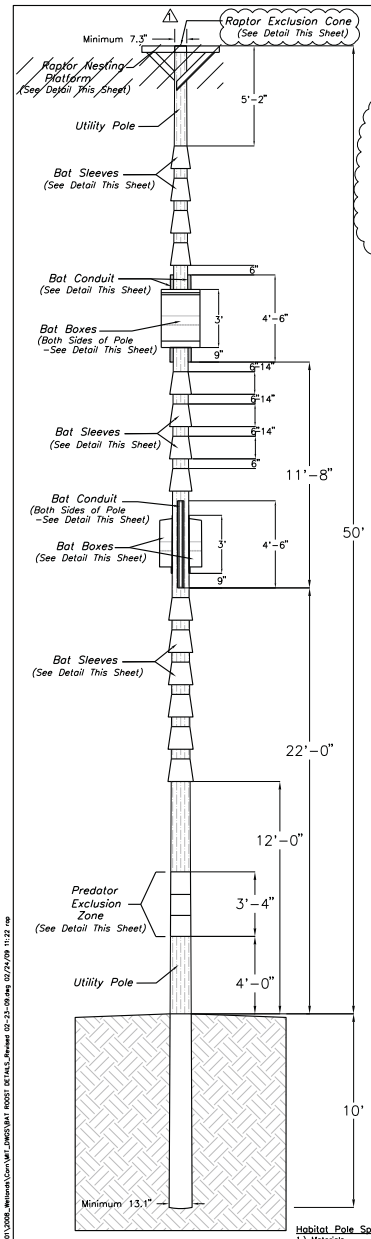
DESIGNED: JAD | DRAWN: RAP
CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

DETAILS AND ALIGNMENT TABLES

HORIZONTAL SCALE	BRIDGE FILE
AS SHOWN	
VERTICAL SCALE	DESIGNATION
---	0710903
SURVEY BOOK	SHEETS
	11 of 25
CONTRACT	PROJECT
IR-30351	0710903

S:\Surveys\103-0001\2008_Wetlands\Survey\MT-DWGS\DETAILS.dwg 12/08/08 13:27 rap

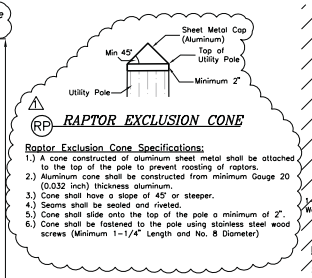


HP HABITAT POLE

Habitat Pole Specifications:

1.) Materials
- Wood Class 3 (or larger) Utility Pole, 60 feet tall
  Note: Utility pole must meet minimum ANSI requirements for Class 3 poles

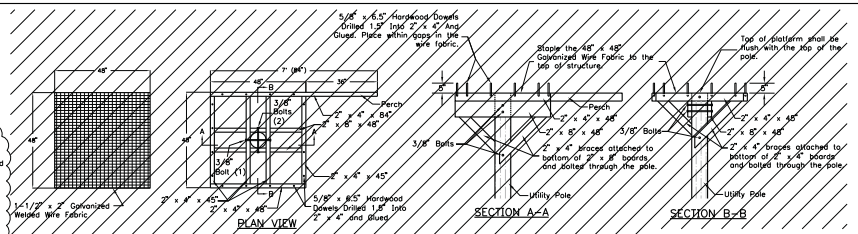
2.) Method
- Attach all habitat roost structures to the utility pole (see details this sheet)
- Install the utility pole 10 feet below ground level with 50 feet above ground level



RP RAPTOR EXCLUSION CONE

Raptor Exclusion Cone Specifications:

1.) A cone constructed of aluminum sheet metal shall be attached to the top of the pole to prevent roosting of raptors.
2.) Aluminum cone shall be constructed from minimum Gauge 20 (0.032 inch) thickness aluminum.
3.) Cone shall have a slope of 45° or steeper.
4.) Seams shall be sealed and riveted.
5.) Cone shall slide onto the top of the pole a minimum of 2".
6.) Cone shall be fastened to the pole using stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)



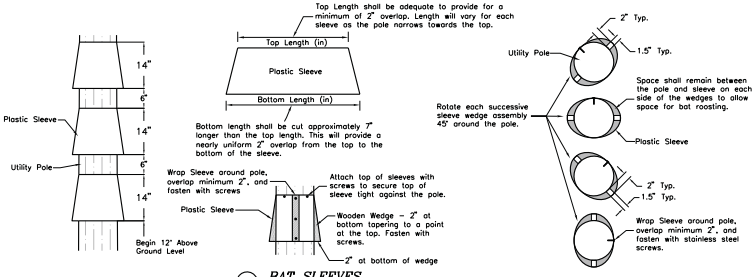
Raptor Nesting Platform Specifications:

1.) All wood materials shall be treated lumber per INDOT 2008 Standard Specification 911.02.
2.) References to 2" x 4" and 2" x 8" lumber are nominal sizes
- Actual dimensions are 1-1/2" x 3-1/2" and 1-1/2" x 7-1/4", respectively.

3.) All bolts, screws, and staples utilized shall be stainless steel to prevent corrosion.
4.) Galvanized wire fabric shall be stapled to the platform assembly with a minimum of 1" long staples

Source: USFWS & APLIC, Aviation Protection Plan (APP), April 2008. This design is modified from Figure 14 of this plan. (http://training.fws.gov/bannchallies/CSP/)

RP RAPTOR NESTING PLATFORM

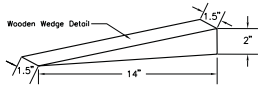


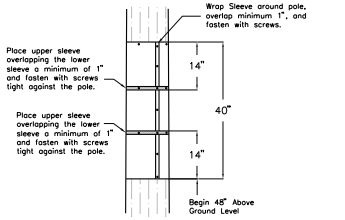
BS BAT SLEEVES

Bat Sleeve Specifications:

1.) Materials
- Heavy grade black polyethylene animal guard (supplied in 14" x 16' roll)
  - Polyethylene material shall be a minimum of 0.035" thick
  - Vendors may include but are not limited to:
    - Reed City Power Line Supply (Mooresville, IN)
    - Osmose Utility Services (http://osmoseutilities.com/cms/repository/media/2008_Products_Catalog.pdf)
- Stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)
  - Longer screws of varying lengths shall be used for attachment of wooden wedges to allow for a minimum of 1" penetration into the utility pole (Minimum No. 8 Diameter)
- Treated 2" x 4" lumber (for wedges) per INDOT 2008 Standard Specification 911.02.
- References to 2" x 4" lumber are nominal sizes, actual dimensions are 1-1/2" x 3-1/2"

2.) Method
- Cut wooden wedges out of 2" x 4" treated boards
  - Wedges shall be 2" tall at base, tapering to a point at the top, per detail this sheet
- Attach wedges on opposite sides of the pole using screws
- Cut plastic sleeve to length to allow for a minimum 2" overlap at the top and bottom (see calculations above)
- Wrap the plastic sleeve around the pole and wedges
- Fasten the sleeve to the pole with the top of the sleeve tight around the entire pole
- Install screws into the overlapped portion of the sleeve
- Bottom of lowest bat sleeve shall be approximately 12' above ground level



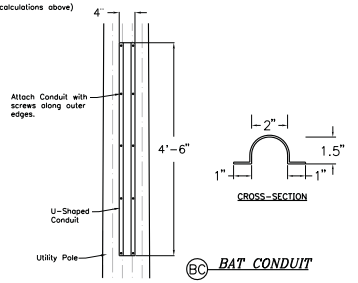


PE PREDATOR EXCLUSION ZONE

Predator Exclustion Zone Specifications:

1.) Materials
- Heavy grade black polyethylene animal guard (supplied in 14" x 16' roll)
  - Polyethylene material shall be a minimum of 0.035" thick
- Stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)

2.) Method
- Cut plastic sleeve to length to allow for a minimum 1" overlap
- Wrap the lowest plastic sleeve tight around the pole with the bottom approximately 48" above ground level
- Fasten the sleeve to the pole with screws along the overlap
- Wrap the subsequent sleeves with 1" overlapping the lower sleeve and fasten along the top and within the overlap of each sleeve



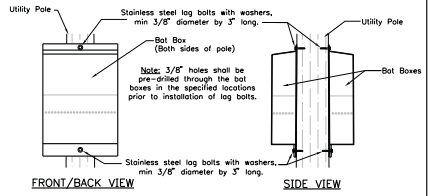
BC BAT CONDUIT

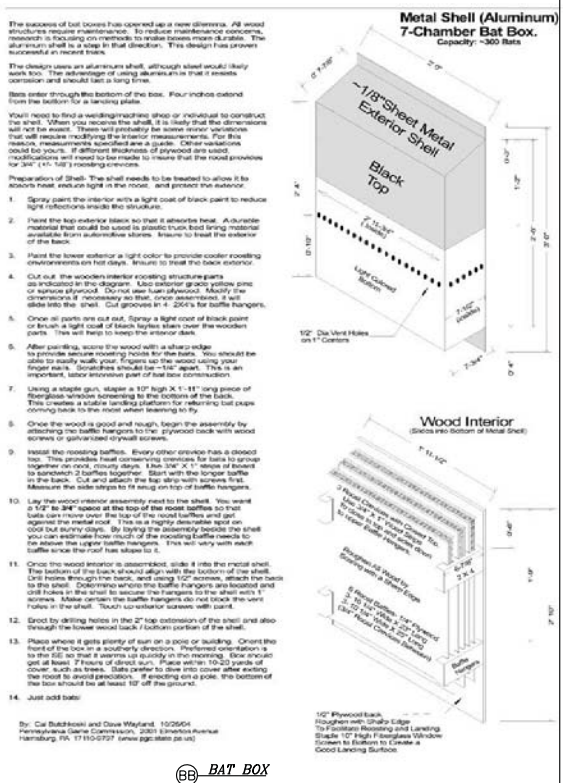
Bat Conduit Specifications:

1.) Materials
- Plastic U-shaped conduit
- Stainless steel wood screws (Minimum 2" Length and No. 8 Diameter)

2.) Method
- Cut 4 pieces of conduit to 4.5 feet in length
- Attach 2 conduit strips, one on each side of the pole, with the bottom elevation at 22 feet above ground level
- Attach the remaining 2 conduit strips at 90° angle from the first set of conduit, with a bottom elevation of 33 feet-8 inches above ground level
- Conduit shall be attached with screws along each edge

BAT BOX MOUNTING DETAIL





BB BAT BOX

Bat Box Specifications:

1.) A total of 4 Bat Boxes shall be assembled and installed per these plans with aluminum exterior shells.
2.) Aluminum exterior shells shall be constructed from the following minimum gauge (thickness) aluminum:
- Back of Bat Box Shell: Gauge 3 (0.2294 inch)
- Front, Sides, and Top of Bat Box Shells: Gauge 8 (0.1285 inch)

2.) Attach 2 bat boxes, one on each side of the pole per the detail above, with a bottom elevation of 22'-9" above ground level.
3.) Attach the remaining 2 bat boxes per the detail above, 90° from the first set of boxes at a bottom elevation of 33'-5" above ground level.

Vendor:
- Vendors of the constructed bat boxes may include but are not limited to this vendor:
  Environmental Solutions and Innovations, Inc., 781 Neeb Rd.,Cincinnati, OH 45233

Source:
- This bat box design was created by:
  Cal Butchkoski and Dave Wayland, Pennsylvania Game Commission, 2001 Elmerton Avenue, Harrisburg, PA 17110-9797 (www.pgc.state.pa.us)

REVISION	DATE	DESCRIPTION
1	2/23/09	Remove Raptor Platform & Add Raptor Exclusion Cone

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL: Jason A. DuPont 12/08/08
DESIGN ENGINEER — DATE

DESIGNED: JAD — DRAWN: RAP
CHECKED: DJR — CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

HABITAT POLE DETAILS

HORIZONTAL SCALE	BRIDGE FILE
AS SHOWN	
VERTICAL SCALE	DESIGNATION
---	0710903

SURVEY BOOK	SHEETS
	12 of 25
CONTRACT	PROJECT
IR-30351	CN 0710903

S:\Surveys\101-0001\006_Wetlands\Cons\all_DWGS\BAT ROOST DETAILS_Revised 02-23-09.dwg 02/24/09 11:22 rap

NATURE & PURPOSE OF CONSTRUCTION ACTIVITY

A-1 Index showing locations of required Plan Elements.
Sheet 1

A-2 11x17 inch plat showing building lot numbers/boundaries and road layout/names.
24x36 plat found in plans on Sheet 3

A-3 Narrative describing the nature and purpose of the project.
This 147.3-acre mitigation site, known as the Purcell property, will be purchased by the Indiana Department of Transportation (INDOT) to compensate for a portion of the water resource impacts caused by the construction of Section 2 of the I-69 Project from Evansville to Indianapolis. Construction on this site will include creation of a water retention berm, excavation of stream channels, seedbed preparation, and planting of wetland vegetation, trees, and shrubs throughout the site.

A-4 Vicinity map showing project location.
Sheet 1 (Title Sheet)

A-5 Legal Description of the Project Site
This project is located in: Indiana, Daviess County, Sandy Hook Quadrangle, Veale Township;
T-1-N, R-7-W, Sections 11 & 12;
Latitude: 38° 31' 54" North
Longitude: 87° 08' 54" West

A-6 Location of all lots and proposed site improvements.
Grading and Planting Plan on Sheets 5-8.

A-7 Hydrologic unit code (14 digit)
05120208170070 (East Fork White River-Beech/Bear Creeks)

A-8 Notation of any State or Federal water quality permits.
This mitigation site is being constructed to meet the requirements of the IDNR Construction in a Floodway Permit, IDEM Section 401 Water Quality Certification, and USACE Section 404 Permit for I-69 Section 2. This mitigation site is also a result of commitments made in the Tier 1 Environmental Impact Statement for the I-69 project.

A-9 Specific points where stormwater discharge will leave the site.
Stormwater will likely leave the site as sheetflow in multiple locations and migrate south into the East Fork of the White River. Other stormwater will flow into Horseshoe Pond where it will be retained except during pond overflow events and flood events of the East Fork of the White River. See Sheets 4-8 for the existing and proposed contours.

A-10 Location and name of all wetlands, lakes and water courses on and adjacent to the site.
A review of the National Wetland Inventory (NWI) Map indicated that all portions of the property not utilized for agricultural purposes are classified as existing palustrine forested (PFO), palustrine shrub-shrub (PSS), or palustrine emergent (PEM) wetlands. An oxbow of the former East Fork of the White River channel, identified as Horseshoe Pond on the USGS Topographic Map, is located on the property. This project serves to enhance and preserve these existing wetland features. See Sheet 3.

A-11 Identification of all receiving waters.
The runoff from the site will likely migrate south to the East Fork of the White River or into Horseshoe Pond, which is located on the property.

A-12 Identification of potential discharges to ground water.
There are no known areas within the project site where stormwater will be discharged to groundwater.

A-13 100 year floodplains, floodways, and floodway fringes.
The majority of the site, except for a portion of the northeast corner, lies within the 100-year floodplain of the East Fork of the White River, special flood hazard area Zone "A" per FEMA F.I.R.M. floodplain maps, Panel Number 180433 0005 A, effective May 5, 1978. See Sheet 3.

A-14 Pre-construction and post construction estimate of Peak Discharge (100 year storm event)
This project is designed to reduce the peak discharge and retain water on-site for an extended period of time to serve as a wetland and bottomland forest mitigation site. See Attached Hydraulic Calculations.

A-15 Adjacent landuse
County Road 825 S borders the north and a portion of the west side of the property. The remainder of the adjacent land use includes agricultural fields, small areas of woodlots, and an oxbow of the former East Fork of the White River channel. Three residential properties are located within 500 feet of the proposed mitigation site.

A-16 Locations and approximate boundaries of all disturbed areas.
The Grading and Planting Plan can be found on Sheets 5-8. The water retention berm and the excavated stream channels shown on the plans are the only areas of the site to receive excavation or grading. All excess material excavated from the stream channels will be evenly dispersed throughout the designated area in the northern portion of the site. Tile exploratory will also involve ground disturbance. The various planting zones will receive seedbed preparation.

A-17 Identification of existing vegetative cover.
The majority of the site, and all areas to receive ground disturbance, are currently utilized for agricultural row crops planted in beans during the 2008 growing season. Other land use on the property includes existing forested, scrub-shrub, and emergent wetlands are not to be disturbed and will be preserved as a part of this mitigation plan.

A-18 Soils map including soil descriptions and limitations.
See Sheet 3.

A-19 Locations, size and dimensions of proposed stormwater systems.
The water retention berms and excavated stream channels are the only stormwater systems proposed for the site. The excavated stream channels are designed to hold water within the channels for an extended period of time and to direct runoff into the proposed emergent and forested wetland areas. The proposed stream channels will not direct water off of the mitigation site. The location of the berms and stream channels can be found on Sheets 4-8.

A-20 Plans for any off-site construction activities associated with this project.
No off-site construction activities are anticipated with this project.

A-21 Locations of proposed soil stockpiles and/or borrow/disposal areas.
Material needed for the construction of the water retention berms shall be obtained from the excavated stream channels. Excess material from the excavation of the stream channels shall be evenly distributed in the designated areas shown on Sheets 5-8.

A-22 Existing site topography.
Existing Site Layout on Sheet 4.

A-23 Proposed final topography.
Planting Plan and final topography on Sheets 5-8.

