

Bridge Inspection Report

036-49-03898 AEBL
US 36 EB
over
LITTLE WHITE LICK CREEK



Inspection Date: 03/03/2022

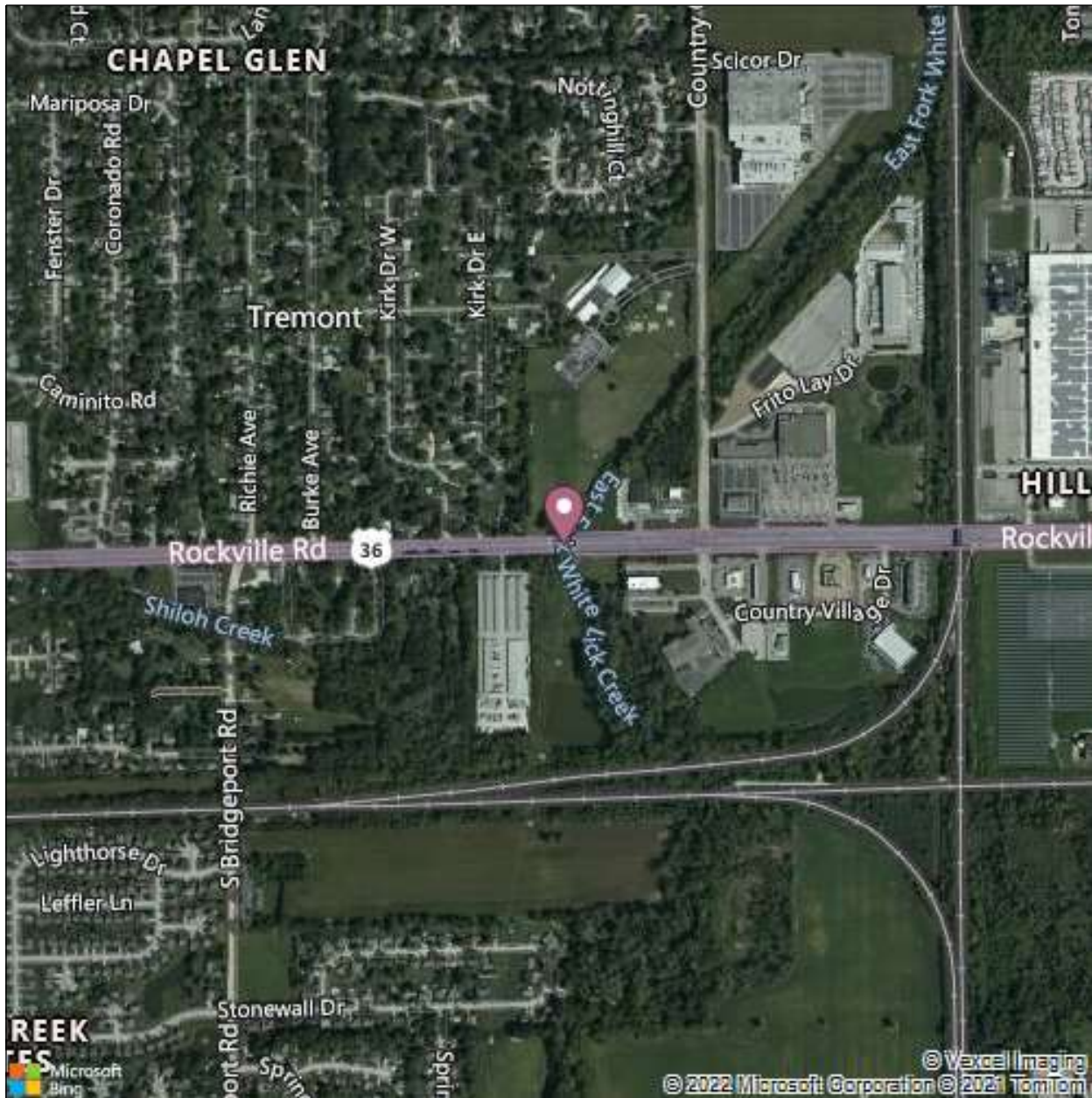
Inspected By: Travis Smith

Inspection Type(s): Routine

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



Latitude: 39.76402
Longitude: -86.31075

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



Latitude: 39.76402
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Bridge Inspection Report

General Notes:

As of 7/1/13, the district boundary between the Crawfordsville and Greenfield districts was officially re-aligned to match the Western border of Marion County. Thus, all bridges previously inspected by Crawfordsville in Marion County became Greenfield district bridges. However, in an effort to level out the workload between districts, the State Bridge Inspection Manager had the Crawfordsville district continue to inspect these structures, even though they were technically now part of the Greenfield district. In March of 2020, the inspection of these bridges was given to Greenfield. Str. #36-49-3898 AEBL is one of these bridges.

Bent #1 is WEST.

The bridge was built in 1976 w/ 2" Bituminous overlay, under contract R-10034.
'A' Rehab (Replaced approach slabs, longitudinal & transverse joints, New latex concrete overlay & Added Concrete barrier) in 1991, B-19601.

DES. #1900340 - Programmed to be widened in 2023, contract R-41781.

Inspector: Travis Smith
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Bridge Inspection Report

IDENTIFICATION

(1) STATE CODE:	185 - Indiana	(12) BASE HIGHWAY NETWORK:	1
(8) STRUCTURE:	011680	(13A) INVENTORY ROUTE:	0000000001
(5 A-B-C-D-E) INV. ROUTE:	1 - 2 - 1 - 00036 - 0	(13B) SUBROUTE NUMBER:	01
(2) HIGHWAY AGENCY DISTRICT:	03 - Greenfield	(16) LATITUDE:	39.76402
(3) COUNTY CODE:	049 - MARION	(17) LONGITUDE:	-86.31075
(4) PLACE CODE:	36000 - INDIANAPOLIS	(98) BORDER	
(6) FEATURES INTERSECTED:	LITTLE WHITE LICK CREEK	A) STATE NAME:	
(7) FACILITY CARRIED:	US 36 EB	B) PERCENT	%
(9) LOCATION:	02.30 W I-465	(99) BORDER BRIDGE STRUCT. NO:	
(11) MILEPOINT:	0000.860		

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE, MAIN:		(45) NUMBER OF SPANS IN MAIN 003 UNIT:	
A) KIND OF MATERIAL/DESIGN:	2 - Concrete continuous	(46) NUMBER OF APPROACH SPANS:	0000
B) TYPE OF DESIGN/CONSTR:	01 - Slab	(107) DECK STRUCTURE TYPE:	1 - Concrete Cast-in-Place
(44) STRUCTURE TYPE, APPROACH SPANS:		(108) WEARING SURFACE/PROT SYS:	
A) KIND OF MATERIAL/DESIGN:	0 - Other	A) WEARING SURFACE:	3 - Latex Concrete or similar additive
B) TYPE OF DESIGN/CONSTR:	00 - Other	B) DECK MEMBRANE:	0 - None
		C) DECK PROTECTION:	0 - None