Assessment of Stormwater Pollution Prevention Plan
Construction Component (Section B)

B-1 Description of potential pollutant sources associated with the construction activities:
Potential pollutant sources associated with the construction activity include those normally associated with construction equipment, such as: oils, fuels, hydraulic fluids, transmission fluids, brake fluid, antifreeze, greases, brake dust, etc.. All heavy equipment shall be parked on site at a location, when not in use; leakage from the equipment will be captured by the surrounding terrain, and not be provided a direct path to the surrounding waterways. Additionally, sediment generated from the construction activity and equipment is a potential pollutant.

Assessment of Stormwater Pollution Prevention Plan (Cont'd)
Construction Component (Section B)

B-2 Initial Setup:
Upon completion of the initial site inspection, and before any ground disturbance occurs, this erosion control plan shall be implemented. Any good erosion control plan must be dynamic and ever changing as the project develops. Continual maintenance and updating of the plan is of utmost importance. Below is the sequencing of events for this erosion control plan:

1. Identify and protect all existing vegetation designated to remain; flag all areas of avoidance. Note: All areas not currently utilized for agricultural purposes shall not be disturbed. These areas are shown on the plans.
2. Call for an underground locate to verify location of existing utilities.
3. Establish areas for storage of potential pollutants (e.g. fuel storage, oils, hydraulic fluids, etc.)
4. Notify the Soil and Water Conservation District (SWCD) and IDEM agents 48 hours in advance of beginning work.
5. Install construction entrance(s) to keep sediment off public roadway. Remove any sediment tracked on roadway. (DO NOT flush).
6. Install silt fence as shown on plans.
7. Begin excavation and grading:
   A. Perform tile exploration trenching. Backfill and compact trenches.
   B. Excavate the stream channels and construct the water retention berm as specified on the plans. Material needed for construction of the water retention berm shall be obtained from the excavated stream channels. Excess material from the stream channel excavation shall be evenly distributed throughout the designated area as shown on the plans. Following final grading; seed and fertilize the water retention berm and excavated stream channels, followed by stabilization with erosion control blankets per the Special Provisions.
   C. Prepare the seedbed within each of the planting zones. Permanently seed, fertilize, and mulch all disturbed areas per the Special Provisions. Following seeding, plant the specified tree and shrub species in the designated planting zones as shown on the plans and detailed in the Special Provisions. If permanent seedbed preparation and final seeding/planting cannot occur immediately following final grading, all disturbed areas shall be seeded with a temporary seed mixture T per INDOT 2008 Standard Specification 621.06 (f).
8. Submit the completed Notice of Termination (N.O.T.) form to the SWCD, IDEM, or other Entity Designated by the Department as the reviewing agency. The N.O.T. will be reviewed for concurrence and either returned to the Project Site Owner or forwarded to IDEM.

B-3 Construction Entrance:
The Contractor shall provide a minimum of 1 stable entrance/exit to keep mud and sediment off public roads. The locations and numbers of installed construction entrances may be modified, however, installation shall be per the detail shown on Sheet 15. See Sheet 14 for suggested location.

B-4 Sediment control measures for sheet flow areas:
Temporary Silt Fence (SF): A silt fence is a fabric barrier used to retain sediment from small, sloping, disturbed areas by reducing the velocity of sheet flow. Silt fence shall be installed in the areas where there is potential for stormwater carrying solids to leave the site or runoff a foreslope into an unprotected ditch as sheet runoff, prior to any work being performed in that area. See Sheet 14.

B-5 Sediment control measures for concentrated flow areas:
Erosion Control Blanket (ECB): A biodegradable, organic or synthetic mulch incorporated with a biodegradable, photodegradable or permanent propylene, natural fiber or similar netting. It is an alternative to mulch and normally used on slopes and in concentrated flow channels. Erosion control blankets shall be installed to prevent erosion of the water retention berm and excavated stream channels.

B-6 Storm sewer inlet protection measure locations and specifications:
Not Applicable

B-7 Runoff control measures:
Water Retention Berms: A water retention berm shall be installed to minimize runoff from leaving the site and retain water for an extended period of time for the purpose of maintaining adequate hydrology to support a wetland habitat community. Installation of the water retention berm shall be as shown on the plans.

B-8 Stormwater outlet protection specifications:
Rock Splashpad (RS): A rock splashpad shall be installed at the outlet location of any culverts to reduce the runoff velocity and prevent scour. A culvert shall be installed, as required, at any construction entrances that cross an existing roadside ditch.

B-9 Grade stabilization structure locations and specifications:
Not Applicable

B-10 Locations, dimensions, specifications and construction details of each stormwater quality measure:
The location, dimensions, and details of all stormwater quality measures are as shown on Sheets 14 & 15.

B-11 Temporary surface stabilization methods appropriate for each season:
Temporary surface stabilization shall be accomplished by the use of a temporary seeding mixture along with temporary mulching. The temporary seed mixture shall be used to establish a temporary cover for disturbed soil during the construction operations. Temporary cover mixes shall be placed on disturbed areas that are expected to undisturbed for over 14 days. Temporary seed mixes shall consist of seed mixture T as outlined in the INDOT 2008 Standard Specifications 621.06 (f).

Fertilizer shall be applied at a rate of 400 lbs/acre of 12-12-12 analysis, or equivalent. Mulching Material (clean grain straw or hay) shall be applied at a rate of 2 ton/acre, 75% coverage of the disturbed area should be obtained.

B-12 Permanent surface stabilization specifications:
Permanent surface stabilization shall be achieved by the use of a seeding mixture, along with mulching material and fertilizer. The mulching rate will be critical for optimal seed germination. The mulching material will provide optimal moisture conditions, therefore reducing the likelihood that reseeding will be required for the project site. Permanent seeding will take place in areas after final construction and seedbed preparation.

Seed mixtures will vary throughout the site with respect to the different planting zones. Seeding specifications and seed mixture requirements can be found in the Special Provisions for this wetland mitigation site. The majority of the site will also receive tree seedling plantings as outlined in the Special Provisions. The location of each of the planting zones to receive the special plantings can be found on Sheets 5-8.

Fertilizer shall be applied to all planting zones at a rate of 400 lbs/acre of 12-12-12 analysis, or equivalent. Mulching Material (clean grain straw or hay) shall be applied at a rate of 2 tons/acre, 75% coverage of the disturbed area should be obtained. Erosion control blankets shall be installed on the water retention berm and within the excavated stream channels to provide further protection from erosion.

Assessment of Stormwater Pollution Prevention Plan (Cont'd)
Construction Component (Section B)

B-13 Material handling and spill prevention plan:
Any onsite storage of hazardous materials/potential pollutants, such as diesel fuel, shall be surrounded by an earthen dike or other secondary containment system having a storage volume equal to 150% of tank capacity, to contain potential pollutants. Any additional means of containing releases should be accessible at each petroleum storage area; this would include various absorbent materials. In the event of a release, a licensed environmental consulting company should be contacted for spill cleanup assistance. Furthermore, all equipment, when not in use, shall be parked onsite in an area that, should potential pollutants leak, they will be contained within the immediate area and will not be inadvertently conveyed to drainage swales and away from the project. Any leakage of pollutants from storage vessels or equipment shall be cleaned up and disposed of offsite in a legal manner.

B-14 Monitoring and maintenance guidelines for each proposed pollution prevention measure:
Temporary erosion and sediment control measures shall be inspected by the Erosion Control Supervisor, or a qualified representative, once every seven days and within 24 hours after a 1/2 inch rainfall. The inspection completed after a rain event can be considered the weekly inspection. Inspections shall be documented and records shall be maintained by the Erosion Control Supervisor, to be made available for review upon request. Records shall include, at a minimum, the date, the inspector's name, the maintenance and corrections needed based on this inspection, and the status of previously identified deficiencies. The temporary protection measures shall be returned to good working condition within 48 hours after inspection or as directed.

For maintenance requirements see the Erosion & Sediment Control Measure Details on Sheet 15 for the measures listed below:

1) Construction Entrance (CE)
2) Silt Fence (SF)
3) Erosion Control Blanket (ECB)

The Erosion Control Supervisor, or qualified representative, shall routinely inspect the overall performance of erosion and sediment control facilities and areas downstream of the project site. If eroded material/sediment is apparent downstream from the facilities, some failure has occurred, and the Supervisor shall notify the Contractor. The Contractor will remove the accumulated sediment downstream and add additional erosion control measures to address the issues as necessary. The Contractor shall implement all recommended solutions to the problem areas as recommended by the Supervisor.

At the proper time, with approval from the owner or their contracted representative, the contractor shall submit a Rule 5 Notice of Termination (N.O.T.) to the SWCD agent/reviewing authority for approval. Upon approval, the contractor shall dismantle the remaining erosion control elements. The contractor shall remove any unsuitable material from the site left from the erosion control measures.

B-15 Erosion and sediment control specifications for individual building lots:
Not applicable, this project does not consist of the construction of, or on, multiple building lots.

Stormwater Pollution Prevention Plan
Post Construction Component (Section C)

C-1 Description of pollutants and their sources associated with the proposed land use:
Additional pollutant sources will be from trash (both organic and inorganic), lawn chemicals, grass clippings, grit brought in from the existing surrounding roads from various vehicles (fuel, antifreeze, oil, grease, brake dust, brake fluid, transmission fluid, other hydrocarbons, etc..), pet and other animal waste, etc..

C-2 Sequence describing stormwater quality measure implementation:
Upon completion of site grading, all disturbed areas of the site will be permanently seeded, fertilized and mulched as outlined in the Special Provisions to reduce the amount of sediment leaving the site. Tree and shrub seedlings shall be planted as specified in the Special Provisions. The plantings will assist in permanent surface stabilization. Additionally, the water retention berm will remain as a permanent structure to reduce and slow runoff from the site. Finally, all existing vegetation outside of the designated planting zones will not be disturbed, and this vegetation will continue to filter out pollutants from the stormwater prior to it leaving the site, and entering into the surrounding water resources.

C-3 Description of proposed post construction stormwater quality measures:
The above referenced measures will serve as filtering and erosion control measures, to reduce the amount of pollutants and sediment contained within the stormwater before entering the surrounding water resources. The water retention berm and special plantings to be installed on this site will help to retain water, allow for filtration of sediment and pollutants, and reduce runoff from the site. In addition, these measures will return this property back into a functional wetland, riparian, and forest habitat which is expected to improve the overall water quality of the East Fork of the White River Watershed.

C-4 Location, dimensions, specifications and construction details of each stormwater quality measure:
The entire project site will be seeded and planted in accordance with the Special Provisions for this mitigation site. The installation of the water retention berm shall be as shown on the plans. Details of the individual structures, including silt fence, construction entrances, erosion control blankets, etc. are shown on Sheet 15 of these plans.

C-5 Description of maintenance guidelines for proposed post-construction water quality measures:
Erosion and sediment control: Repair and revegetate eroded areas in the project site. These measures will be implemented, as needed, based on regular inspections by the appropriate government agency. After the permanent seeding has reached 100% coverage and 70% density the project site will not need revisited unless future ground disturbance occurs.

Nuisance control: Address odor, insects, and overgrowth issues associated with stagnant or standing water in the roadside ditches. This will be handled as necessary per inspection by the appropriate government agency or following complaints adjacent property owners.

Sediment removal: Remove accumulated sediment from all areas of the project site, especially within the water retention berm.

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL Jason A DuPont 12/08/08
DESIGN ENGINEER DATE

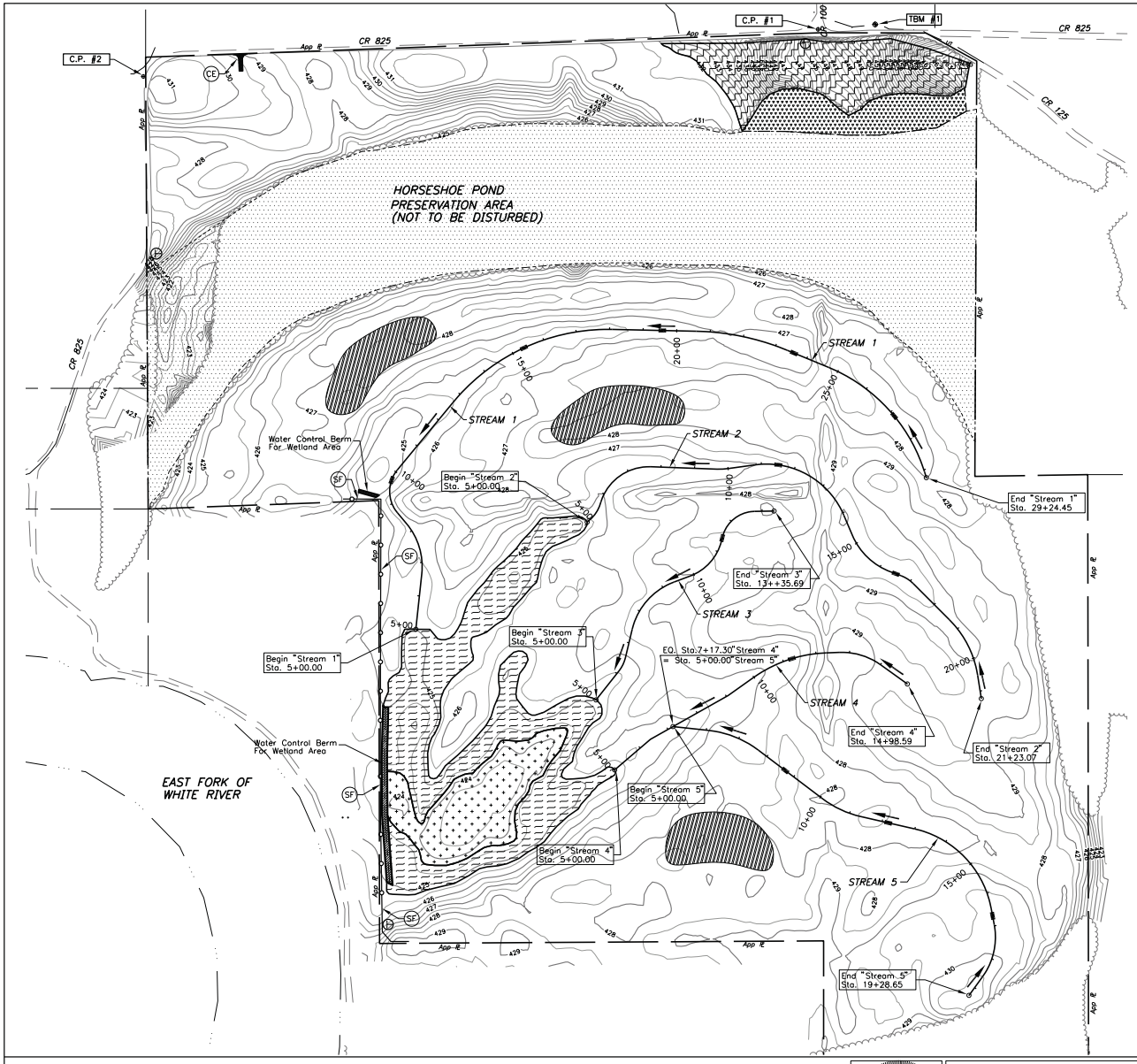
DESIGNED: JAD DRAWN: RAP
CHECKED: DJR CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

STORM WATER POLLUTION PREVENTION INFORMATION SHEET

HORIZONTAL SCALE	BRIDGE FILE
VERTICAL SCALE	DESIGNATION 0710903
SURVEY BOOK	SHEETS 13 of 25
CONTRACT	PROJECT 0710903
	IR-30351

S:\Surveys\103-2001\2008_Mitigation\Purcell\MT-DWGS\Info_Sheet.dwg 12/08/08 13:54 mrehle



0 75 150 300 450

LEGEND

- CE — CONSTRUCTION ENTRANCE
- SF — SILT FENCE
- DENOTES ZONE C – FORESTED WETLAND
- DENOTES ZONE D – EMERGENT WETLAND
- DENOTES WATER CONTROL BERM FOR WETLAND AREA
- DENOTES PRESERVATION AREA NOT TO BE DISTURBED
- DENOTES REFUSE REMOVAL AREA
- DENOTES STREAM EXCESS CUT DISPOSAL AREA
- STREAM FLOW DIRECTION

JASON A. DuPONT
REGISTERED
No. PE10303058
STATE OF INDIANA
PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — 12/08/08 DATE

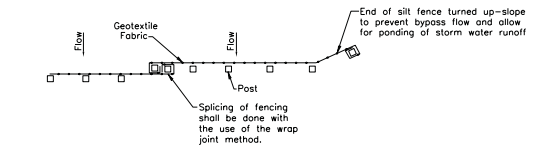
DESIGNED: JAD | DRAWN: RAP
CHECKED: DJR | CHECKED: DJR

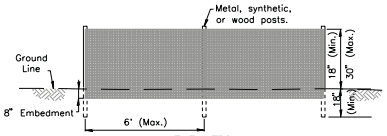
INDIANA DEPARTMENT OF TRANSPORTATION

STORM WATER POLLUTION PREVENTION PLAN LAYOUT

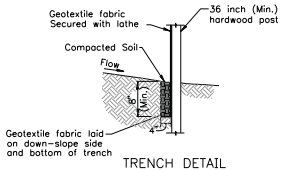
HORIZONTAL SCALE	BRIDGE FILE
1" = 150'	
VERTICAL SCALE	DESIGNATION
--	0710903
SURVEY BOOK	SHEETS
	14 of 25
CONTRACT	PROJECT
IR-30351	0710903

S:\Scrcnrk\103-0001\2008_Mentone\Parcel\MT-EROSION-CONTROL.dwg 12/08/08 13:32 rap





ELEVATION



TRENCH DETAIL

(SF) SILT FENCE

Installation:

1. Lay out the location of the fence so that it is parallel to the contour of the slope; providing for a sediment storage area. Turn the ends of the fence up slope to prevent bypass.
2. Excavate an 8 inch deep by 4 inch wide trench along the entire length of the fence line. An alternate to trenching is to use mechanical equipment to plow in the silt fence.
3. Install the silt fence with the filter fabric located on the up-slope side of the excavated trench and the supprt posts on the down-slope side of the trench.
4. Drive the posts at least 18 inches into the ground, tightly stretching the fabric between the posts as each is driven into the soil. A minimum of 12 inches of filter fabric should extend into the trench. (If splicing is required, see detail above)
5. Lay the lower four inches of filter fabric on the bottom of the trench and extend it toward the up-slope of the trench.
6. Backfill the trench with soil material and compact it in place.

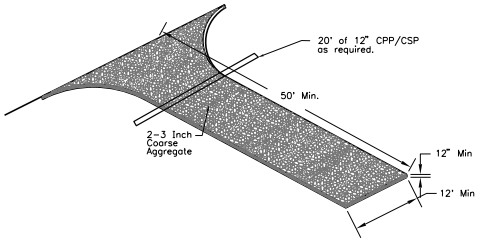
Materials & Specifications:

Silt Fence
- Fabric- Woven or non-woven geotextile fabric
- Height- 18 inches min. above ground level (30 inches max.)
- Reinforcement-Fabric securely fastened to posts with wood lathe

Support Posts
- Material- 2x2 inch hardwood posts (Steel fence posts are an acceptable substitute providing they have projections for fastening the fabric).
- Spacing: 1) 6 feet max. for extra strength fabric without wire backing.
  2) 8 feet max. if fence is supported by wire mesh fencing.

Maintenance:

- Inspect the silt fence within 24 hours of a rain event and at least seven calender days.
- If the fabric tears, starts to decompose, or in any way becomes ineffective, replace the affected portion immediately. (All repairs should mee specifications as outlined above.
- Remove deposited sediment when it reaches half the height of the fence at its, lowest point or is causing the fabric to bulge.Take care to avoid undermining the fence during clean out.
- After the contributing drainage area has been stabilized, remove the fence and sediment deposits, bring the disturbed area to grade, and stabilize.



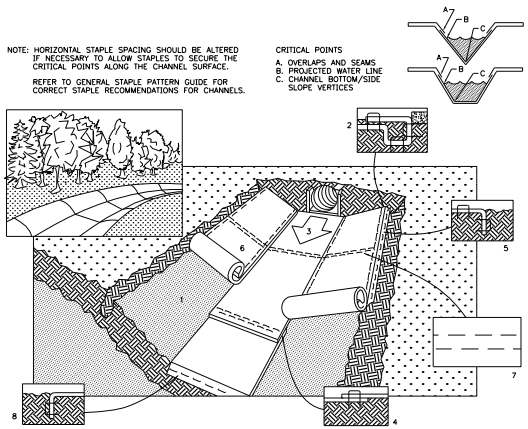
(CE) TEMPORARY CONSTRUCTION ENTRANCE

INSTALLATION

1. Avoid locating on steep slopes or at curves in public roads.
2. Aemove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.
3. If slope towards the road exceedes 2%, construct a 6-8 inch high water bar (ridge) with 3:1 side slopes across the foundation area about 15 feet from the entrance to divert runoff away from the road (practice 3.24)
4. Install pipe under the pad if needed to maintain proper public road drainage.
5. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.
6. Place stone to dimensions and grade shown in the erosion/sediment control plan leaving the surface smooth and sloped for draingoe
7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin

MAINTENANCE

- Inspect entrance pad and sediment disposal area weekly and after storm events or heavy use.
- Reshape pad as needed for drainage and runoff control.
- Topdress with clean stone as needed.
- Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping. flushing should only be used if the water is conveyed into a sediment trap or basin.
- Repair any broken road pavement immediately.



1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF SEED.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW ON BOTTOM OF CHANNEL.
4. PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH A 6" OVERLAP. USE A DOUBLE ROW OF STAGGERED STAPLES 4" APART TO SECURE BLANKETS.
5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED IN 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. BLANKETS ON SIDE SLOPES MUST BE OVERLAPPED 4" OVER THE CENTER BLANKET AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A ROW OF STAPLES 4" APART OVER ENTIRE WIDTH OF THE CHANNEL. PLACE A SECOND ROW 4" BELOW THE FIRST ROW IN A STAGGERED PATTERN.
8. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

(ECB) CHANNEL INSTALLATION

JASON A. DuPONT REGISTERED No. PE10303058 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL — DESIGN ENGINEER — DATE 12/08/08

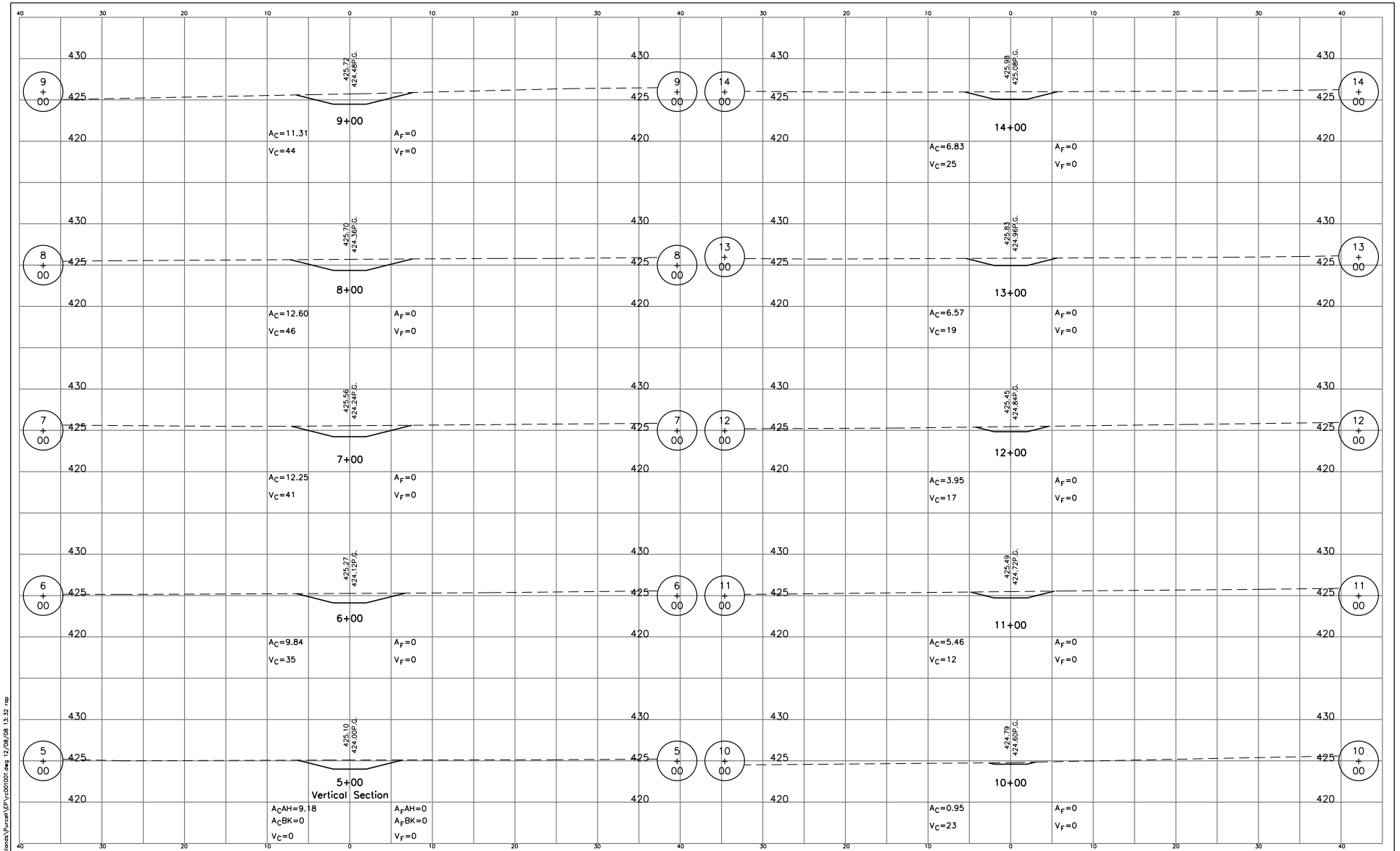
DESIGNED: JAD | DRAWN: RAP | CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

STORM WATER POLLUTION PREVENTION DETAILS

HORIZONTAL SCALE	BRIDGE FILE
AS SHOWN	
VERTICAL SCALE	DESIGNATION
---	0710903
SURVEY BOOK	SHEETS
	15 of 25
CONTRACT	PROJECT
IR-30351	0710903

S:\Surveys\103-0001\2008_Bertrand\Pursue\MT-DWGS\01-EROSION.dwg 12/08/08 13:30:00



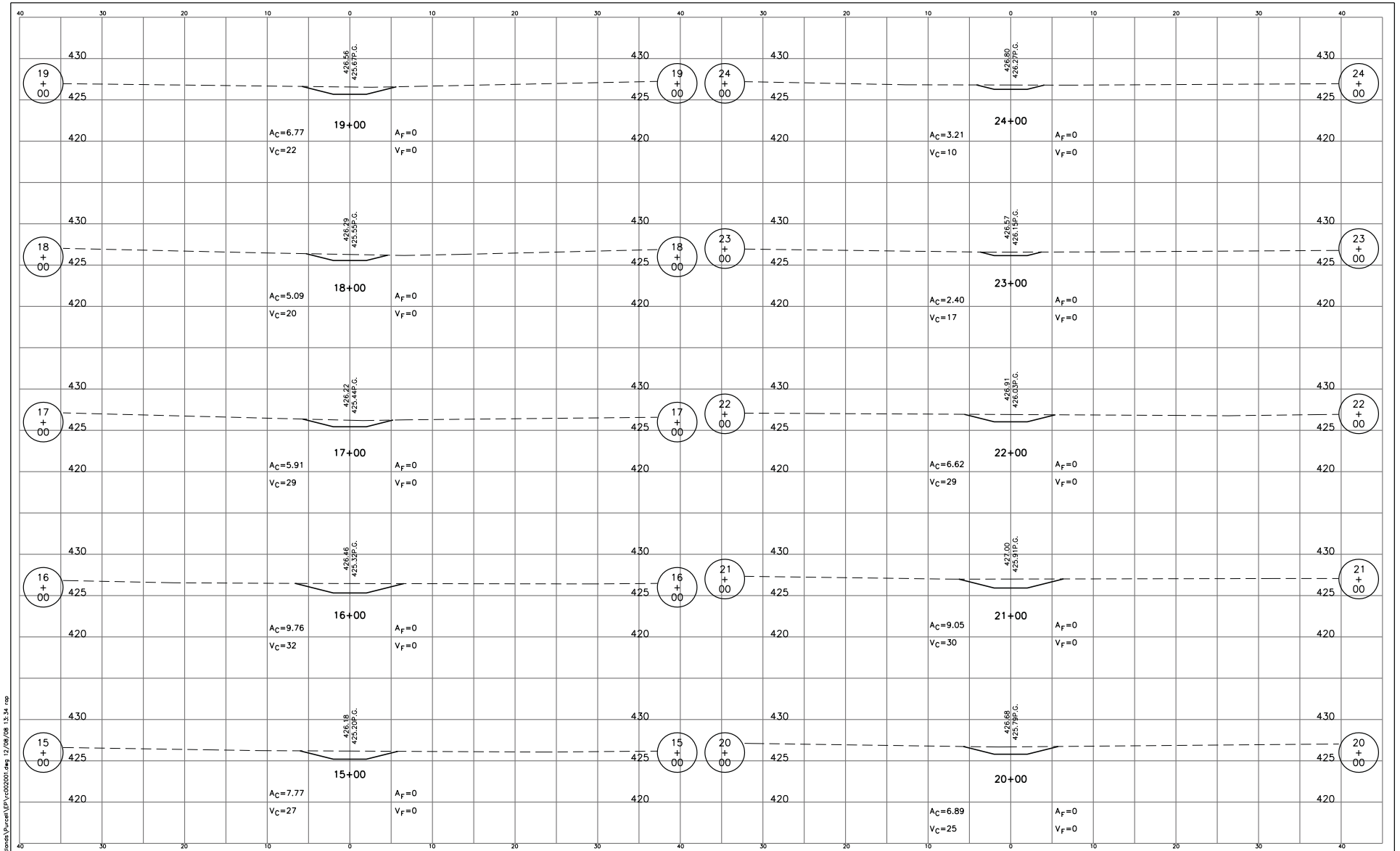
S:\Surveys\103-0001\2008_Wetlands\Purcell\EP\vc001001.dwg 12/08/08 13:32 rap

INDIANA
DEPARTMENT OF TRANSPORTATION

CROSS SECTION
STREAM 1

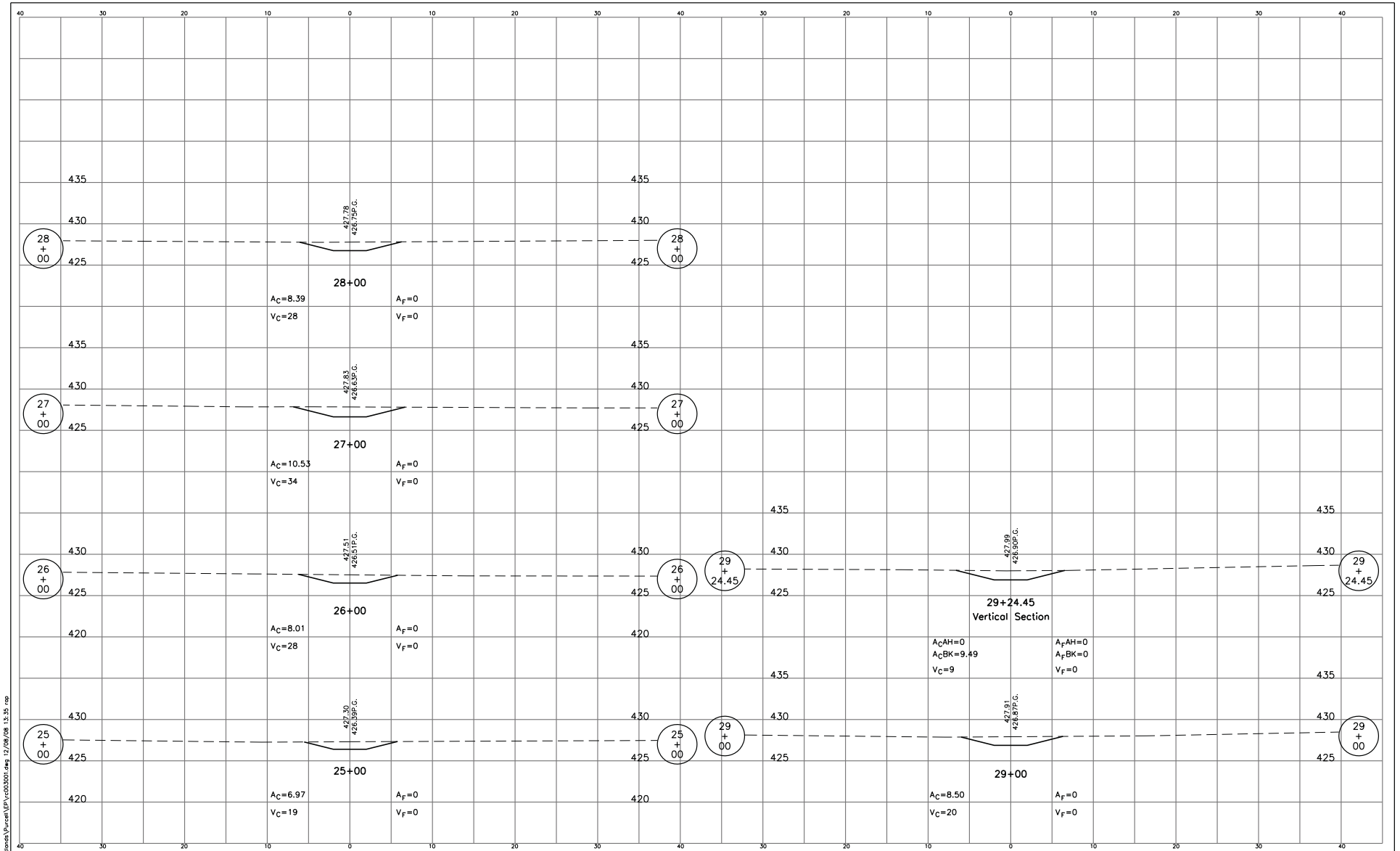
DESIGNED: JAD
DRAWN: RAP
CHECKED: DJR
CHECKED: DJR

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	0710903
SURVEY BOOK	
	16 of 25
CONTRACT	PROJECT
IR-30351	0710903