AGE OF SERVICE

(27) YEAR BUILT:	1976	(28) LANES:	
(106) YEAR RECONSTRUCTED:	1991	A) ON BRIDGE:	02
(42) TYPE OF SERVICE:		B) UNDER BRIDGE:	00
A) ON BRIDGE:	1 - Highway	(29) AVERAGE DAILY TRAFFIC:	024998
B) UNDER BRIDGE:	5 - Water way	(30) YEAR OF AVERAGE DAILY TRAFFIC:	2019
		(109) AVERAGE DAILY TRUCK TRAFFIC:	05 %
		(19) BYPASS DETOUR LENGTH:	001 MI

Inspector: Travis Smith
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GEOMETRIC DATA

(48) LENGTH OF MAX SPAN: 0048.0 FT	(35) STRUCTURE FLARED: 0 - No flare
(49) STRUCTURE LENGTH: 00121.5 FT	(10) INV RTE, MIN VERT CLEARANCE: 99.99 FT
(50) CURB/SIDEWALK WIDTHS:	(47) TOT HORIZ CLEARANCE: 041.7 FT
A) LEFT 00.0 FT	(53) VERT CLEAR OVER BR RDWY: 99.99 FT
B) RIGHT: 00.0 FT	(54) MIN VERTICAL UNDERCLEARANCE:
(51) BRDG RDWY WIDTH CURB-TO-CURB: 041.7 FT	A) REFERENCE FEATURE: N
(52) DECK WIDTH, OUT-TO-OUT: 043.2 FT	B) MIN VERT UNDERCLEAR: 00.00 FT
(32) APPROACH ROADWAY 042.0 FT	(55) LATERAL UNDERCLEARANCE RIGHT:
(33) BRIDGE MEDIAN: 0 - No median	A) REFERENCE FEATURE: N
(34) SKEW: 00 DEG	B) MIN LATERAL UNDERCLEAR: 000.0 FT
	(56) MIN LATERAL UNDERCLEAR ON LEFT: 00.0 FT

INSPECTIONS

(90) INSPECTION DATE: 03/03/2022	(91) DESIGNATED INSPECTION FREQUENCY: 24 MONTHS
(92) CRITICAL FEATURE INSPECTION:	(93) CRITICAL FEATURE INSPECTION DATE:
A) FRACTURE CRITICAL REQUIRED/FREQUENCY: N	A) FRACTURE CRITICAL DATE:
B) UNDERWATER INSPECTION REQUIRED/FREQUENCY: N	B) UNDERWATER INSP DATE:
C) OTHER SPECIAL INSPECTION REQUIRED/FREQUENCY: N	C) OTHER SPECIAL INSP DATE:

CONDITION

(58) DECK: 6 - Satisfactory Condition (minor deterioration)	(60) SUBSTRUCTURE: 7 - Good Condition (some minor problems)
(58.01) WEARING SURFACE: 6 - Satisfactory Condition	(61) CHANNEL/CHANNEL PROTECTION: 6 - Bank slump. widespread minor damage
(59) SUPERSTRUCTURE: 6 - Satisfactory Condition (minor deterioration)	(62) CULVERTS: N - Not Applicable

CONDITION COMMENTS

(58) DECK: 6 - Satisfactory Condition (minor deterioration)

Comments:
 See Superstructure.

(58.01) WEARING SURFACE: 6 - Satisfactory Condition

Comments:
 Wearing surface: some fairly wide longitudinal cracks (~120'); some fairly wide transverse cracks (60').

Inspector: Travis Smith
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Asset Name: 036-49-03898 AEBL
 Facility Carried: US 36 EB

Bridge Inspection Report

(59) SUPERSTRUCTURE: 6 - Satisfactory Condition (minor deterioration)

Comments:

3-span Continuous Reinforced Concrete Slab:

South coping - large areas repointed along bottom edge with longitudinal cracks & delaminations (span A - 36', span B - 30', span C - 36') - some areas spalling w/ rebar exposed (10' in span A & 8' in span C);

End spans - longitudinal cracking near centerline with minor delaminations, rust-staining & efflorescence (36' in span A, 20' in span C) - some spalls due to lack of cover in span C;

Longitudinal joint - repointing, fairly wide longitudinal cracks & delaminations (span A - 33', span B - 38', span C - 36') - 5' spalled w/ rebar exposed span A.

(60) SUBSTRUCTURE: 7 - Good Condition (some minor problems)

Comments:

Pier stems: minor vertical cracks; repointed area at South end of Pier #3 starting to spall off (1').

(61) CHANNEL/CHANNEL PROTECTION 6 - Bank slump. widespread minor damage

Comments:

Channel flows from North to South below the bridge.

5' high bank erosion - from South end of Pier #3 heading South past ROW.

Rip rap at end bents.

(62) CULVERTS: N - Not Applicable

Comments:

LOAD RATING AND POSTING

(31) DESIGN LOAD:	5 - HS 20	(66) INVENTORY RATING:	0.843
(70) BRIDGE POSTING	5 - Equal to or above legal loads	(65) INVENTORY RATING METHOD:	8 - Load and Resistance Factor Rating (LRFR) rating report by rating factor (RF) method using HL-93 loadings.
(41) STRUCTURE OPEN/POSTED/CLOSED:	A - Open	(66B) INVENTORY RATING (H):	
(64) OPERATING RATING:	1.093	(66C) TONS POSTED :	
(63) OPERATING RATING METHOD:	8 - Load and Resistance Factor Rating (LRFR) rating report by rating factor (RF) method using HL-93 loadings.	(66D) DATE POSTED/CLOSED:	

APPRAISAL

SUFFICIENCY RATING:	92.7	(36) TRAFFIC SAFETY FEATURE:	
STATUS:	0	36A) BRIDGE RAILINGS:	1
(67) STRUCTURAL EVALUATION:	6	36B) TRANSITIONS:	0
(68) DECK GEOMETRY:	7	36C) APPROACH GUARDRAIL:	0
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL:	N	36D) APPROACH GUARDRAIL ENDS:	1

(71) WATERWAY ADEQUACY: 9 - Bridge Above Flood Water Elevations

Comments:

High Water Elevation = 768.4

Low Concrete Elevation = 770.38

(72) APPROACH ROADWAY ALIGNMENT: 8 - Equal to present desirable criteria

Comments:

Inspector: Travis Smith
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Asset Name: 036-49-03898 AEBL
 Facility Carried: US 36 EB

Bridge Inspection Report

(113) SCOUR CRITICAL BRIDGES: 8 - Stable for scour conditions

Comments:

Piles, minor scour @ piers #2 & 3, in-filling under Span B. Bridge is stable for scour conditions.