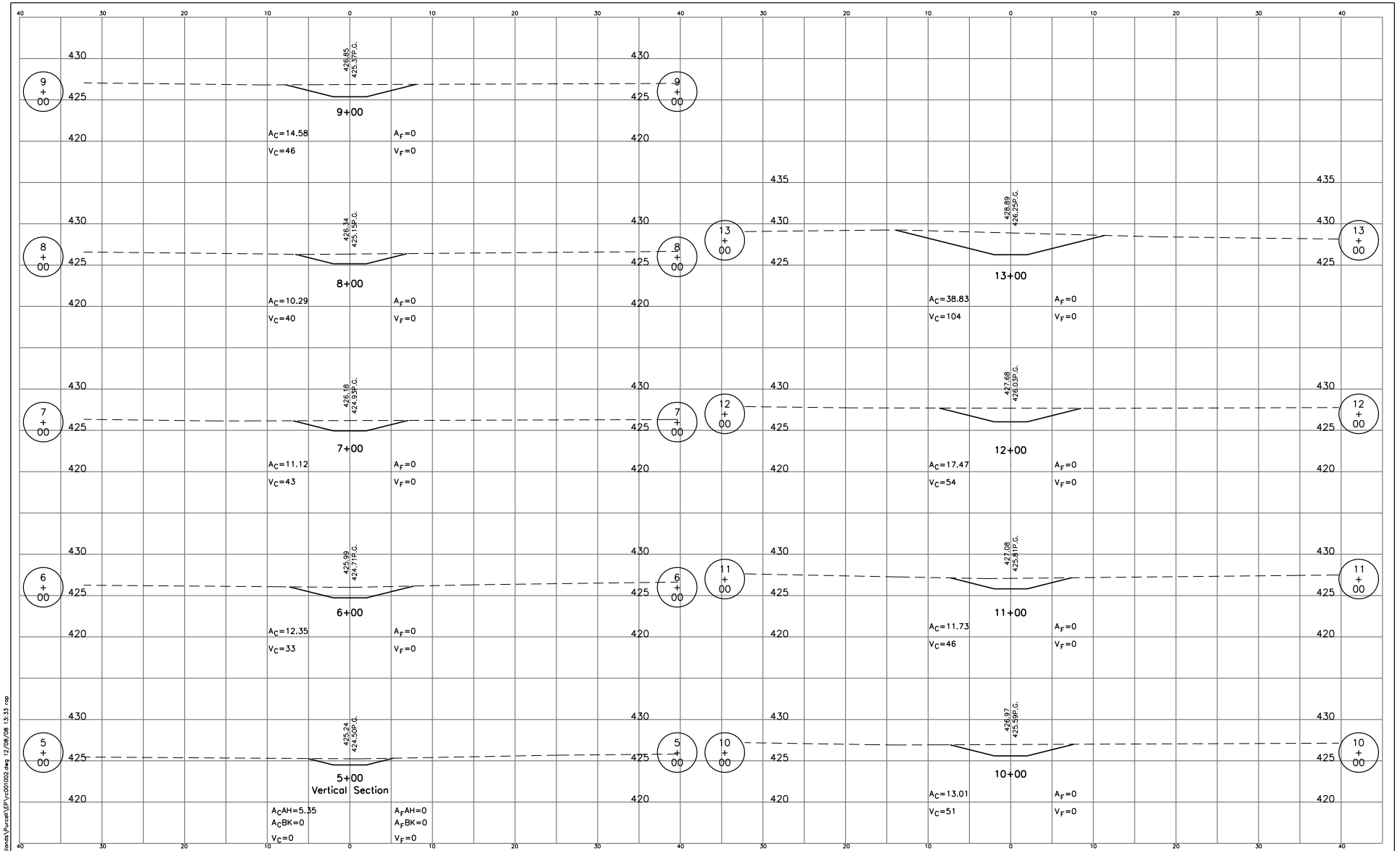
S:\Surveys\103-0001\2008_Wetlands\Parcel1\EP\vc002001.dwg 12/08/08 13:34 rap

DESIGNED: JAD	DRAWN: RAP	**INDIANA DEPARTMENT OF TRANSPORTATION**	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
CHECKED: DJR	CHECKED: DJR	CROSS SECTION STREAM 1	VERTICAL SCALE 1"=5' / DESIGNATION 0710903
			SURVEY BOOK / 17 of 25
			CONTRACT IR-30351 / PROJECT 0710903



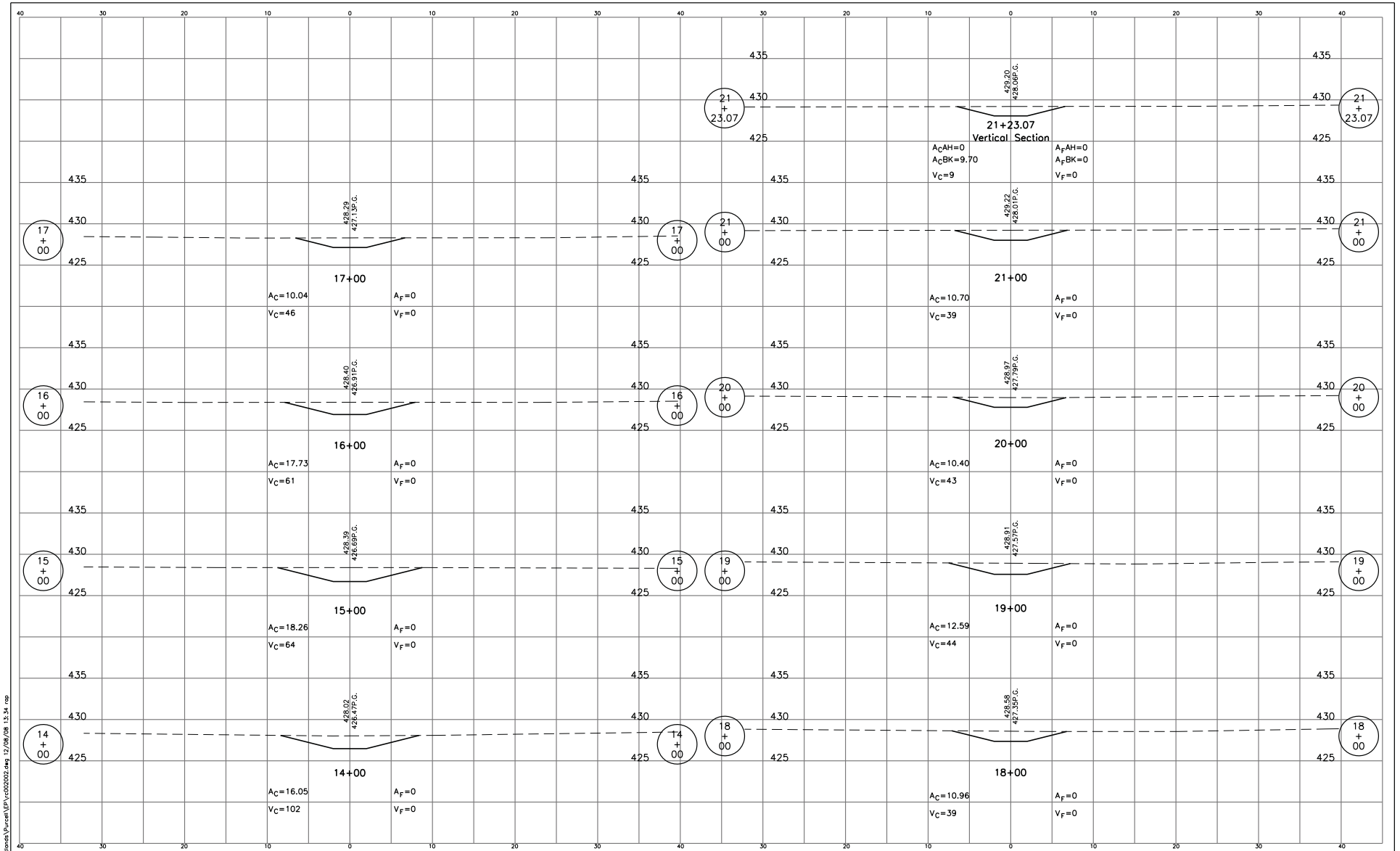
S:\Surveys\103-0001\2008_Wetlands\Parcel1\EP\vc03001.dwg 12/08/08 13:35 rap

DESIGNED: JAD	DRAWN: RAP	**INDIANA DEPARTMENT OF TRANSPORTATION**	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
CHECKED: DJR	CHECKED: DJR	CROSS SECTION STREAM 1	VERTICAL SCALE 1"=5' / DESIGNATION 0710903
			SURVEY BOOK / 18 of 25
			CONTRACT IR-30351 / PROJECT 0710903



S:\Surveys\103-0001\2008_Wetlands\Parcel1\EPV\vc001002.dwg 12/08/08 13:33 rap

DESIGNED: JAD	DRAWN: RAP	**INDIANA DEPARTMENT OF TRANSPORTATION**	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
CHECKED: DJR	CHECKED: DJR	CROSS SECTION STREAM 2	VERTICAL SCALE 1"=5' / DESIGNATION 0710903
			SURVEY BOOK / 19 of 25
			CONTRACT IR-30351 / PROJECT 0710903



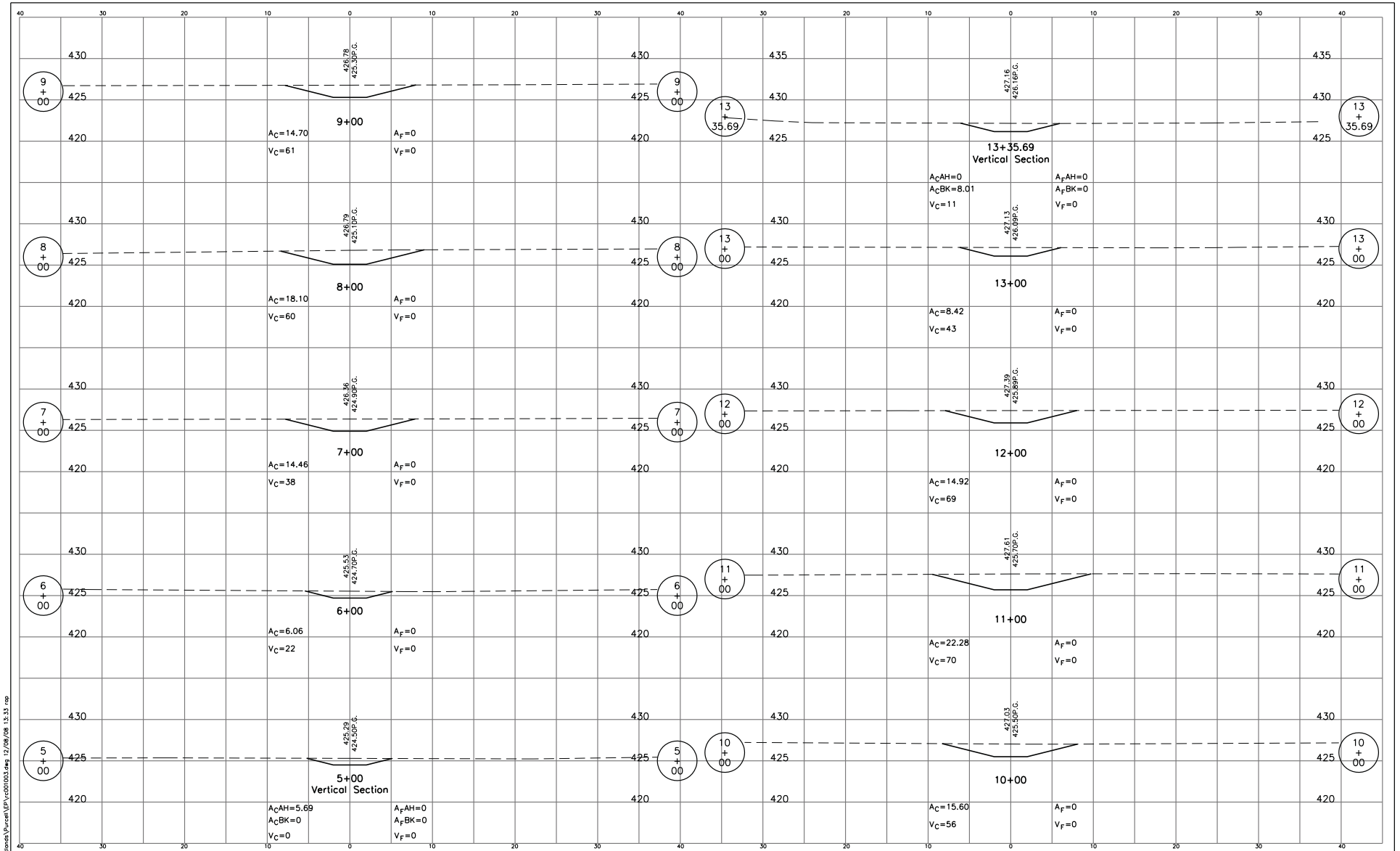
S:\Surveys\103-0001\2008_Wetlands\Parcel1\EP\vc002002.dwg 12/08/08 13:34 rap

DESIGNED: JAD | DRAWN: RAP | CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

CROSS SECTION
STREAM 2

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	0710903
SURVEY BOOK	
	20 of 25
CONTRACT	PROJECT
IR-30351	0710903



S:\Surveys\103-0001\2008_Wetlands\Parcel1\EPV\vc001003.dwg 12/08/08 13:33 rap

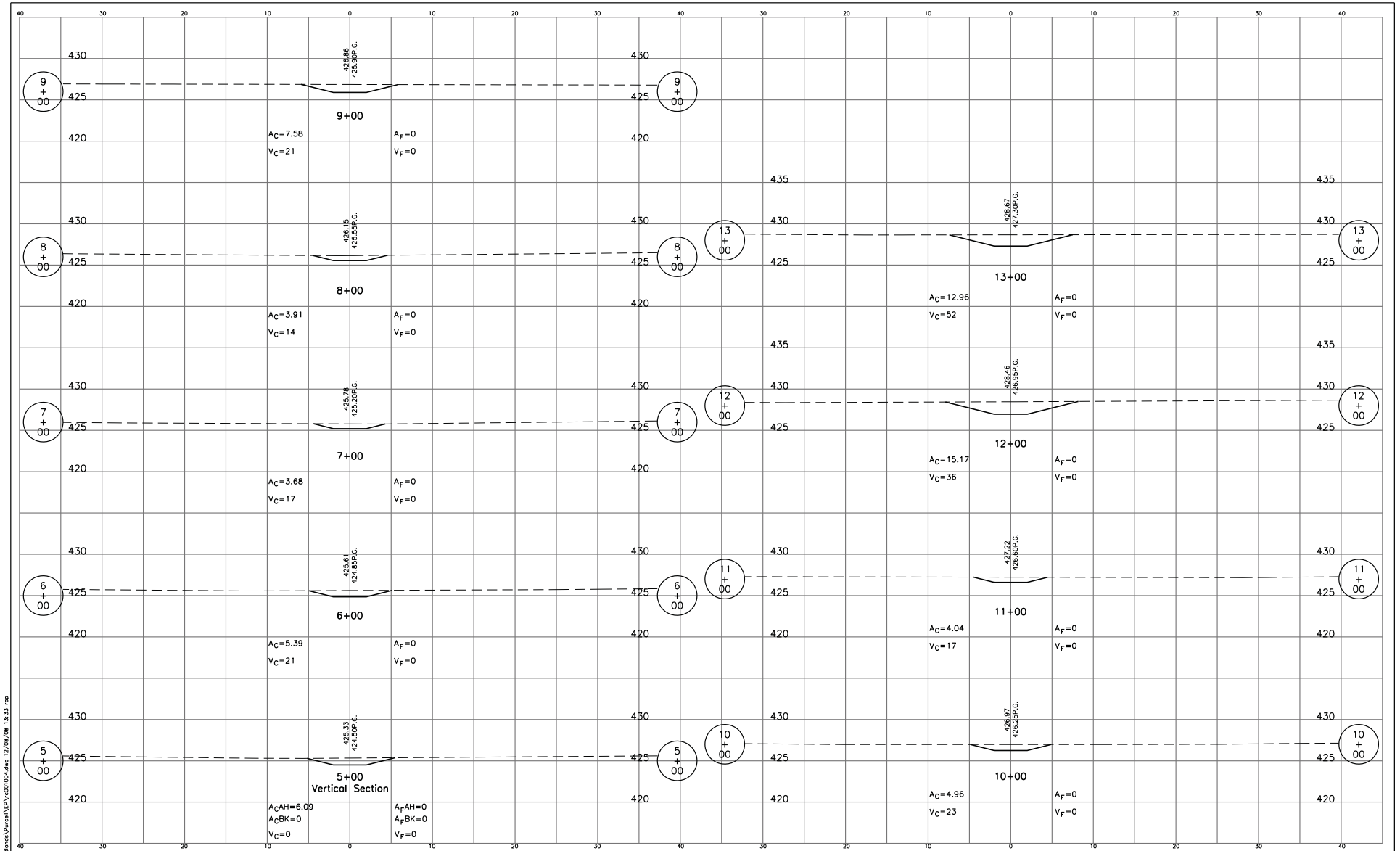
DESIGNED: JAD | DRAWN: RAP

CHECKED: DJR | CHECKED: DJR

INDIANA DEPARTMENT OF TRANSPORTATION

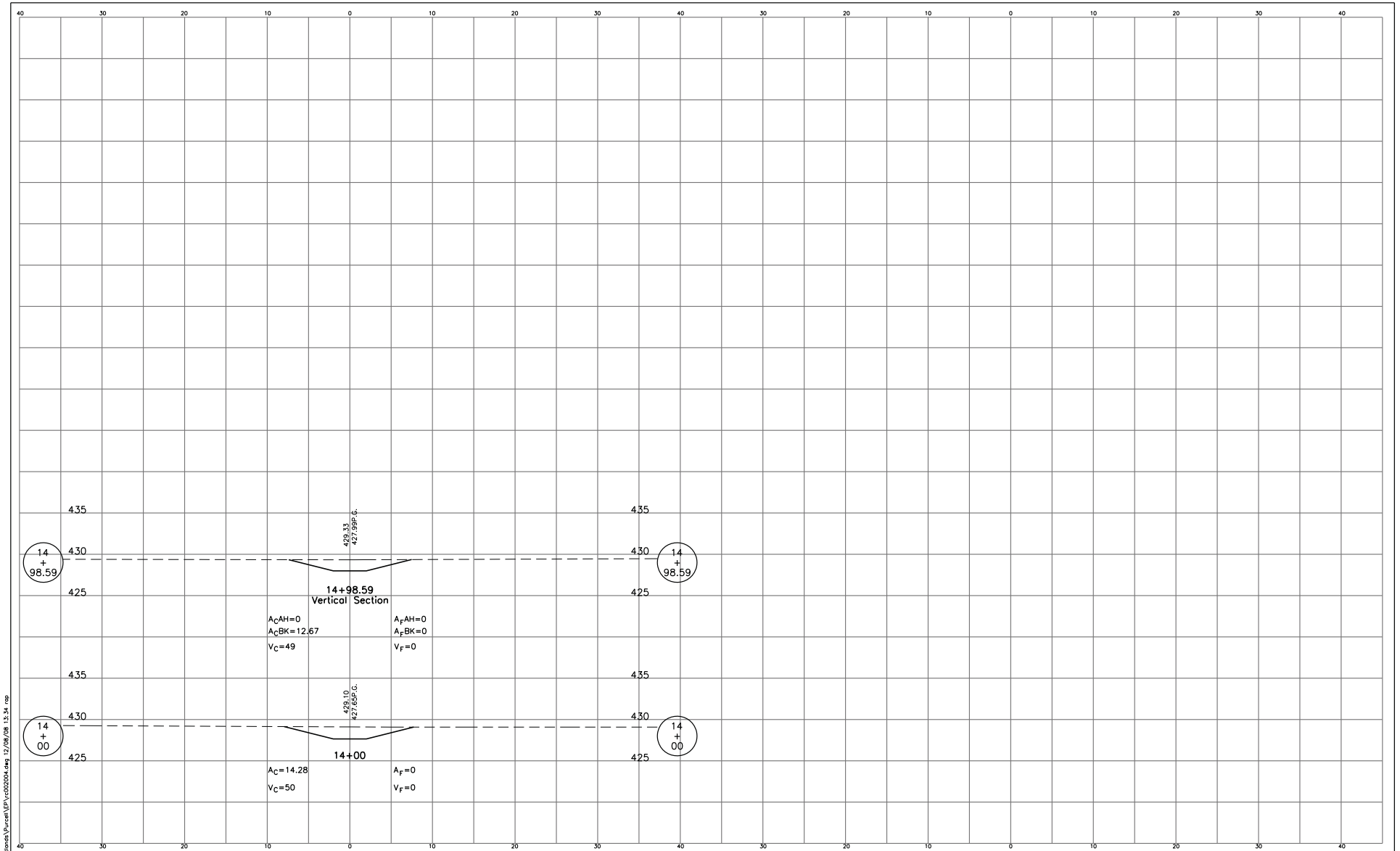
CROSS SECTION
STREAM 3

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	0710903
SURVEY BOOK	
	21 of 25
CONTRACT	PROJECT
IR-30351	0710903



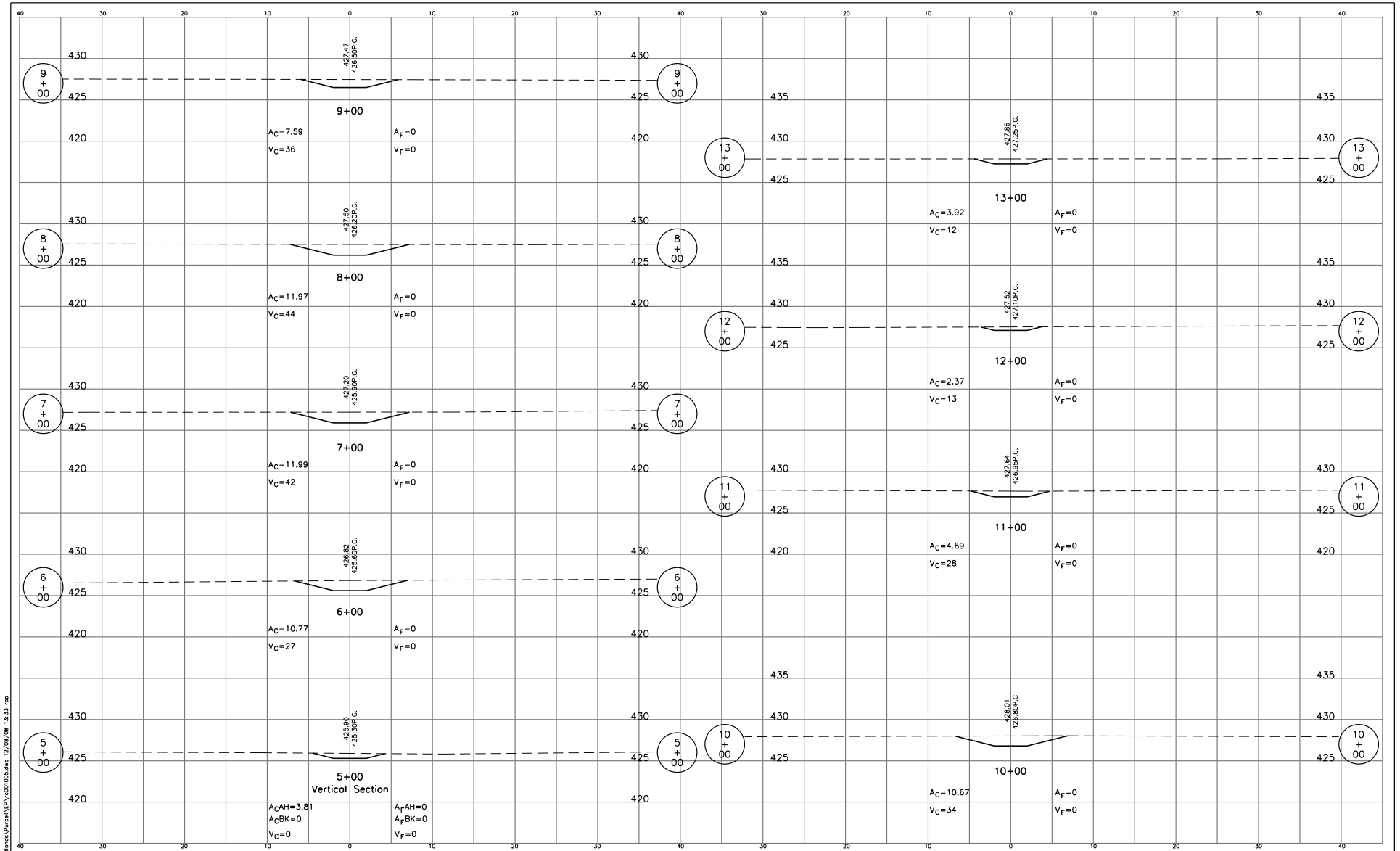
S:\Surveys\103-0001\2008_Wetlands\Parcel1\EP\vc001004.dwg 12/08/08 13:33 rap

DESIGNED: JAD	DRAWN: RAP	**INDIANA DEPARTMENT OF TRANSPORTATION**	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
CHECKED: DJR	CHECKED: DJR	CROSS SECTION STREAM 4	VERTICAL SCALE 1"=5' / DESIGNATION 0710903
			SURVEY BOOK / 22 of 25
			CONTRACT IR-30351 / PROJECT 0710903



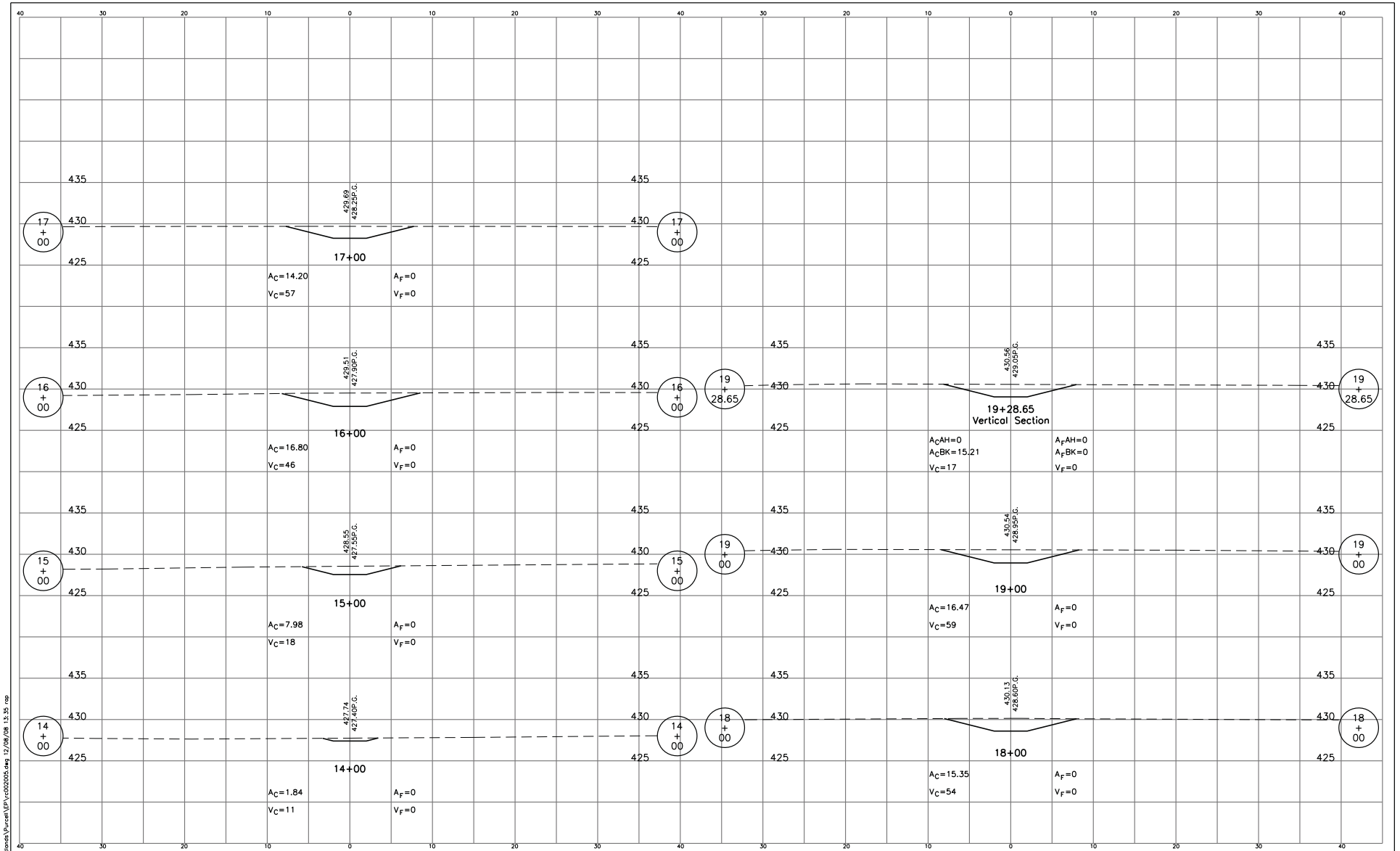
S:\Survproj\103-0001\2008_Wetlands\Parcel1\EP\vc002004.dwg 12/08/08 13:34 rap

		INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
			VERTICAL SCALE 1"=5' / DESIGNATION 0710903
DESIGNED: JAD	DRAWN: RAP	CROSS SECTION STREAM 4	SURVEY BOOK / 23 of 25
CHECKED: DJR	CHECKED: DJR		CONTRACT IR-30351 / PROJECT 0710903



S:\Surveys\103-0001\2008_Wetlands\Parcel1\EPV\vc001005.dwg 12/08/08 13:33 rap

DESIGNED: JAD	DRAWN: RAP	**INDIANA DEPARTMENT OF TRANSPORTATION**	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
CHECKED: DJR	CHECKED: DJR	CROSS SECTION STREAM 5	VERTICAL SCALE 1"=5' / DESIGNATION 0710903
			SURVEY BOOK / 24 of 25
			CONTRACT IR-30351 / PROJECT 0710903



S:\Surveys\103-0001\2008_Wetlands\Parcel\EFV\vc002005.dwg 12/08/08 13:35 rap

DESIGNED: JAD	DRAWN: RAP	**INDIANA DEPARTMENT OF TRANSPORTATION**	HORIZONTAL SCALE 1"=5' / BRIDGE FILE
CHECKED: DJR	CHECKED: DJR	CROSS SECTION STREAM 5	VERTICAL SCALE 1"=5' / DESIGNATION 0710903
			SURVEY BOOK / 25 of 25
			CONTRACT IR-30351 / PROJECT 0710903

Attachment 5

I-69 Section 2
Mitigation Site
Special Provisions

SPECIAL PROVISION

DES 0710903 - MITIGATION SITE
WETLAND, STREAM, FORESTARIAN HABITAT MITIGATION

This mitigation site, known as the Mitigation Site, is being developed as part of the I-69 Sections 2 and 3 Mitigation Bank. This mitigation plan is offered in compensation for a portion of the impacts of Section 2 of the I-69 Evansville to Indianapolis Project in Gibson, Pike, and Daviess Counties, Indiana to fulfill commitments identified in the Tier 1 and Tier 2 Environmental Impact Statements addressing impacts to forest and wetland habitats. This mitigation addresses conditions of Section 7 consultation, Section 404/401 Permits and Construction in a Floodway Permits for Section 2 of I-69 from SR 64 to US 50. This mitigation site meets the criteria for the Wetland Restoration Exemption to the Construction in a Floodway Permit, per 312 IAC 10-5-1. The design plans show the location of the mitigation and the grading details for the site. Also shown on the plans are the locations of the various zones that will receive special plantings that are covered in this special provision. The provisions of Section 621 and 622 of the INDOT Standard Specifications (2008), where not in conflict with these special provisions, shall be applicable to the special planting requirements of the mitigation plan.

Mitigation site construction shall begin immediately upon receipt of notice to proceed on the contract. Final planting shall take place between March 1 and July 1. If site preparation concludes, such that planting cannot occur immediately following site preparation, a temporary cover shall be planted using Seed Mix T in accordance with INDOT Standard Specification 621.06(f) and the erosion control plan.

The CONTRACTOR shall submit his schedule of activities to the ENGINEER for approval. The CONTRACTOR shall provide a written notification to the INDOT Environmental Assessment Manager upon initiation of construction activities on the project as well as upon completion of planting of the site. The written notification shall be sent to Steve Sperry, Indiana Department of Transportation, Ecology and Waterway Permitting Section, Office of Environmental Services, Government Building North, Room N642, 100 North Senate Avenue, Indianapolis, Indiana 46204-2249. As soon as approved, and as directed by the ENGINEER, the CONTRACTOR shall prepare the site, and plant the species as per this special provision.

A. SITE PREPARATION

Prior to mobilization of equipment to the mitigation site, all mechanical equipment (e.g. trucks, bulldozers, backhoes, etc.) shall be pressure-washed at an off-site location to remove any dirt or soil that may be a potential seed source for invasive or non-native species. Any equipment that leaves the site shall also be pressure-washed at an off-site location prior to returning to the site. All equipment shall be inspected for cleanliness by the ENGINEER before entering the site.

Erosion control measures, including silt fences shall be installed per INDOT 2008 Standard Specification 205.03, and as shown on the plans, to minimize erosion of disturbed soil and prevent runoff from leaving the site during construction. Temporary erosion control features, as well as permanent water retention berms, shall be constructed prior to any excavation or land disturbance on the site. Prior to planting within the flat-bottom channels of Zone G, all surrounding soils shall be stabilized. Channel bottom planting shall occur when the channel is dry. The surface soil shall be scarified by shallow tilling or raking. Bank stabilization shall include revegetation and application of erosion control matting within the excavated channels.

Exploratory trenching along the western boundary of the Mitigation Site and along a portion of the southern edge of the preservation area shall be completed as shown on the design plans to disable any drain tiles that may be located within the Mitigation Site. The trench shall be six (6) feet deep with a minimum width of one (1) foot to allow for visual observation of any tiles. If a visual observation indicates the presence of a tile, the tile shall be plugged on the downstream end with a concrete plug and a minimum of 50 feet of the tile shall be removed upstream from the trench. All trenches shall be backfilled with excavated material upon completion of the tile exploration. No trenching shall occur in the preservation areas located in the northern and eastern portions of the property.

Refuse will be removed from the area identified on the design plans as "Refuse Removal Area". Any refuse shall be removed from the mitigation site property and disposed of in an appropriately permitted landfill. Removal of the refuse in this area should be completed with as little disturbance to the surrounding landscape as possible. Any ground disturbance caused by mechanical equipment used to remove refuse shall be regraded to existing contours to avoid any disturbance to the natural springs that are located within this area.

Areas within Zone G (ephemeral stream channel development areas) are proposed for excavation at this site. Material excavated from the stream channels shall be used for the construction of the water retention berms. Excess excavated material shall be placed in the designated stream cut disposal area(s) as shown on the plans at a total maximum depth of 6 inches. Excavation and grading shall be as shown in the plans. Excavation and grading shall be followed by seedbed preparation as specified below.

Site preparation for the Planting Zones A and B (the Wooded Riparian Areas along the ephemeral stream channels), Zone E (the upland forested area), and Zone F (the bottomland forested area) will not require excavation. The existing contours will be preserved and only seedbed preparation shall be performed.