CLASSIFICATION

(20) TOLL:	3 - On Free Road	(21) MAINT. RESPONSIBILITY:	01 - State Highway Agency
(22) OWNER:	01 - State Highway Agency	(26) FUNCTIONAL CLASS OF INVENTORY RTE:	12 - Urban - Principal Arterial - Other Freeway or Expressway
(37) HISTORICAL SIGNIFICANCE:	5 - Not eligible	(100) STRAHNET HIGHWAY:	Not a STRAHNET route
(101) PARALLEL STRUCTURE:	R - Right structure (North or East)	(102) DIRECTION OF TRAFFIC:	1-way traffic
(103) TEMPORARY STRUCTURE:		(104) HIGHWAY SYSTEM OF INVENTORY ROUTE:	1 - Structure/Route is on NHS
(105) FEDERAL LANDS HIGHWAYS:	0-Not Applicable	(110) DESIGNATED NATIONAL NETWORK:	Inventory route on National Truck Network
(112) NBIS BRIDGE LENGTH:	Yes		

NAVIGATION DATA

(38) NAVIGATION CONTROL:	0 - No navigation control on waterway (bridge permit not required)	(39) NAVIGATION VERTICAL CLEAR:	000.0 FT
(111) PIER OR ABUTMENT PROTECTION:		(116) MINIMUM NAVIGATION VERT. CLEARANCE, VERT. LIFT BRIDGE:	FT
		(40) NAV HORIZONTAL CLEARANCE:	0000.0 FT

PROPOSED IMPROVEMENTS

(75A) TYPE OF WORK:		(95) ROADWAY IMPROVEMENT COST:	\$ 000000
(75B) WORK DONE BY:		(96) TOTAL PROJECT COST:	\$ 000000
(76) LENGTH OF IMPROVEMENT:	000000 FT	(97) YR OF IMPROVEMENT COST EST:	
(94) BRIDGE IMPROVEMENT COST:	\$ 000000	(114) FUTURE AVG DAILY TRAFFIC:	023925
		(115) YR OF FUTURE ADT:	2034

Inspector: Travis Smith
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 Facility Carried: US 36 EB

Bridge Inspection Report

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
38 - Reinforced Concrete Slab	2 - Low	5249	sq. ft.	4984	265	0	0
Slab Area = Lo x Wo 121.50' X 43.20' = 5248.80 SF							
510 - Wearing Surfaces		5067	sq. ft.	4887	180	0	0
Wearing Surface Area = Lo x Wc 121.50' X 41.70' = 5066.55 SF							
210 - Reinforced Concrete Pier Wall	2 - Low	86	ft.	85	1	0	0
Tot. wall length = Np x (Wo / cos(π / 180 x Sk) - 2 x Lh) 2 EA X (43.200 LF/cos(π / 180 x 0.00000) - 2 EA x 0.00 LF) = 86.40 LF 2 Piers X 43.20' = 86.40 LF							
215 - Reinforced Concrete Abutment	2 - Low	86	ft.	86	0	0	0
Abuts. Length = 2 EA x Wo / cos(π / 180 x Sk) 2 Abutments X 43.200 LF/cos(π / 180 x 0.00000) 2 Abutments X 43.20' = 86.40 LF End bents are identified as abutments for Element Level inspections.							
302 - Compression Joint Seal	2 - Low	86	ft.	0	0	86	0
Joints. Length = 2 EA x Wo / cos(π / 180 x Sk) 2 Joints X 43.200 LF/cos(π / 180 x 0.00000) 2 Joints X 43.20' = 86.40 LF							
321 - Reinforced Concrete Approach Slab	2 - Low	1710	sq. ft.	1656	54	0	0
Total Approach Slab Area = Wc (La + Long Side) Wc X (La + (La + Wc X tan(PI/180 X Sk)) 41.70' X (20.50' + 20.50') = 1709.70 SF							
331 - Reinforced Concrete Bridge Railing	2 - Low	243	ft.	243	0	0	0
2 barrier rails X 121.50' = 243.00 LF							

Inspector: Travis Smith
Inspection Date: 03/03/2022

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Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 2

Description South elevation



PHOTO 3

Description Bent 1, West

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 4

Description Span A, cracks, delaminations, spalling



PHOTO 5

Description Span A center construction joint, delaminating repointing

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 6

Description Deck under Span A



PHOTO 7

Description Span A, South coping underside

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 8

Description Span A South coping, cracks, delaminations, spalling



PHOTO 9

Description Pier 2

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 10

Description South coping Span B



PHOTO 11

Description South coping Span B, underside

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 12

Description Deck under Span B



PHOTO 13

Description Span B, cracks, delaminating

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 14

Description Center construction joint, repointing, delaminating



PHOTO 15

Description Pier 3

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 16

Description Deck under Span C



PHOTO 17

Description Center construction joint, delaminating repointing

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 18

Description Span C, cracks, delaminations, rust staining



PHOTO 19

Description Span C, South coping, delaminating repointing

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 20

Description Span C, cracks with efflorescence, SE corner



PHOTO 21

Description South coping Span C, spalling

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 22

Description Bent 4, East



PHOTO 23

Description South coping

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 24

Description East approach



PHOTO 25

Description East approach slab

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 26

Description Cracks East approach slab



PHOTO 27

Description East joint

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 28

Description Deck over looking West



PHOTO 29

Description East approach from center

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 30

Description Looking South



PHOTO 31

Description West approach from center

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 32

Description Deck over looking East



PHOTO 33

Description West joint

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 34

Description West approach slab



PHOTO 35

Description Cracks West approach slab

Inspector: Travis Smith
Inspection Date: 03/03/2022

Asset Name: 036-49-03898 AEBL
Facility Carried: US 36 EB

Bridge Inspection Report



PHOTO 36

Description West approach



PHOTO 37

Description

Inspector: Smith, Travis
Inspection Date: 03/03/2022

Structure Number: 011680
Facility Carried: US 36 EB

Bridge Inspection Report

Miscellaneous Asset Data
Asset Management

011680

Load Rating 2:

Has the dead load or the structural condition of the primary load carrying members changed since the last inspection?

No - Load Rating Update Not Required

Extended Frequency:

Submittal Date:

Inspector:

INDOT Reviewer:

This bridge has been accepted into the Extended Frequency Program.

Approval Date:

Joints: * Indicate location, type, and rating of lowest rated joint.

Transverse
North/East

H

4 - Poor Condition,
leaking, noising damage,
areas of adhesion loss

Comments:

Transverse joints type IA: glands mostly gone; minor spalling.

Terminal Joints: *Rating of lowest rated terminal joint. 7

Comments:

Concrete Slopewall: *Rating of lowest rated slopewall. N

Comments:

Bearings: * Indicate type, and rating of lowest rated bearing.

N - No Bearing(s)

Comments:

Inspector: Smith, Travis
Inspection Date: 03/03/2022

Structure Number: 011680
Facility Carried: US 36 EB

Bridge Inspection Report

Approach Slabs: * Indicate if present & condition rating.

1 - Approach Slabs

7 - Good condition, minor cracking, wide spacing

Comments:

Approach slabs: West - fairly wide transverse cracks (25'), small patching at right edgeline (2 SF) & minor spall at right edgeline & end of slab (1 SF); East - fairly wide transverse cracks (25'), triangular patch at right edgeline at IA joint (1 SF).

Paint: * Indicate if paint present, year painted & condition rating.