Seedbed preparation shall consist of a multiple tilling to eliminate any existing seed source of undesirable volunteer species. Till or plow no more than 6 inches on the first pass. After two weeks, till or disc no more than the upper 3 inches of soil at least two (2) times at two (2) week intervals. This shallow tilling shall be performed when young developing weeds show. After final tilling harrow the upper 3 inches and seed immediately. Alternative tilling schedules may be approved by the INDOT Office of Environmental Services to adequately eliminate any undesirable seed source.

Areas outside the designated Planting Zones, comprised of a variety of existing wetland, bottomland forest, and riparian habitats, shall be preserved in place and not disturbed during mitigation activities. These preservation areas total 34.0 acres of the 147.3 acre property.

If water levels in the mitigation site are too deep for seeding, planting, proper germination, or establishment, the CONTRACTOR shall be responsible for removal of water to allow for proper seeding, planting, germination, and establishment.

B. PLANTING PLAN

The provisions of Section 621 and 622 of INDOT Standard Specifications (2008), where not in conflict with the Special Provisions for this site,

shall be ap e to the special planting requirements of the mitigation plan. The mitigation plan includes seven (7) distinct planting zones (Zone rough G) totaling 111.9 acres. An additional 0.3 acres of the site, comprised of water retention berms, are included in this acreage and shall also receive planting. The remaining 35.4 acres of the 147.3 acre property will not be planted. Collectively, 33,114 bare root tree seedlings, 2,494 3-gallon container grown tree seedlings, 8,301 bare root shrub seedlings and 4,931 lbs of herbaceous ground cover seed mix are called for in the planting plan.

Prior to the planting of tree seedlings, the seedbed shall be prepared, as specified above, to allow for seeding of the various herbaceous cover seed mixes proposed. All planting shall occur between March 1 and July 1. Planting outside of this specified time window shall only be authorized in writing by the INDOT Office of Environmental Services. If site preparation concludes, such that planting cannot occur during these dates, a temporary cover shall be planted using Seed Mix T in accordance with INDOT Standard Specification 621.06(f).

Where herbaceous ground cover is specified, the seed mixes shall be seeded at the rates specified below. All seeding rates identified in this specification are based on pure live seed (PLS). All seed to be used on the site shall be properly tagged to identify PLS percentage.

Seed Mixes for the Mitigation Planting Plan shall be the following:

Planting Zone	**Seed Mix Name**	**Seeding Rate**	**Amount**
A,B,C, and F	Wooded Wetland Establishment	44.53 lbs/acre	4,658 lbs
D	Emergent Wetland Seed Mix	34.78 lbs/acre	80 lbs
E	Annual Rye Grass	40 lbs/acre	120 lbs
G	Swale Seed Mix	27.72 lbs/acre	55 lbs
Berms	Slope Stabilization Seed Mix	57.63 lbs/acre	18 lbs
	Total		**4,931 lbs**

The Wooded Wetland Establishment Seed Mix shall be as listed in Table 1, or a comparable wetland woods herbaceous cover mix consisting of at least twelve (12) native graminoid species and nine (9) native forb species. If not all species listed in Table 1 are used, each species used must all be at a rate equal to or greater than that listed in Table 1. This mix shall be planted at a rate of 44.53 lbs/acre PLS within planting zones A, B, C and F.

The Emergent Wetland Seed Mix shall be as listed in Table 2, or shall include at least seven (7) native graminoid species and thirteen (13) native forb species listed in Table 2. If not all species listed in Table 2 are used, each species used must all be at a rate equal to or greater than that listed in Table 2. This mix shall be planted at a rate of 34.78 lbs/acre PLS within planting zone D.

The seeding of the Annual Rye shall be planted at a rate of 40.00 lbs/acre within planting zone E.

The Swale Seed Mix shall be as listed in Table 3, or shall include at least seven (7) native graminoid species and ten (10) native forb species listed in Table 3. If not all species listed in Table 3 are used, each species used must all be at a rate equal to or grater than that listed in Table 3. This mix shall be planted at a rate of 27.72 lbs/acre PLS within

planting zone G.

The Slope Stabilization Seed Mix shall be as listed in Table 4, or shall include at least five (5) of the native graminoid species listed in Table 4. If not all species listed in Table 4 are used, each species used must all be at a rate equal to or greater than that listed in Table 4. This mix shall be planted at a rate of 57.63 lbs/acre on the water retention berms.

Seeding of all zones shall be by broadcast spreading, followed by mulching and watering (see below). Seeding shall follow immediately after seedbed preparation.

A roller, cultipacker or light raking shall be used on all seeded areas to ensure adequate seed-to-soil contact. Seeds shall not be covered by more than 1/8 (0.125) inch of soil. The seeded areas are to be immediately followed by mulching (see below) and watering (see below).

Planting of the bare root and 3-gallon container grown seedlings shall occur following the seeding and mulching of the herbaceous ground cover in Zones A, B, C, E and F. Bare root tree and shrub seedlings shall be 1 ½ - 2 feet tall. Seedlings shall have a minimum root collar caliper equal to or greater than 1/4 inch and shall have a well developed fibrous root system. The 3-gallon container grown tree seedlings (Zones A, B, and C) shall be 3 - 6 feet tall and shall have a minimum root collar diameter equal to or greater than 3/4 inch. The 3-gallon container grown seedlings shall have a fibrous root mass sufficient enough to retain its shape and hold together when removed from the container. Seedlings shall be transported, stored, and handled in accordance with 914.08. Storage of bare root seedlings shall be in a cool dark place until the date they are to be installed. Only that number of bare root seedlings which can reasonably be planted during a single day may be removed from storage. They shall be kept moist at all times. Seedling trees and shrubs will be planted in accordance with sound horticultural practices with respect to moisture, root pruning, planting depth, planting hole size, soil compaction, etc. All bare root tree and shrub seedlings shall be mechanically planted. All 3-gallon container grown seedlings shall be manually planted. Seedlings shall be planted so the root collar is even with the ground surface. Roots shall not be forced into an improper planting hole, which would restrict their ability to grow and support the seedling to permit survival.

Mechanical planting of the bare root tree seedlings shall be in a random manner with regard to species composition within each zone to avoid clustering with a density of 436 stems/acre (approximately 10 foot spacing) in Zones A, B, and C and with a density of 302 stems/acre (approximately 12 foot spacing) in Zones E and F. Trees will be planted in rows following the specified pattern in the plans. The beginning point of adjacent rows shall be staggered by approximately 5 feet to avoid a uniform grid pattern. Each planting row shall be marked by placing a wood lath spaced every 150 feet within the planting row immediately adjacent to the stem of that seedling. The wood laths shall be painted fluorescent orange and shall be a minimum of 4 feet long and shall be placed with a minimum of 3 feet above the ground elevation.

Tree Species for the Mitigation Planting Plan shall be the following:
Zone A – Wooded Riparian Area (0 to 25 feet from Top of Bank)

Common name	**Scientific Name**	**Type of Planting**
Tree Species		
American Elm	*Ulmus americana*	695 Bare Root

		232 3-Gallon
Silver Maple	*Acer saccharinum*	695 Bare Root
		232 3-Gallon
Cottonwood	*Populus deltoides*	695 Bare Root
		232 3-Gallon
Sycamore	*Platanus occidentalis*	695 Bare Root
		232 3-Gallon
Shrub Species		
Pale Dogwood	*Cornus obliqua*	309 Bare Root
Common Spicebush	*Lindera benzoin*	309 Bare Root
Elberberry	*Sambucus canadensis*	309 Bare Root
Total		**3,707 Bare Root**
		928 3-Gallon

Zone B – Wooded Riparian Area (25 to 50 feet from Top of Bank)

Common name	Scientific Name	Type of Planting
Tree Species		
Shellbark Hickory	*Carya laciniosa*	703 Bare Root
		234 3-Gallon
Pin Oak	*Quercus palustris*	703 Bare Root
		234 3-Gallon
Swamp White Oak	*Quercus bicolor*	703 Bare Root
		234 3-Gallon
Pecan	*Carya illinoinensis*	703 Bare Root
		234 3-Gallon
Shrub Species		
Pale Dogwood	*Cornus obliqua*	312 Bare Root
Common Spicebush	*Lindera benzoin*	312 Bare Root
Elberberry	*Sambucus canadensis*	312 Bare Root
Total		**3,748 Bare Root**
		936 3-Gallon

Zone C – Forested Wetland Area

Common name	Scientific Name	Type of Planting
Tree Species		
Pin Oak	*Quercus palustris*	380 Bare Root
		126 3-Gallon
Swamp White Oak	*Quercus bicolor*	380 Bare Root
		126 3-Gallon
Pecan	*Carya illinoinensis*	380 Bare Root
		126 3-Gallon
River Birch	*Betula nigra*	380 Bare Root
		126 3-Gallon
Sweetgum	*Liquidambar styraciflua*	380 Bare Root
		126 3-Gallon
Total		**1,900 Bare Root**
		630 3-Gallon

Zone E – Upland Forest Area

Common name	Scientific Name	Type of Planting
Tree Species		
Red Oak	*Quercus rubra*	227 Bare Root
White Oak	*Quercus alba*	227 Bare Root
Tuliptree	*Liriodendron tulipifera*	227 Bare Root
Black Cherry	*Prunus serotina*	227 Bare Root

Shrub Species		
Serviceberry	*Amelancbter arborea*	76 Bare Root
American Hazelnut	*Corylus Americana*	76 Bare Root
Blackhaw	*Viburnum prunifolium*	6 Bare Root
Total		**1,440 Bare Root**

Zone F – Bottomland Forest Area

Common name	Scientific Name	Type of Planting
Tree Species		
Pin Oak	*Quercus palustris*	2,746 Bare Root
Shumard Oak	*Quercus shumardii*	2,746 Bare Root
Bur Oak	*Quercus macrocarpa*	2,746 Bare Root
White Oak	*Quercus alba*	2,746 Bare Root
Shagbark Hickory	*Carya ovata*	2,746 Bare Root
Pecan	*Carya illinoinensis*	2,746 Bare Root
Black Walnut	*Juglans nigra*	2,746 Bare Root
Cottonwood	*Populus deltoides*	2,746 Bare Root
American Elm	*Ulmus americana*	2,746 Bare Root
Shrub Species		
Roughleaf Dogwood	*Cornus drummondii*	1,242 Bare Root
Gray Dogwood	*Cornus racemosa*	1,242 Bare Root
Common Winterberry	*Ilex verticillata*	1,242 Bare Root
Ninebark	*Physocarpus opultfolius*	1,242 Bare Root
Nannyberry	*Viburnum lentago*	1,242 Bare Root
Total		**30,924 Bare Root**

The design plans show the locations of planting zones. Species shall be planted at these zone locations with the quantities shown below. Strict adherence to planting species in the appropriate zone is required. Any substitution of species or seed mix shall be approved by the ENGINEER. The seeding rate for any substituted species or seed mix shall be sufficient to provide a seed count equivalent to that of the specified seed mix.

All seeds and bare root plants should be obtained from nurseries within the American National Standards Institute (ANSI) Plant Hardiness Zones 4, 5 or 6. Potential vendors include, but are not limited to:

Indiana
- Indiana Department of Natural Resources
- J.F. New Native Plant Nursery (Walkerton, IN)
- Heartland Restoration Services, Inc. (Fort Wayne, IN)
- Berg Warner Nursery (Lizton, IN)

Illinois
- Lafayette Home Nursery, Inc. (Lafayette, IL)

Kentucky
- Shooting Star Nursery (Georgetown, KY)

Ohio
- Envirotech Consultants, Inc. (Somerset, OH)

Missouri
- Forrest Keeling Nursery (Elsberry, MO)
- Ripley County Farms (Doniphan, MO)

New York
- Southern Tier Consulting, Inc. (West Clarksville, NY)

Virginia
- Bobtown Nursery (Melfa, VA)

Plant Species and Quantities per Zone

Zone A Wooded Riparian (Top-of-Bank to 25' from Top-of-Bank)	**Area:**	8.5 acres	
	Elevation:	Varies along channels (425-430.5)	
	Trees:	American Elm Silver Maple Cottonwood Sycamore	**Number:** 695 BR / 232 CG 695 BR / 232 CG 695 BR / 232 CG 695 BR / 232 CG
	Shrubs:	Pale Dogwood Common Spicebush Elderberry	**Number:** 309 BR 309 BR 309 BR
	Ground Cover:	Wooded Wetland Establishment Seed Mix	**Amount:** 378.5 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast spreading at a rate of 44.53 lbs/acre followed by mulching and watering. Bare root seedlings are to be mechanically planted with 10-foot spacing with manual planting of container grown seedlings to occur between every 3rd and 4th bare root seedling, also with 10-foot spacing. Bare root shrubs seedlings shall be planted with 5-foot spacing between every 4th and 5th tree seedling. All tree and shrub seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.	
Zone B Wooded Riparian (25' from Top-of-Bank to 50'from Top-of-Bank)	**Area:**	8.6 acres	
	Elevation:	Varies along channels (425-430.5)	
	Trees:	Shellbark Hickory Pin Oak Swamp White Oak Pecan	**Number:** 703 BR / 234 CG 703 BR / 234 CG 703 BR / 234 CG 703 BR / 234 CG
	Shrubs:	Pale Dogwood Common Spicebush Elderberry	**Number:** 312 BR 312 BR 312 BR
	Ground Cover:	Wooded Wetland Establishment Seed Mix	**Amount:** 383.0 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast spreading at a rate of 44.53 lbs/acre followed by mulching and watering. Bare root seedlings are to be mechanically planted with 10-foot spacing with manual planting of container grown seedlings to occur between every 3rd and 4th bare root seedling, also with 10-foot spacing. Bare root shrubs seedlings shall be planted with 5-foot spacing between every 4th and 5th tree seedling. All tree and shrub seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.	
Zone C Forested Wetland	**Area:**	5.8 acres	
	Elevation:	424.25 to 425.25 feet	
	Trees:	Pin Oak	**Number: 3**80 BR **/** 126 CG

		Swamp White Oak Pecan River Birch Sweetgum	380 BR / 126 CG 380 BR / 126 CG 380 BR / 126 CG 380 BR / 126 CG
	Ground Cover:	Wooded Wetland Establishment Seed Mix	**Amount:** 258.3 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast spreading at a rate of 44.53 lbs/acre followed by mulching and watering. Bare root seedlings are to be mechanically planted with 10-foot spacing with manual planting of container grown seedlings to occur between every 3rd and 4th bare root seedling, also with 10-foot spacing. All tree seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.	
Zone D Emergent Wetland	**Area:**	2.3 acres	
	Elevation:	423 to 424.25 feet	
	Ground Cover:	Emergent Wetland Seed Mix	**Amount:** 80 lbs
	Planting Guidelines:	Planting of the Emergent Wetland Seed Mix shall be by broadcast spreading at a rate of 34.78 lbs/acre or followed by mulching and watering.	
Zone E Upland Forest	**Area:**	3.0 acres	
	Elevation:	Varies (432-464)	
	Trees:	Red Oak White Oak Tuliptree Black Cherry	**Number:** 227 BR 227 BR 227 BR 227 BR
	Shrubs:	Serviceberry American Hazelnut Blackhaw	**Number:** 76 BR 76 BR 76 BR
	Ground Cover:	Annual Rye Grass Seed	**Amount:** 120 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Annual Rye Seed shall be by broadcast spreading at a rate of 40.0 lbs/acre followed by mulching and watering. Bare root seedlings are to be mechanically planted with 12-foot spacing. Bare root shrubs seedlings shall be planted with 6-foot spacing between every 4th and 5th tree seedling. All tree and shrub seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.	
Zone F Bottomland Forest	**Area:**	81.7 acres	
	Elevation:	Varies (425-432)	
	Trees:	Pin Oak Shumard Oak Bur Oak White Oak Shagbark Hickory Pecan	**Number:** 2,746 BR 2,746 BR 2,746 BR 2,746 BR 2,746 BR 2,746 BR

		Black Walnut Cottonwood American Elm	2,746 BR 2,746 BR 2,746 BR
	Shrubs:	Roughleaf Dogwood Gray Dogwood Common Winterberry Ninebark Nannyberry	**Number:** 1,242 BR 1,242 BR 1,242 BR 1,242 BR 1,242 BR
	Ground Cover:	Wooded Wetland Establishment Seed Mix	**Amount:** 3,639 lbs
	Planting Guidelines:	Prior to tree planting, the planting of the Wooded Wetland Establishment Seed Mix shall be by broadcast spreading at a rate of 44.53 lbs/acre followed by mulching and watering. Bare root seedlings are to be mechanically planted with 12-foot spacing. Bare root shrubs seedlings shall be planted with 6-foot spacing between every 4th and 5th tree seedling. All tree and shrub seedlings shall be planted randomly and equally throughout the zone in regards to species. The planting pattern shall be as specified in the plans.	
Zone G Stream Channel Bottom	**Area:**	2.0 acres	
	Elevations:	424 to 430 feet	
	Ground Cover:	Swale Seed Mix	**Amount:** 55 lbs
	Planting Guidelines:	Planting of Swale Seed Mix shall be by broadcast spreading at a rate of 27.72 lbs/acre followed by coconut fiber mat application and watering. Seeding of the Swale Seed Mix will cover the 4 foot bottom of each stream channel and 4 feet of the 4:1 sideslopes of each stream channel.	
Water Retention Berms	**Area:**	0.3 acres	
	Elevation:	425 feet at top of berms	
	Ground Cover:	Slope Stabilization Seed Mix	**Amount:** 17.3 lbs
	Planting Guidelines:	Planting of the Slope Stabilization Seed Mix shall be by broadcast spreading at a rate of 57.63 lbs/acre, followed by application of coconut fiber matting.	