N - No Paint

N

Comments:

Endangered Species: * If yes, add one photo to the dropdown field

Bats: seen or heard under structure? *

N

Birds/swallows/nests seen? Empty nests present? *

N

BRIDGE Culvert Geometry:

Barrel Length:

Height:

Width:

Culvert Inspection Report

CV 036-049-65.70

US 36

over



Inspection Date: 03/16/2022

Inspected By: Travis Smith

Inspection Type(s): Culvert

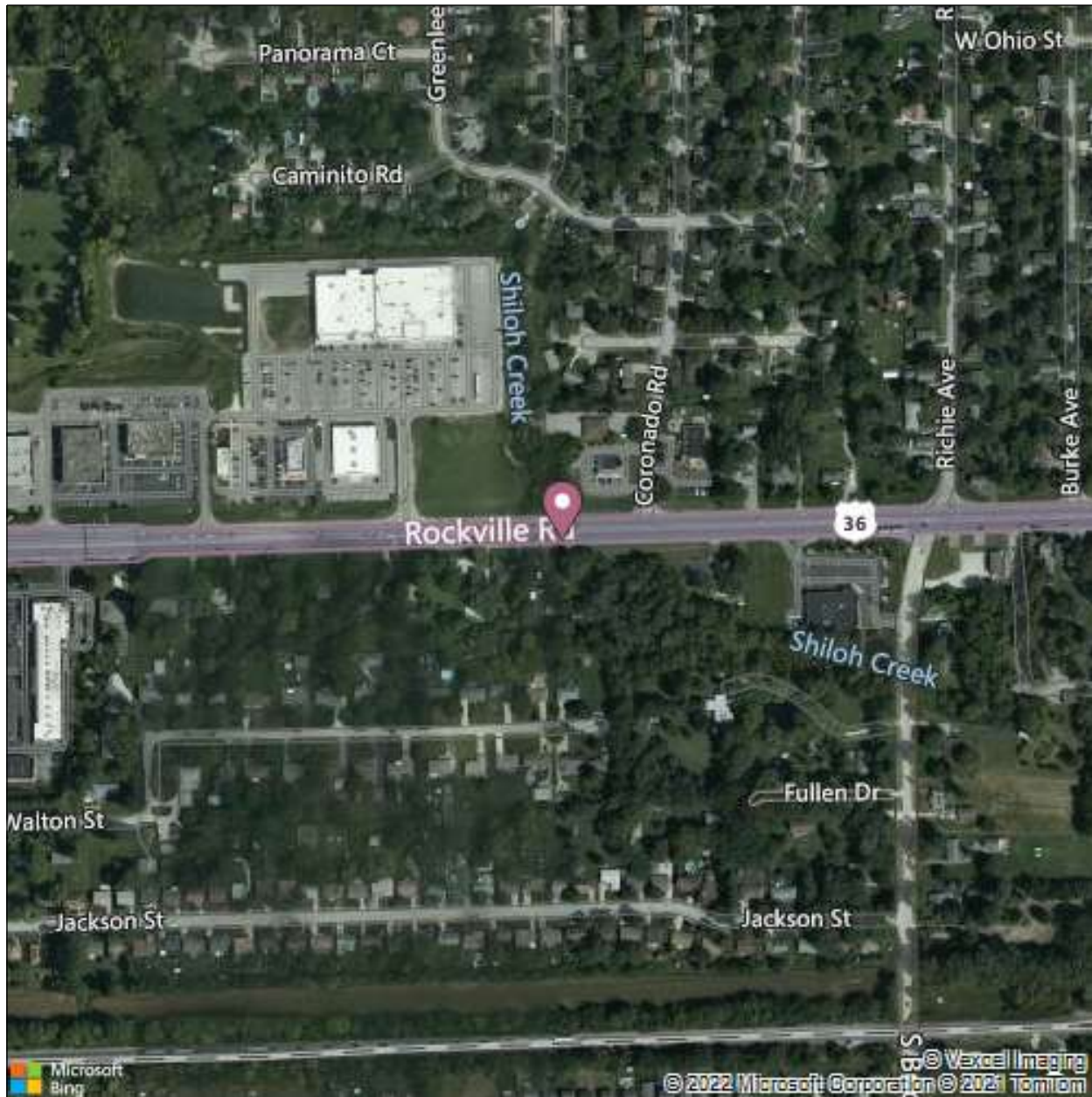
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Inspector: Travis Smith
Inspection Date: 03/16/2022

Asset Name: CV 036-049-65.70
Facility Carried: US 36

Culvert Inspection Report

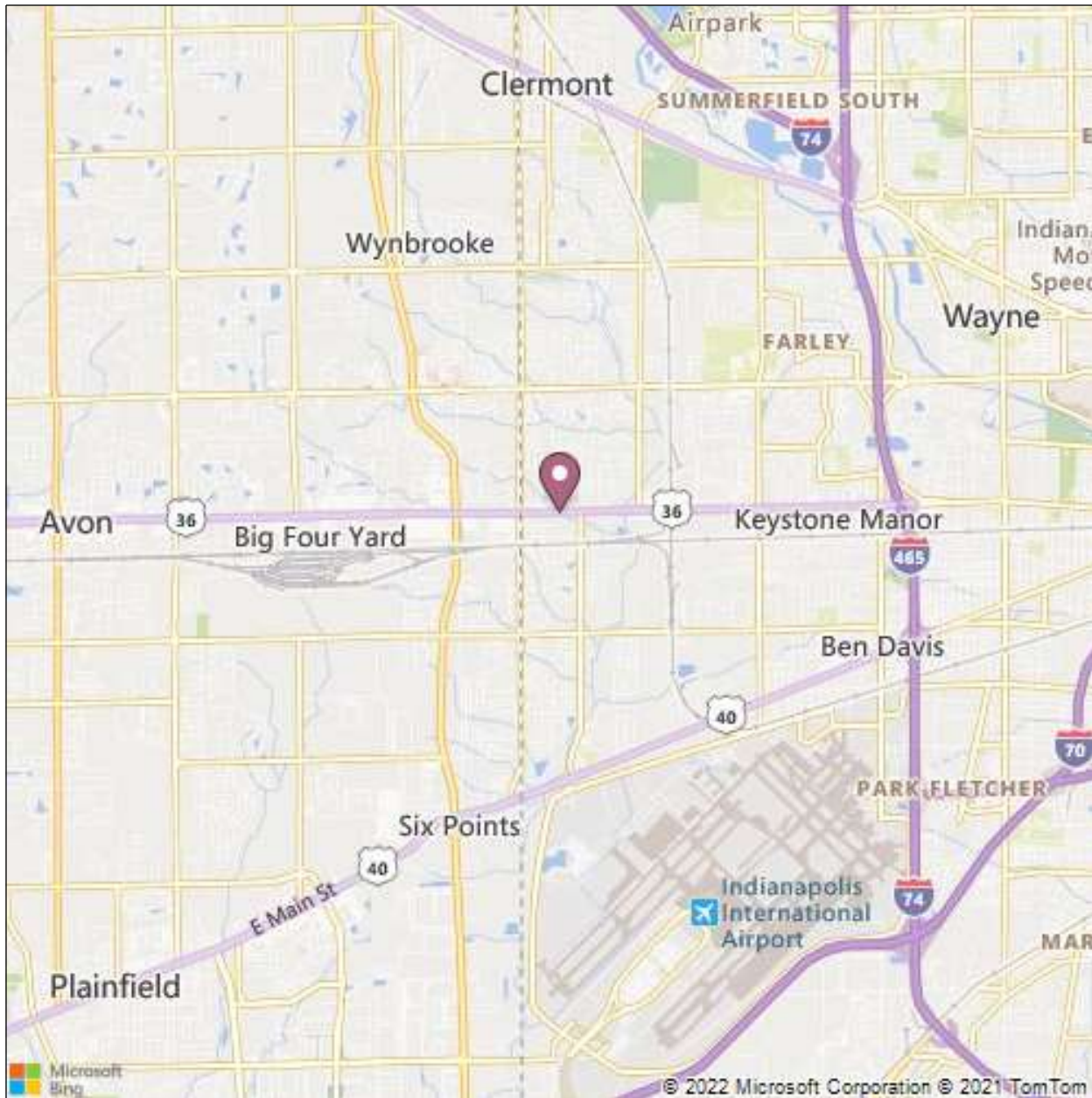


Latitude: 39.76376
Longitude: -86.32069

Inspector: Travis Smith
Inspection Date: 03/16/2022

Asset Name: CV 036-049-65.70
Facility Carried: US 36

Culvert Inspection Report



Latitude: 39.76376
Longitude: -86.32069

Inspector: Travis Smith
Inspection Date: 03/16/2022

Structure Number: 93003946
Facility Carried: US 36

Culvert Inspection Report

Executive Summary

Culvert is rated in poor condition because there were a couple of holes that were completely rusted through the pipe approximately 20' into the pipe from the South end. Other than that no noted concerns. There is no approach guardrail. The culvert is about 6' below the road surface. I walked through the culvert during the inspection. The channel runs from the East toward the West. Some scouring on the West end. 5/20/2019

Structure Number: CV 036-049-65.70

Inspector: Smith, Travis

Large Culvert Inspection Report

(8) Asset Code:	93003946	(27) Year Built:	0000
Asset Name:	CV 036-049-65.70	(90) Inspection Date:	03/16/2022
OLD Culvert ID:	036-49-65.70	(91) Inspection Frequency:	12
Team Assignment:	03	<input type="checkbox"/> Additional Treatment Exists	

Identification

(2) Highway Agency District:	03	(3) County Code:	049
Sub District:	3100	Ramp ID:	
(42B) Type of Service (Under):	5	<input type="checkbox"/> Adjacent to Roadway	
(7) Facility Carried:	US 36	(6) Features Intersected:	
(9) Location:	2.77 W I-465	(9.01) Location Additional Description:	
(11) Milepoint:	0	(16) Latitude:	39.76376
Classification:		(17) Longitude:	-86.32069
(104) Highway System of the Inventory Route:	1	(26) Functional Classification of Inventory Route:	02

Geometric Data

Culvert: Kind of Material:	3. Steel	Culvert: Type of Structure:	3. Pipe	Min Est Fill Cover (ft):	6.00
Culvert: Max. Horizontal Opening (ft.):	10.8	Culvert: Max. Vertical Opening (ft.):	10.8	(34) Skew:	
Barrel Length (ft.):	187	Original Culvert Shape:	Round		

Measurement Remarks:

Structure Additional Description: *Corrugated Metal Pipe 10.8' x 10.8' CMP*

Openings:

Direction	Opening Latitude	Opening Longitude	Direction	Opening Latitude	Opening Longitude
1.			3.		
2.			4.		

Openings Comments:

Follow Up Required:

**If checked, please describe for follow up:

Endangered Species

Bats: seen or heard under structure? *	<i>N - No evidence of bats</i>
Birds/swallows/nests seen? Empty nests present?	<i>N - No Birds and/or Nests Visi</i>

* If yes, add one photo to the dropdown field

General Condition Ratings

(36A) Bridge Railings:	N	(36C) Approach Guardrail:	N
(36B) Transitions:	N	(36D) Approach Guardrail Ends:	N

Culvert:

(62) Culvert - Rating: 4

(62) Culvert Rating Comments: *Fairly large rust holes in floor near both ends, heavier at South end. Heavy corrosion at water line throughout the structure with scattered hot spots of corrosion and thinning metal. West side of culvert near the north end has an area of corrosion and rust staining coming from the horizontal seam/bolts. All concrete anchors have very heavy deterioration. Small scour hole at the South outlet.*
Program Year 2023, DES #2002284

Deck:

(58) Deck: N

(58a) Deck Comments:

Superstructure:

(59) Superstructure: N

(59.01) Superstructure Comments:

Substructure:

(60) Substructure: N

(60.01) Substructure Comments:

CV-Headwall/Anchor Rating 4

CV-Wingwalls Rating

Channel:

(61) Channel and Channel Protection: 6

(61.01) Channel and Channel Protection Comments: *There is slight bank erosion and channel scour at the south end of the structure. The channel flows from the north to the south.*

Bank Erosion Rating: 6

Drift/Sediment Rating 7

Channel Alignment Rating 7

Check this box if culvert has OBSTRUCTED flow

Describe Obstruction:

Inspector: Travis Smith
Inspection Date: 03/16/2022

Structure Number: 93003946
Facility Carried: US 36

Culvert Inspection Report

Pictures



PHOTO 1

Description South elevation



PHOTO 2

Description Road over

Inspector: Travis Smith
Inspection Date: 03/16/2022

Structure Number: 93003946
Facility Carried: US 36

Culvert Inspection Report

Pictures



PHOTO 3

Description SW anchor

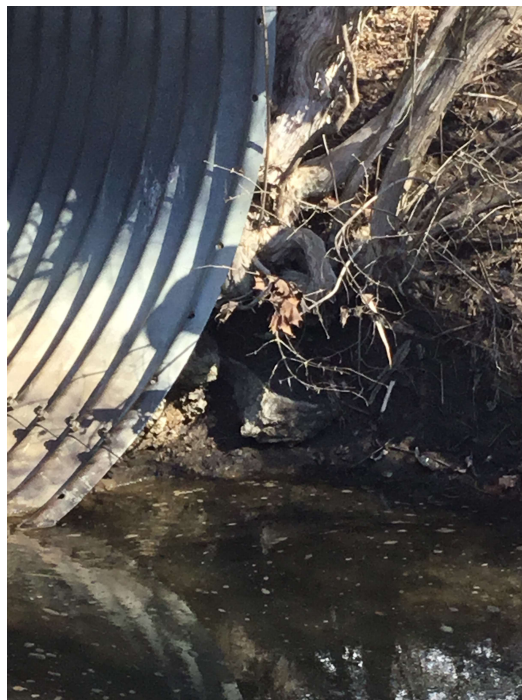


PHOTO 4

Description Missing SE anchor

Inspector: Travis Smith
Inspection Date: 03/16/2022

Structure Number: 93003946
Facility Carried: US 36

Culvert Inspection Report

Pictures



PHOTO 5

Description North elevation



PHOTO 6

Description Inside North end

Inspector: Travis Smith
Inspection Date: 03/16/2022

Structure Number: 93003946
Facility Carried: US 36

Culvert Inspection Report

Pictures



PHOTO 7

Description West side near North end



PHOTO 8

Description Large holes near South end

From: [Darrah, Taylor N](#)
To: [Rachel Pluckebaum](#)
Subject: RE: Des. No. 1800035 & Des. No. 1800037 - Bat and Heritage Database Check (1900340 & 1900341)
Date: Friday, February 5, 2021 8:17:50 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)

Rachel,

A review of the USFWS GIS database for Indiana bat and Northern long-eared bat roosting, hibernacula and capture sites was conducted for Des No's 1900340 and 1900341 on February 5, 2021. There are no documented sites within a half mile the project area. The USFWS Information for Planning and Conservation (IPaC) website must be consulted and a new project created to obtain an official species list and complete the questionnaire for the project to determine the applicability of the programmatic consultation. If needed, the IPaC generated documents must be forwarded to the USFWS for verification.