C. FERTILIZERS

Planting Zones A through G will receive an application of 12-12-12 granular fertilizer in accordance with INDOT 2008 Standard Specification 914.03. Fertilizer will be uniformly spread over the mitigation area in Planting Zones A through G at a rate of 400 lbs/acre prior to or during final tilling. A total of 22.38 tons will be required for the mitigation site.

D. HERBICIDES

Since much of the mitigation site will be cleared of vegetation by grading and tilling, the use of herbicides as a pre-planting treatment is not anticipated for the site. Any herbicide utilized, if necessary, shall be per manufacturer’s recommendations.

E. MULCHING

Mulch material for Zones A, B, C, D, E, and F will conform to INDOT 2008 Standard Specifications 914.05(a). Material will be applied such that it covers the site at an average rate of 2 tons/acre. The mulch material shall be secured by crimping as per Specification 621.05(c) to hold the seed in place and prevent removal during periods of high water. Mulch shall be crimped into place immediately upon placement. Mulch will be applied in Planting Zones A, B, C, D, E, and F for a total of 220 tons.

F. COIR FIBER MATTING

Within Zone G, Coir Fiber Matting shall cover the 4 foot bottom of each stream channel and 4 feet of the 4:1 sideslopes on both sides of each stream channel. In addition, coir fiber matting shall cover the water retention berms proposed for the site. Coir Fiber Matting shall be a 100% coconut fiber (coir) twine woven into a high strength matrix which complies with the following specifications:

Thickness – 0.30 inch minimum (7.6 mm)
Tensile Strength – 1348 x 626 lb/ft minimum (1650.5 x 766.5 kg/m)
Elongation – 34% x 38% maximum
Flexibility (mg-cm) – 6503 x 29590
Flow Velocity Allowable – 11 ft/sec (3.35 m/s)
Weight – 20 oz/SY minimum (678 g/SM)
Open Area (measured) – 50%

Staples used to secure the matting shall be new steel wire of 0.125 inch diameter formed into a “U” shape not less than 12 inches in length with a throat of not less than 1 inch in width.

Coir Fiber Matting shall be installed immediately after the final grading. Prior to installation, the soil surface shall be smooth and free from stones, clods, or debris that will prevent contact of the matting with the soil. Matting shall be applied without stretching such that it will lie smoothly but loosely on the soil surface. The top slope end of each piece of matting shall be anchored in a narrow trench at least 6 inches deep. At the end of each roll and where edges are joined, the overlap shall be a minimum of 1 foot with the upstream roll placed over the downstream roll and the upslope roll placed over the downslope roll. The matting shall be secured using staples spaced according to manufacturer’s specifications.

G. WATERING

1. The Contractor shall conduct watering of the seeded areas (replace “seeded areas” so as to read “reseeded areas” if being conducted under the auspices of G2 of this provision) within the mitigation site at a frequency and duration such as to insure that 60 days after completion of the seeding activities (replace “seeding activities” so as to read “reseeding activities” if being conducted under the auspices of G2 of this provision) that for every square meter of ground there is 80% areal cover by herbaceous species. At the end of the 60 days should the INDOT ENGINEER, the INDOT Environmental Manager and the INDOT Landscape Architect determine that there is less than 80% areal cover they will determine whether or not the herbaceous species mortality is at least partially a result of inadequate watering.
2. Should the ENGINEER/Environmental Manager and Landscape Architect determine that the mortality is at least partially a result of inadequate watering the Contractor shall be responsible for reseeding the deficient area(s) in accordance with the relevant

sections of the planting plans and provisions for the Zone(s) in question. The Contactor shall conduct watering of the reseeded area(s) in accordance with the measures detailed in G1 of this specification and continue with reseeding of any deficient area(s) until this specification is satisfied. If irrigation is required for watering of this site, it is anticipated that water will be extracted from the East Fork of the White River utilizing a temporary water pump, provided an adequate water supply exists within the river channel at the time of watering. The pump and all necessary attachments/equipment shall be removed from the site immediately upon completion of watering activities.

H. DELINEATOR POSTS

The wetland and riparian mitigation areas will have 4 in x 4 in treated posts eight (8) feet in height placed 150 feet apart along the outside borders of these areas as identified in the plans. In addition, post will be placed every 400 feet around the north, south, and west boundary of the site between the “Do Not Mow or Spray” signs as shown on the plans. The posts shall be placed with two (2) feet buried and six (6) feet above ground level. Post material shall conform to INDOT 2008 Standard Specification 911.02(a). These posts will visually show the edge of the wetland and riparian mitigation areas for monitoring and compliance field inspections. A total of 160 posts will be placed along these borders.

I. SIGNAGE

“Do Not Mow or Spray” signs fashioned in accordance with INDOT 2008 Standard Specification 621.06(h) as per Specification 622.20, will be placed every 400 feet around the north, south, and west boundary of the mitigation site facing the adjacent parcels. The plans show the location of these signs. A total of 18 signs will be placed around the north, south and west property boundary of this mitigation site.

In addition, three (3) signs that identify this site as a Mitigation Site will be placed at specified locations according to the plans. The signs shall be constructed and designed in accordance with Standard Specification Section 802. These signs shall read:

INDOT Mitigation Property
Wetland, Stream, Forest,
and Floodway Habitat
Mitigation Site

and shall conform to the details as shown on the plans.

J. HABITAT POLE

A utility pole containing bat roosting structures shall be installed at the mitigation site. Prior to installation of the pole, the habitat structures shall be constructed and attached to the pole. The specifications of the habitat pole, details of the individual habitat structures, and location of the pole shall be as shown on the plans.

K. AS-BUILT PLANS

The CONTRACTOR shall prepare drawings showing the as-built conditions of the mitigation site, noting any deviation from the originally proposed plan and any previously unidentified features, including the locations of any tiles located and plugged during the construction. These drawings

shall be certified by a registered Professional Land Surveyor or Professional Engineer assuring that the information contained on the plans is true and accurate. An electronic CAD version of these plans in Indiana State Plane Coordinates, West Zone shall be furnished to the INDOT Office of Environmental Services in addition to the original hard copies.

L. WARRANTY OF WORK

The CONTRACTOR shall guarantee the survival of, and replant if necessary, the plantings within the mitigation site for a period of two (2) years upon completion and acceptance of the mitigation site. The CONTRACTOR shall guarantee 100% ground cover resulting from the planted seed mixes within all planting zones and an overall survival rate of 85% for all planted tree and shrub species at the end of this two (2) year time period. In addition, the CONTRACTOR shall provide any means necessary (e.g. herbicide treatment) to remove any invasive species that may grow within the mitigation site for a period of two (2) years upon completion and acceptance of the mitigation site. Invasive species are defined as any vegetation detrimental to the establishment of desired species planted in the mitigation site.

The determination to implement invasive species control or replanting/reseeding if necessary shall be at the discretion of INDOT or their designated representative. Replacement seed and/or plantings used for over-seeding/replanting shall be the same variety and species installed, unless directed otherwise by INDOT or their designated representative. This work shall be completed in accordance with the INDOT Standard Specifications, 2008 and this Special Provision, by the CONTRACTOR, at no additional cost.

The warranty period shall be initiated by the acceptance of the mitigation site. The warranty period shall extend two (2) years from the date of the acceptance. A Warranty Bond shall be required for this two (2) year period and shall be posted by the CONTRACTOR in favor of INDOT. The minimum amount for this warranty bond shall be for 150% of the total cost of the warranted items. The warranty bond shall be provided within 14 days of the acceptance of the mitigation site.

M. BASIS OF PAYMENT

The cost associated with constructing the water control berms and the ephemeral stream channels will be paid for at the contract unit price per cubic yard of common excavation. The cost associated with furnishing the necessary stone and materials for the construction entrance(s), as well as, installation of the construction entrance(s) shall not be paid for directly, but will be included in the cost of common excavation. The cost associated with tilling the mitigation site per this special provision will not be paid for directly, but will be included in the cost of common excavation. The cost associated with temporary seeding if necessary will not be paid for directly, but will be included in the cost of common excavation.

Payment will be made under:

Common Excavation..... CYS

The cost of furnishing and seeding the mixtures listed below (and as specified above) for permanent ground cover will be paid for as "Seed Mixture, Type" at the contract unit price per pound based on pure live seed. The cost of any watering necessary to ensure adequate ground cover, as specified above, shall not be paid for directly but will be included in

the cost of the seed mixtures. The cost associated with the posting of the warranty bond, as specified above, will not be paid for directly but will be included in the cost of the seed mixtures.

Payment will be made under:

Seed Mixture, Wooded Wetland Establishment..... LBS
Seed Mixture, Emergent Wetland..... LBS
Swale Seed Mix..... LBS
Annual Rye Seed..... LBS
Seed Mixture, Slope Stabilization..... LBS

The cost of furnishing and seeding annual ryegrass for temporary erosion control, if necessary, will not be paid for directly, but will be included in the cost of common excavation.

The cost of furnishing and planting the bare root tree and shrub seedling species and the 3-gallon container grown tree species listed below will be paid for at the contract unit price per each seedling. The cost of fertilizer, and mulching material needed for the seedlings will not be paid directly but will be included in the cost of the seedlings. The cost of any watering necessary to ensure adequate survival rates, as specified above, shall not be paid for directly but will be included in the cost of the tree and shrub seedlings. The cost associated with the posting of the warranty bond, as specified above, will not be paid for directly but will be included in the cost of the tree and shrub seedlings.

Tree, Shellbark Hickory
Tree, Tuliptree
Tree, Swamp White Oak
Tree, American Elm
Tree, Shumard Oak
Tree, Sweetgum
Tree, Red Oak
Tree, River Birch
Tree, Pin Oak
Tree, Black Cherry
Tree, Silver Maple
Tree, Cottonwood
Tree, Sycamore
Tree, Pecan
Tree, Bur Oak
Tree, White Oak
Tree, Shagbark Hickory
Tree, Black Walnut
Shrub, Pale Dogwood
Shrub, Common Spicebush
Shrub, Elderberry
Shrub, Serviceberry
Shrub, American Hazelnut
Shrub, Blackhaw
Shrub, Roughleaf Dogwood
Shrub, Gray Dogwood
Shrub, Common Winterberry
Shrub, Ninebark
Shrub, Nannyberry

Payment will be made under:

Seedling, Bare Root..... EACH

Seedling, Container Grown..... EACH

The cost of providing and applying the fertilizer to the seeded areas in Zones A through G as specified above will be paid for at the contract unit price per pound of Fertilizer.

The cost of providing and applying the mulching material as specified above shall be paid for at the contract unit price per ton of Mulching Material.

Payment will be under:

Fertilizer..... LBS
Mulching Material..... TON

The cost of providing the specified “Do Not Mow or Spray” signs shall be paid for at the contract unit price per each sign.

The cost of providing the specified “Mitigation Site” identification signs as stated above shall be paid for at the contract unit price per each sign.

Payment will be made under:

Sign, Do Not Mow or Spray..... EACH
Sign, Mitigation Site Identification..... EACH

The cost of performing the tile exploration trenching and the removal/disabling of any tiles that are found shall be paid for at the contract unit price per linear foot of trenching.

Payment will be made under:

Tile Intercept Trench Excavation and Location..... LFT

The cost of furnishing and installing the coir fiber matting for erosion control on the berms and within Zone G shall be paid for at the contract unit price per square yard of material.

The cost of furnishing and installing the silt fence for sediment runoff control shall be paid for at the contract unit price per linear feet of silt fence.

Payment will be made under:

Coir Fiber Matting (100% Coconut Fiber)..... SY
Silt Fence..... LFT

The cost of removing the refuse and appropriate disposal as specified above shall be paid for at the contracted lump sum amount.

Payment will be made under:

Refuse Removal..... LS

The cost constructing and installing the habitat pole as shown in the plans shall be paid for at the contracted lump sum amount.

Payment will be made under:

Habitat Pole..... EACH

The cost of providing the As-Built Plans as specified above shall be included in the cost of the Construction Engineering for the site and paid for at the contracted lump sum amount.

Payment will be made under:

Construction Engineering..... LS

The cost associated with the pressure-washing of equipment prior to use on the site, as specified above, shall be included in the cost of Mobilization and Demobilization.

Payment will be made under:

Mobilization and Demobilization..... LS

Table 1: Wooded Wetland Establishment Seed Mix (Zones A, B, C, and F) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Calamagrostis Canadensis	bluejoint grass	OBL	1.00
Carex crinita	fringed sedge	FACW+	2.00
Carex lupulina	common hop sedge	OBL	4.00
Carex lurida	bottlebrush sedge	OBL	1.50
Carex squarrosa	narrow-leaved cattail sedge	OBL	2.00
Carex sparganioides	rough-clustered sedge	FAC	1.50
Carex typhina	common cattail sedge	OBL	2.00
Carex vulpinoidea	brown fox sedge	OBL	4.00
Elymus virginicus	Virginia wild rye	FACW-	20.00
Glyceria striata	fowl manna grass	OBL	2.00
Leersia oryzoides	rice cut grass	OBL	2.00
Scirpus atrovirens	dark green rush	OBL	2.00
Spartina pectinata	prairie cord grass	FACW+	1.00
Temporary Cover			
Avena sativa	common oat	*NL	537.00
Lolium multiflorum	annual rye	FACU	112.00
Forbs			
Alisma spp.	water plantain (various mix)	NL	3.00
Angelica altropurpurea	great alngelica	OBL	1.00
Aster puniceus	bristly aster	OBL	0.75
Aster umbellatus	flat-top aster	FACW	0.25
Bidens cernua	nodding bur marigold	OBL	2.50
Campanula americanus	tall bellflower	NL	0.25
Cephalanthus occidentalis	buttonbush	OBL	0.50
Helenium autumnale	sneezeweed	FACW+	2.00
Heracleum lanatum	cow parsnip	NL	0.75
Hibiscus moscheutos	swamp rose mallow	OBL	2.00
Lobelia siphilitica	great blue lobelia	FACW+	1.50
Mimulus ringens	monkey flower	OBL	1.25
Rudbeckia laciniata	wild golden glow	FACW+	0.75
Verbesina alternifolia	wingstem	FACW	2.00
Total			**712.50 oz/acre 44.53 lbs/acre**

Table 2: Emergent Wetland Seed Mix (Zone D) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Carex comosa	bristly sedge	OBL	2.50
Carex lacustris	common lake sedge	OBL	0.25
Carex lurida	bottlebrush sedge	OBL	4.00
Carex vulpinoidea	brown fox sedge	OBL	6.00
Eleocharis ovata	blunt spike rush	OBL	1.00
Juncus effusus	common rush	OBL	1.00
Leersia orzyoides	rice cut grass	OBL	3.00
Scirpus acutus	hard-stemmed bulrush	OBL	2.50
Scirpus pungens	chairmaker's rush	NO	4.00
Scirpus validus	great bulrush	OBL	6.00
Temporary Cover			
Avena sativa	common oat	*NL	360.00
Lolium multiflorum	annual rye	FACU	104.00
Forbs			
Acorus calamus	sweet flag	OBL	1.00
Asclepias incarnata	swamp milkweed	OBL	1.50
Alisma spp.	water plantain (various mix)	NL	2.00
Cephalanthus occidentalis	buttonbush	OBL	1.00
Decodon verticillatus	swamp loosestrife	OBL	1.25
Eupatorium maculatum	spotted joe-pye weed	OBL	0.50
Hibiscus spp.	rosemallow (various mix)	*NL	3.00
Iris virginica	blue-flag iris	OBL	6.00
Lobelia cardinalis	cardinal flower	OBL	0.25
Lobelia siphilitica	great blue lobelia	FACW+	1.50
Ludwigia alternifolia	seedbox	OBL	0.25
Mimulus ringens	monkey flower	OBL	1.00
Peltandra virginica	arrow arum	OBL	16.00
Pontederia cordata	pickerel weed	OBL	10.00
Sagittaria latifolia	broad-leaved arrowhead	OBL	2.00
Sparganium americanum	American bur reed	OBL	2.00
Sparganium eurycarpum	common bur reed	OBL	4.00
Verbena hastata	blue vervain	FACW+	1.00
Zizania aquatica	wild rice	OBL	8.00
Total			**556.50 oz/acre 34.78 lbs/acre**

Table 3: Swale Seed Mix (Zone G) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Andropogon gerardii	big bluestem	FAC-	12.00
Carex comosa	bristly sedge	OBL	2.00
Carex cristatella	crested oval-sedge	FACW+	2.00
Carex lurida	bottlebrush sedge	OBL	2.50
Carex sparganioides	rough-clustered sedge	FAC	3.00
Carex vulpinoidea	brown fox sedge	OBL	3.00
Elymus virginicus	Virginia wild rye	FACW-	8.00
Glyceria striata	fowl manna grass	OBL	1.00
Panicum virgatum	switch grass	FAC+	2.00
Scirpus atrovirens	dark green rush	OBL	2.00
Scirpus cyperinus	wool grass	OBL	0.50
Spartina pectinata	prairie cord grass	FACW	2.50
Temporary Cover			
Avena sativa	common oat	*NL	360.00
Lolium multiflorum	annual rye	FACU	28.00
Forbs			
Alisma spp.	water plantain (various mix)	NL	1.00
Asclepias incarnate	swamp milkweed	OBL	2.00
Aster novae-angliae	New England aster	FACW	0.50
Coreopsis tripteris	tall coreopsis	FAC	2.00
Eupatorium maculatum	spotted joe-pye weed	OBL	0.25
Iris virginica	blue flag iris	OBL	3.00
Liatris spicata	marsh blazing star	FAC	2.00
Lobelia cardinalis	cardinal flower	OBL	0.25
Lobelia siphilitica	great blue lobelia	FACW+	0.50
Sagittaria latifolia	broad-leaved arrowhead	OBL	0.75
Silphium terebinthinaceum	prairie dock	FAC-	1.00
Verbena hastate	blue vervain	FACW+	1.00
Zizia aurea	golden alexanders	FAC+	0.75
Total			**443.5 oz/acre 27.72 lbs/acre**