Thank you,

Taylor Darrah

Environmental Section Manager

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School of Forestry



Species from Feces Results

Client	Kirk Roth, Corradino, LLC, kroth@CORRADINO.com
Invoice number	20200925_1
Project ID	KRoth
Sequencing date	January 2021
Report date	January 2021
Technician	Daniel Sanchez
Bioinformatician	Daniel Sanchez

Sample processing:

We received five 15 mL vials of bat guano and a tissue sample. The goal was to identify one or more bat species in the guano and to identify the tissue sample to species. We noted no issues with sample preservation and quality upon receipt of the vials. We decontaminated all vials with 10% bleach prior to handling and processing.

We successfully extracted genomic DNA and amplified a short-section of cytochrome oxidase subunit I (COI) from all samples using our standard methodology (Walker et al. 2016; Walker et al. 2019). Amplified product was sequenced on an Illumina MiSeq V3 600 cycle kit to obtain DNA sequences (reads) of one or more taxa per sample. Sequencing reads were computationally processed to obtain read variants of the highest taxonomic quality in QIIME2 v2020.11 (Bolyen et al. 2018). Priming regions, adapters, and read-through were removed using cutadapt v2.1 (Martin 2011) to isolate the 202 base pair fragment of interest. We removed low quality reads, alleviated sequencing contamination by joining paired-end reads, and filtered out PCR artifacts (chimeric reads) using DADA2 (Callahan et al. 2016). Using our positive control, we identified a read threshold by which to filter out read variants of likely sequencing error. Sequences were then classified using a naïve-Bayes machine learning classifier (Bokulich et al. 2018) that we trained against our custom reference database. We retained species classifications only if they were classified by at least 90% bootstrap support. Any read variants not classified using the machine learning algorithm to species were cross-referenced against the National Center for Biotechnology Information’s (NCBI) GenBank database (Benson et al. 2009) using BLAST (Altschul et al. 1990) with taxa classified using Least Common Ancestor (LCA)

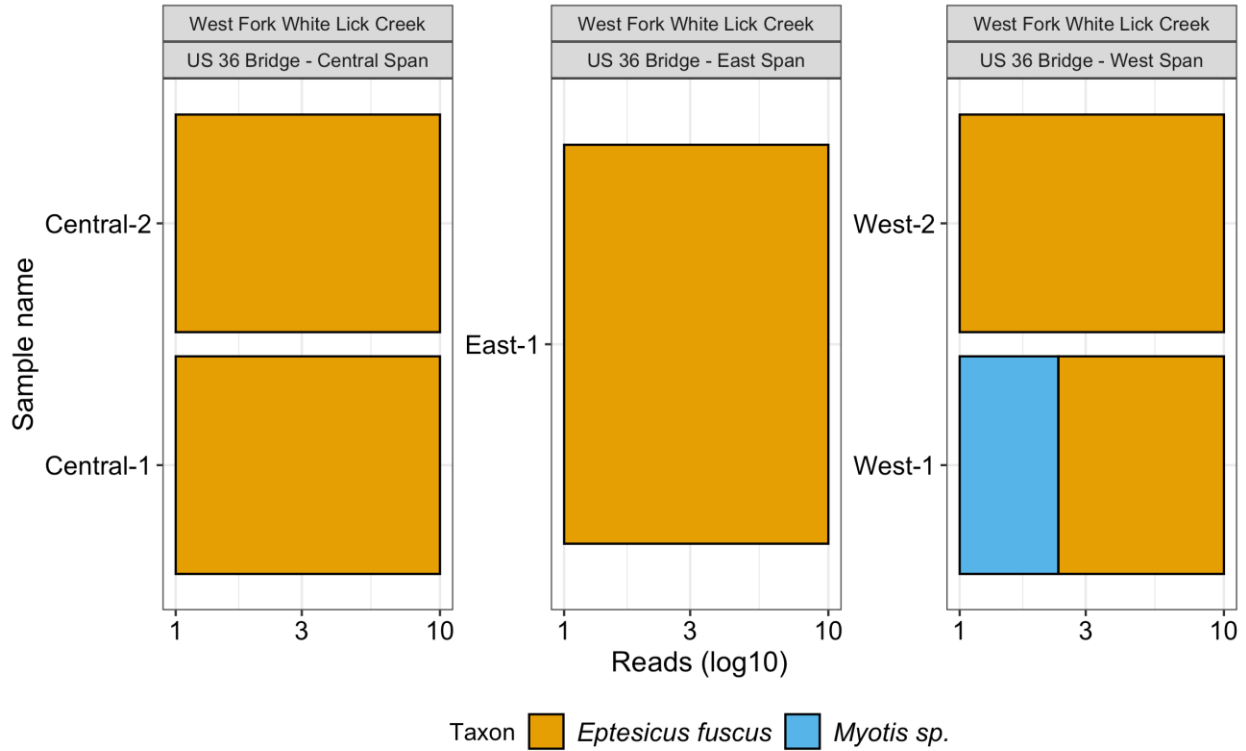
Bat Ecology & Genetics Lab, School of Forestry, NAU, P.O. Box 15018, Flagstaff, AZ 86011

www.nau.edu/batdna

Questions? Faith.Walker@nau.edu; Carol.Chambers@nau.edu

analysis in MEGAN v6 (Huson et al. 2007). This cross-referencing step helps to alleviate any false negative bat classifications in the naïve-Bayes’s model or identify non-bat taxa.

Results:



Reads	After filtering	Taxonomy assigned
Total	381277	377940
Mean	76255.4	75588
Median	60132	60132
SD	48218.4003	48295.9172
iqr	17800	17800
Min	32184	29912
Max	158135	157070
N.samples	5	5

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Our positive control, containing a known mixture of four bat species, amplified and sequenced in expected read proportions. None of the negative controls prepared with your samples amplified. All samples were successfully sequenced. **We detected two bat taxa in the dataset, *Eptesicus fuscus* and a species of *Myotis* that was unable to be classified to the species level. Given its low read count, we believe the DNA sequence of this unknown *Myotis* was likely of poor quality. Both taxa are known to occur in Indiana.**

The bat pup tissue sample from East Span was genetically identified as *Eptesicus fuscus*.

Accompanying files:

Along with a PDF of the detection barplots, we included an Excel (xlsx) spreadsheet that includes all figures, all taxonomic data, and sequencing pass and read summaries.

KRoth_20200925_1_BEGResults.xlsx
Batdetection_plot.pdf

References:

Altschul SF, Gish W, Miller W, Myers EW, Lipman DJ. 1990. Basic Local Alignment Search Tool. *J Mol Biol.*:8.

Benson DA, Karsch-Mizrachi I, Lipman DJ, Ostell J, Sayers EW. 2009. GenBank. *Nucleic Acids Res.* 37(suppl_1):D26–D31. doi:10.1093/nar/gkn723.

Bokulich NA, Kaehler BD, Rideout JR, Dillon M, Bolyen E, Knight R, Huttley GA, Gregory Caporaso J. 2018. Optimizing taxonomic classification of marker-gene amplicon sequences with QIIME 2's q2-feature-classifier plugin. *Microbiome.* 6(1):90. doi:10.1186/s40168-018-0470-z.

Bolyen E, Rideout JR, Dillon MR, Bokulich NA, Abnet C, Al-Ghalith GA, Alexander H, Alm EJ, Arumugam M, Asnicar F, et al. 2018. QIIME 2: Reproducible, interactive, scalable, and extensible microbiome data science. *PeerJ Inc. Report No.:* e27295v2. [accessed 2019 Jul 3]. <https://peerj.com/preprints/27295>.

Callahan BJ, McMurdie PJ, Rosen MJ, Han AW, Johnson AJA, Holmes SP. 2016. DADA2: High-resolution sample inference from Illumina amplicon data. *Nat Methods.* 13(7):581–583. doi:10.1038/nmeth.3869.

Huson DH, Auch AF, Qi J, Schuster SC. 2007. MEGAN analysis of metagenomic data. *Genome Res.* 17(3):377–386. doi:10.1101/gr.5969107.

Martin M. 2011. Cutadapt removes adapter sequences from high-throughput sequencing reads. *EMBnet.journal.* 17(1):10–12. doi:10.14806/ej.17.1.200.

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Walker FM, Tobin A, Simmons NB, Sobek CJ, Sanchez DE, Chambers CL, Fofanov VY. 2019. A fecal sequel: Testing the limits of a genetic assay for bat species identification. PLOS ONE. 14(11):e0224969. doi:10.1371/journal.pone.0224969.

Walker FM, Williamson CHD, Sanchez DE, Sobek CJ, Chambers CL. 2016. Species From Feces: Order-Wide Identification of Chiroptera From Guano and Other Non-Invasive Genetic Samples. Russo D, editor. PLOS ONE. 11(9):e0162342. doi:10.1371/journal.pone.0162342.

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Questions? Faith.Walker@nau.edu; Carol.Chambers@nau.edu



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Species from Feces Results

Client	Kirk Roth, Corradino, LLC, kroth@CORRADINO.com
Invoice number	20210609_1
Project ID	KRoth
Sequencing date	19 July 2021
Report date	22 July 2021
Technician	Daniel Sanchez
Bioinformatician	Daniel Sanchez

Sample processing:

We received eight 15 mL vials of bat guano. The goal was to identify one or more bat species in a mixture for each sample. We noted no issues with sample preservation and quality upon receipt of the vials. We decontaminated all vials with 10% bleach prior to handling and processing.

We successfully extracted genomic DNA and amplified a short-section of cytochrome oxidase subunit I (COI) from the samples using our standard methodology (Walker et al. 2016; Walker et al. 2019). Amplified product was sequenced on an Illumina MiSeq V3 600 cycle kit to obtain DNA sequences (reads) of one or more taxa per sample. Sequencing reads were computationally processed to obtain read variants of the highest taxonomic quality in QIIME2 v2020.11 (Bolyen et al. 2018). Priming regions were removed using cutadapt v3.1 (Martin 2011) to isolate the 202 base pair fragment of interest. We removed low quality reads, alleviated sequencing contamination by joining paired-end reads, and filtered out PCR artifacts (chimeric reads) using DADA2 (Callahan et al. 2016). Using our positive control, we identified a read threshold by which to filter out read variants of likely sequencing error. Sequences were then classified using a naïve-Bayes machine learning classifier (Bokulich et al. 2018) that we trained against our custom reference database. We retained species classifications only if they were classified with at least 90% bootstrap support. Any read variants not classified using the machine learning algorithm to species were cross-referenced against the National Center for Biotechnology Information's (NCBI) GenBank database (Benson et al. 2009) using BLAST (Altschul et al. 1990) with taxa classified using Least Common Ancestor (LCA) analysis in MEGAN

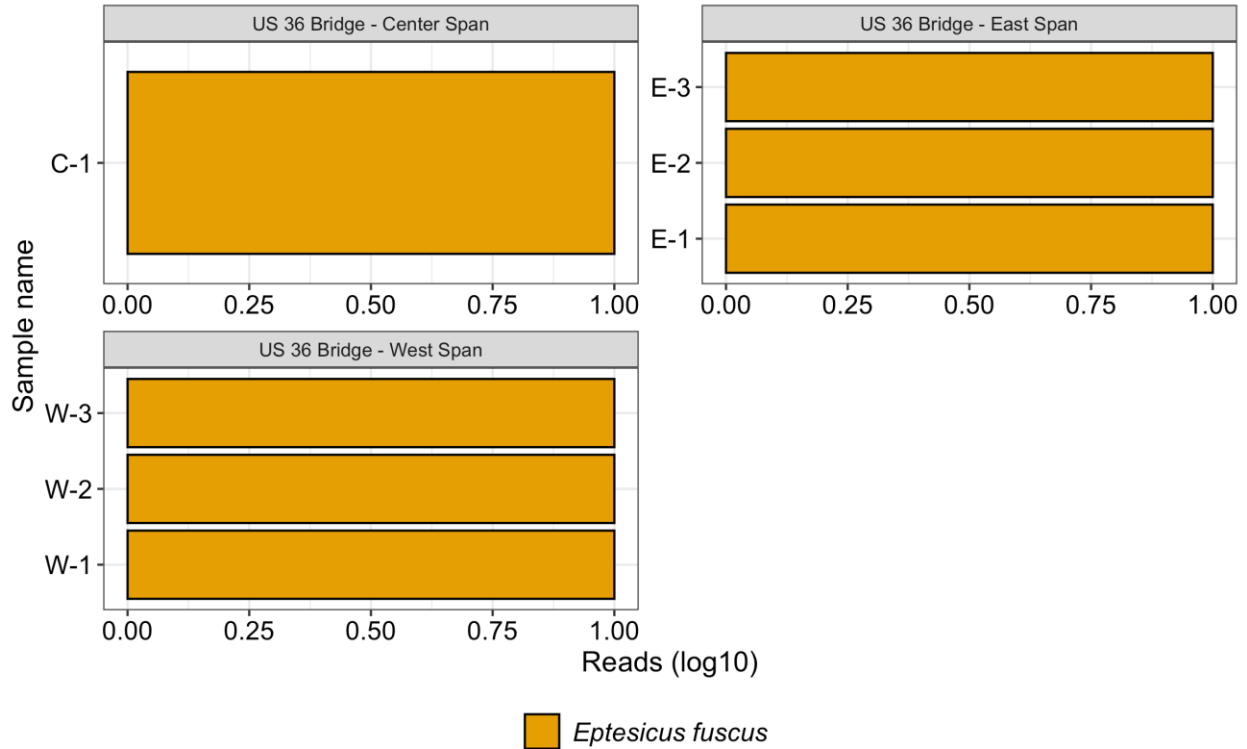
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Questions? Faith.Walker@nau.edu; Carol.Chambers@nau.edu

v6 (Huson et al. 2007). This cross-referencing step helps to alleviate any false negative bat classifications in the naïve-Bayes' model or identify non-bat taxa.