Table 4: Slope Stabilization Seed Mix (Berms) and Indicator Status			
Scientific Name	**Common Name**	**Indicator Status**	**Ounces/Acre**
Permanent Grasses/Sedges/Rushes			
Andropogon gerardii	Big Bluestem	FAC-	48.00
Bouteloua curtipendula	Side-Oats Gramma	*NL	32.00
Carex sparganioides v. cephaloidea	Rough-Clustered Sedge	FAC	4.00
Elymus canadensis	Canada Wild Rye	FAC-	32.00
Panicum virgatum	Switch Grass	FAC+	8.00
Schizachyrium scoparium	Little Bluestem	FACU-	32.00
Sorghastrum nutans	Indian Grass	FACU+	32.00
Temporary Cover			
Avena sativa	common oat	*NL	512.00
Lolium multiflorum	annual rye	FACU	222.00
Total			**734.00 oz/acre 57.63 lbs/acre**

Appendix P

Mitigation Site Documentation

Mitigation Property Report

Property: I-69 Section 2

Property Identification

Tract ID: I69-2-013

Tract Name 1

Tract Name 2 N/A

Owner Barbara

Manager Future INDOT

Property Location

County	Section	Township	Range	Indiana Bat Maternity Colony
Daviess				
Political Township Washington	12	2N	7W	Veale Creek

Mitigation Summary

Total Property Acres 39*

Wetlands

Anticipated Credits	1.8	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forests

Anticipated Credits	36.5	Acres
Approved Credits	0	Acres
Potential Excess	0	Acres

Upland Forest (Section 7) Breakdown

Reforested	**17.8**	**Acres**
Preserved	**18.7**	**Acres**

Streams

Anticipated Credits	3,155	Feet
Approved Credits	0	Feet
Potential Excess	0	Feet

Wetland Breakdown

	Anticipated Credits	Approved Credits	Potential Excess	
Emergent	0	0	0	Acres
Forested	1.8	0	0	Acres
Scrub-Shrub	0	0	0	Acres
Aquatic Bed	0	0	0	Acres
Open Water	0	0	0	Acres

Hydrology

Basin Patoka-White **8-Digit HUC** 05120202 **14-Digit HUC** 05120202090030

Current Status

Project Phase Acquisition **Purchased** No **Purchase Type** N/A **Constructed** No **Begin Construction Date** N/A

Designed No **End Construction Date** N/A

Comments Anticipated mitigation credits are based on a conceptual mitigation plan only. Actual mitigation amounts may vary upon final design.

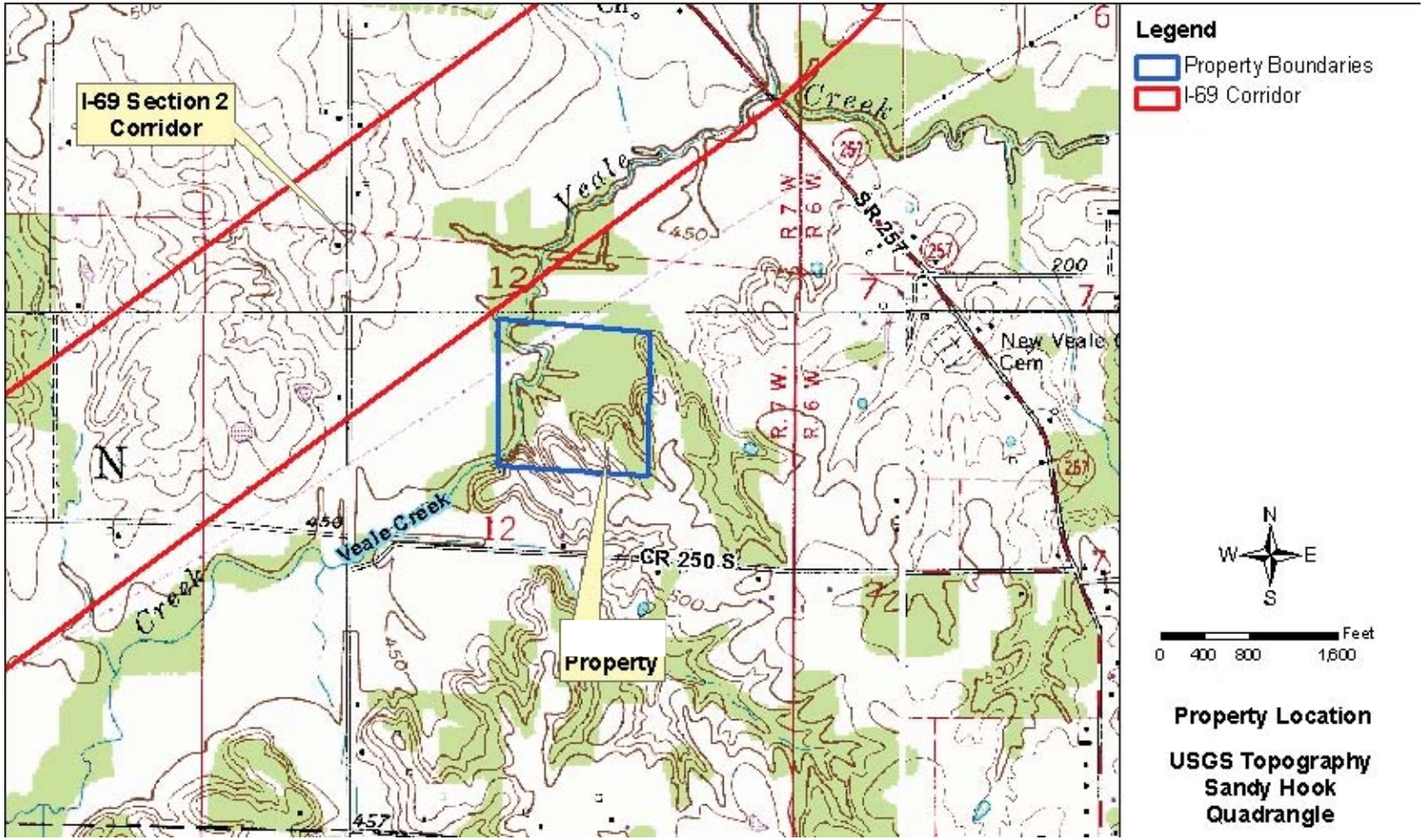
*Balance of property acreage other than forest and wetland mitigation consists of a 1.7 acre electric power line easement.

Mitigation Property Report

Property: I-69 Section 2

Property Location Map

Tract ID I69-2-013 **Tract Name**



Mitigation Property Report

Property: I-69 Section 2

Property Detail Map

Tract ID I69-2-013 **Tract Name**

Property Detail Map has been removed for confidentiality reasons related to the federally endangered Indiana bat (*Myotis sodalis*)

Note: Planting zones and mitigation design plans are conceptual only. Mitigation acreages and actual planting zones may vary upon final design.

Mitigation Property Report

Property: I-69 Section 2

Site Photographs

Tract ID I69-2-013
Tract Name

Phase Pre-Construction
Year 2008

1

View of small field near S edge of property, facing E - 5/7/08

2

View of Forested Preservation Area, facing N - 5/7/08

3

View of Large Field, facing N - 5/7/08

4

View of SE Field, facing E - 5/7/08

5

View of Large Field, facing NW - 5/7/08

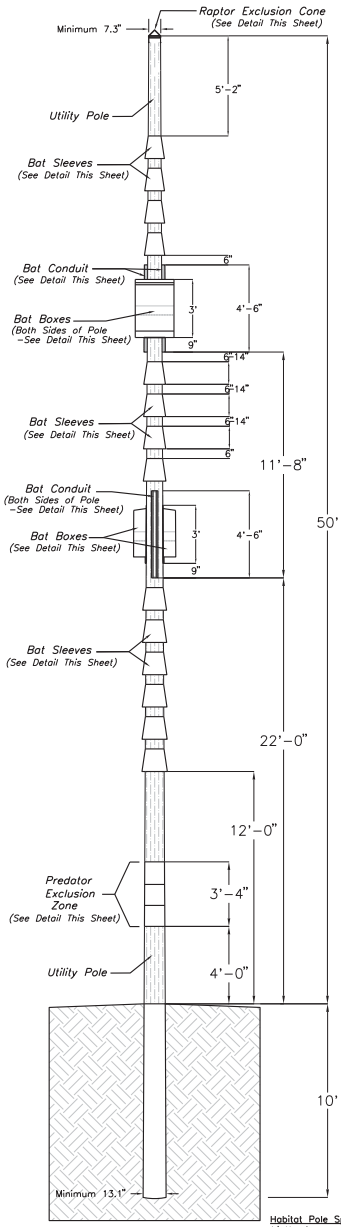
6

View of Large Field, facing N - 5/7/08

Appendices Q and R have been removed because the mitigation properties are still undergoing the acquisition process

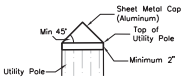
APPENDIX S

Bat Habitat Pole Plan



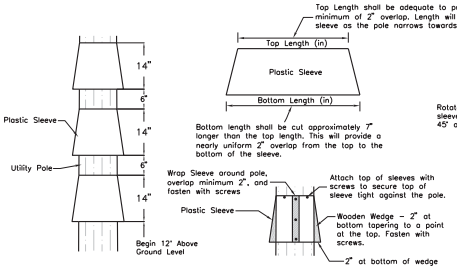
HP HABITAT POLE

Habitat Pole Specifications:
1.) Materials
- Wood Class 3 (or larger) Utility Pole, 60 feet tall
  Note: Utility pole must meet minimum ANSI requirements for Class 3 poles
2.) Method
- Attach all habitat roost structures to the utility pole (see details this sheet)
- Install the utility pole 10 feet below ground level with 50 feet above ground level



RP RAPTOR EXCLUSION CONE

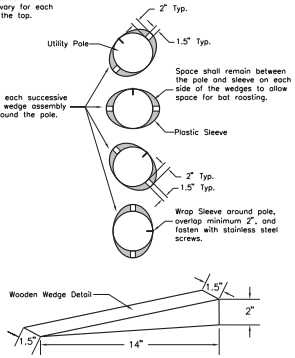
Raptor Exclusion Cone Specifications:
1.) A cone constructed of aluminum sheet metal shall be attached to the top of the pole to prevent roosting of raptors.
2.) Aluminum cone shall be constructed from minimum Gauge 20 (0.032 inch) thickness aluminum.
3.) Cone shall have a slope of 45° or steeper.
4.) Seams shall be sealed and riveted.
5.) Cone shall slide onto the top of the pole a minimum of 2".
6.) Cone shall be fastened to the pole using stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)

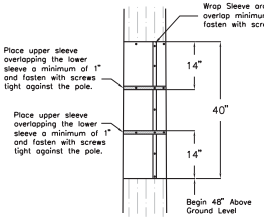


BS BAT SLEEVES

Bat Sleeve Specifications:
1.) Materials
- Heavy grade black polyethylene animal guard (supplied in 14" x 16' roll)
  - Polyethylene material shall be a minimum of 0.035" thick
- Vendors may include but are not limited to:
  - Reed City Power Line Supply (Mooresville, IN)
  - Osmose Utility Services (http://osmoseutilities.com/cms/repository/media/2008_Products_Catalog.pdf)
- Stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)
  - Longer screws of varying lengths shall be used for attachment of wooden wedges to allow for a minimum of 1" penetration into the utility pole (Minimum No. 8 Diameter screws).
- Treated 2" x 4" lumber (for wedges) per INDOT 2008 Standard Specification 911.02.
- References to 2" x 4" lumber are nominal sizes, actual dimensions are 1-1/2" x 3-1/2"

2.) Method
- Cut wooden wedges out of 2" x 4" treated boards
  - Wedges shall be 2" tall at base, tapering to a point at the top, per detail this sheet
- Attach wedges on opposite sides of the pole using screws
- Cut plastic sleeve to length to allow for a minimum 2" overlap at the top and bottom (see calculations above)
- Wrap the plastic sleeve around the pole and wedges
- Fasten the sleeve to the pole with the top of the sleeve tight around the entire pole
- Install screws into the overlapped portion of the sleeve
- Bottom of lowest bat sleeve shall be approximately 12' above ground level

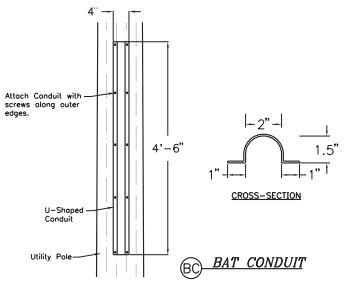




PE PREDATOR EXCLUSION ZONE

Predator Exclustion Zone Specifications:
1.) Materials
- Heavy grade black polyethylene animal guard (supplied in 14" x 16' roll)
  - Polyethylene material shall be a minimum of 0.035" thick
- Stainless steel wood screws (Minimum 1-1/4" Length and No. 8 Diameter)

2.) Method
- Cut plastic sleeve to length to allow for a minimum 1" overlap
- Wrap the lowest plastic sleeve tight around the pole with the bottom approximately 48" above ground level
- Fasten the sleeve to the pole with screws along the overlap
- Wrap the subsequent sleeves with 1" overlapping the lower sleeve and fasten along the top and within the overlap of each sleeve

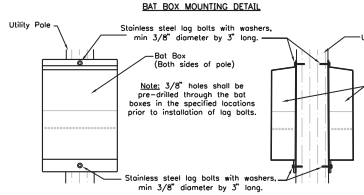


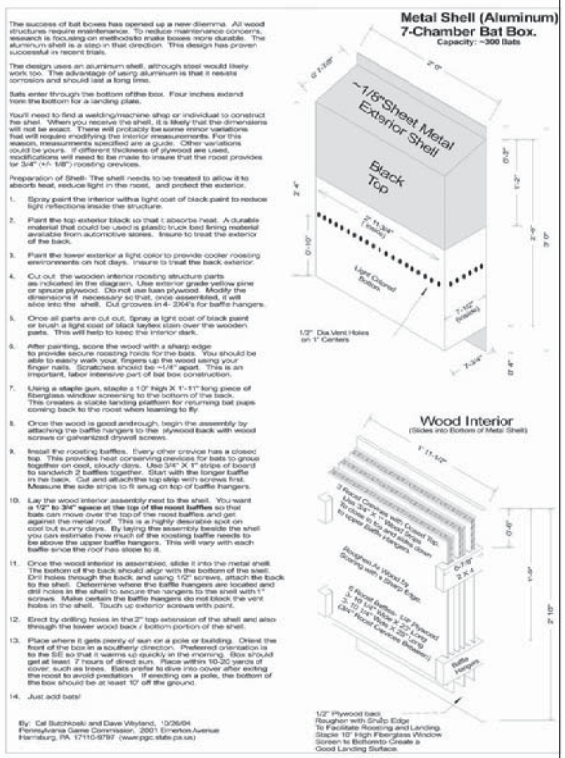
BC BAT CONDUIT

Bat Conduit Specifications:
1.) Materials
- Plastic U-shaped conduit
- Stainless steel wood screws (Minimum 2" Length and No. 8 Diameter)

2.) Method
- Cut 4 pieces of conduit to 4.5 feet in length
- Attach 2 conduit strips, one on each side of the pole, with the bottom elevation at 22 feet above ground level
- Attach the remaining 2 conduit strips at 90° angle from the first set of conduit, with a bottom elevation of 33 feet-8 inches above ground level
- Conduit shall be attached with screws along each edge

BAT BOX MOUNTING DETAIL





BB BAT BOX

Bat Box Specifications:
1.) A total of 4 Bat Boxes shall be assembled and installed per these plans with aluminum exterior shells.
2.) Aluminum exterior shells shall be constructed from the following minimum gauge (thickness) aluminum:
- Back of Bat Box Shell: Gauge 3 (0.2294 inch)
- Front, Sides, and Top of Bat Box Shells: Gauge 8 (0.1285 inch)

2.) Attach 2 bat boxes, one on each side of the pole per the detail above, with a bottom elevation of 22'-9" above ground level.
3.) Attach the remaining 2 bat boxes per the detail above, 90° from the first set of boxes at a bottom elevation of 33'-5" above ground level.

Vendor:
- Vendors of the constructed bat boxes may include but are not limited to this vendor:
  Environmental Solutions and Innovations, Inc., 781 Neeb Rd.,Cincinnati, OH 45233

Source:
- This bat box design was created by:
  Cal Butchkoski and Dave Wayland, Pennsylvania Game Commission, 2001 Elmerton Avenue, Harrisburg, PA 17110-9797 (www.pgc.state.pa.us)

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE	BRIDGE FILE
		VERTICAL SCALE	DESIGNATION
DESIGNED: _____ DRAWN: _____ CHECKED: _____ CHECKED: _____	HABITAT POLE DETAILS	SURVEY BOOK	SHEETS
			of
		CONTRACT	PROJECT

S:\Surveys\101-0001\2008_Wetlands\BAT ROOST DETAILS.dwg 11/03/09 10:30 mmiha