Results:



Our positive control, containing a known mixture of nine bat species (of three families) amplified and sequenced eight of nine. None of the negative controls prepared with your samples amplified. Seven of the eight samples were successfully sequenced. **We detected big brown bat (*Eptesicus fuscus*) for 100% of the sequences of all samples.** The species is widespread across North America. Sample C-2 failed because it did not yield identifiable DNA sequences.

Accompanying files:

Along with a PDF of the detection barplots, we included an Excel (xlsx) spreadsheet that includes all figures, all taxonomic data, and sequencing pass and read summaries.

KRoth_20210609_1_BEGResults.xlsx
Batdetection_plot.pdf

Bat Ecology & Genetics Lab, School of Forestry, NAU, P.O. Box 15018, Flagstaff, AZ 86011

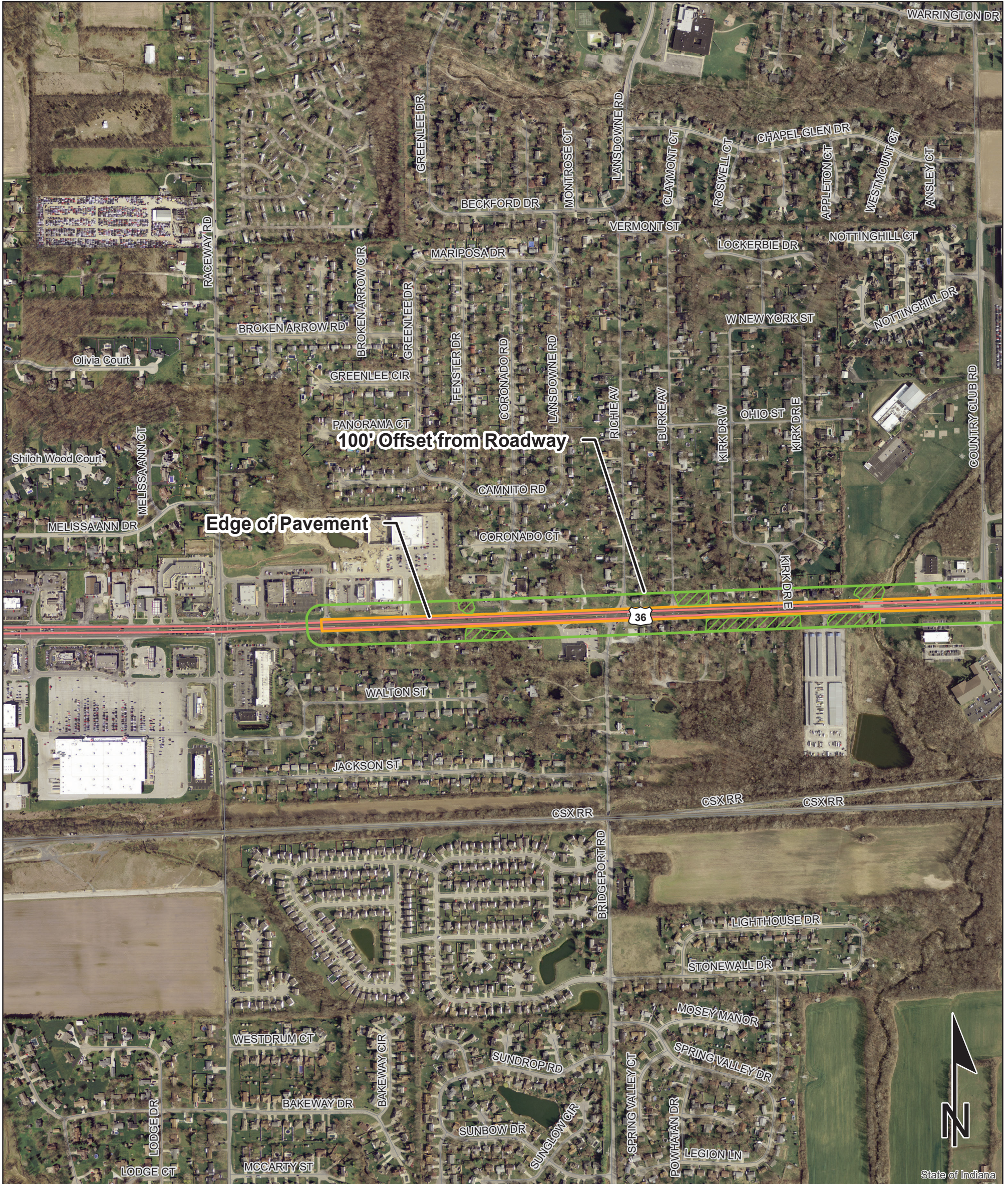
www.nau.edu/batdna

Questions? Faith.Walker@nau.edu; Carol.Chambers@nau.edu

References:

- Altschul SF, Gish W, Miller W, Myers EW, Lipman DJ. 1990. Basic Local Alignment Search Tool. *J Mol Biol.*:8.
- Benson DA, Karsch-Mizrachi I, Lipman DJ, Ostell J, Sayers EW. 2009. GenBank. *Nucleic Acids Res.* 37(suppl_1):D26–D31. doi:10.1093/nar/gkn723.
- Bokulich NA, Kaehler BD, Rideout JR, Dillon M, Bolyen E, Knight R, Huttley GA, Gregory Caporaso J. 2018. Optimizing taxonomic classification of marker-gene amplicon sequences with QIIME 2's q2-feature-classifier plugin. *Microbiome.* 6(1):90. doi:10.1186/s40168-018-0470-z.
- Bolyen E, Rideout JR, Dillon MR, Bokulich NA, Abnet C, Al-Ghalith GA, Alexander H, Alm EJ, Arumugam M, Asnicar F, et al. 2018. QIIME 2: Reproducible, interactive, scalable, and extensible microbiome data science. *PeerJ Inc. Report No.:* e27295v2. [accessed 2019 Jul 3]. <https://peerj.com/preprints/27295>.
- Callahan BJ, McMurdie PJ, Rosen MJ, Han AW, Johnson AJA, Holmes SP. 2016. DADA2: High-resolution sample inference from Illumina amplicon data. *Nat Methods.* 13(7):581–583. doi:10.1038/nmeth.3869.
- Huson DH, Auch AF, Qi J, Schuster SC. 2007. MEGAN analysis of metagenomic data. *Genome Res.* 17(3):377–386. doi:10.1101/gr.5969107.
- Martin M. 2011. Cutadapt removes adapter sequences from high-throughput sequencing reads. *EMBnet.journal.* 17(1):10–12. doi:10.14806/ej.17.1.200.
- Walker FM, Tobin A, Simmons NB, Sobek CJ, Sanchez DE, Chambers CL, Fofanov VY. 2019. A fecal sequel: Testing the limits of a genetic assay for bat species identification. *PLOS ONE.* 14(11):e0224969. doi:10.1371/journal.pone.0224969.
- Walker FM, Williamson CHD, Sanchez DE, Sobek CJ, Chambers CL. 2016. Species From Feces: Order-Wide Identification of Chiroptera From Guano and Other Non-Invasive Genetic Samples. Russo D, editor. *PLOS ONE.* 11(9):e0162342. doi:10.1371/journal.pone.0162342.

Tree Clearing Map (1 of 3)
 US 36, from Raceway Rd. to I-465
 Des. No's. 1800035 & 1800037, Corridor Improvements
 Marion County, Indiana



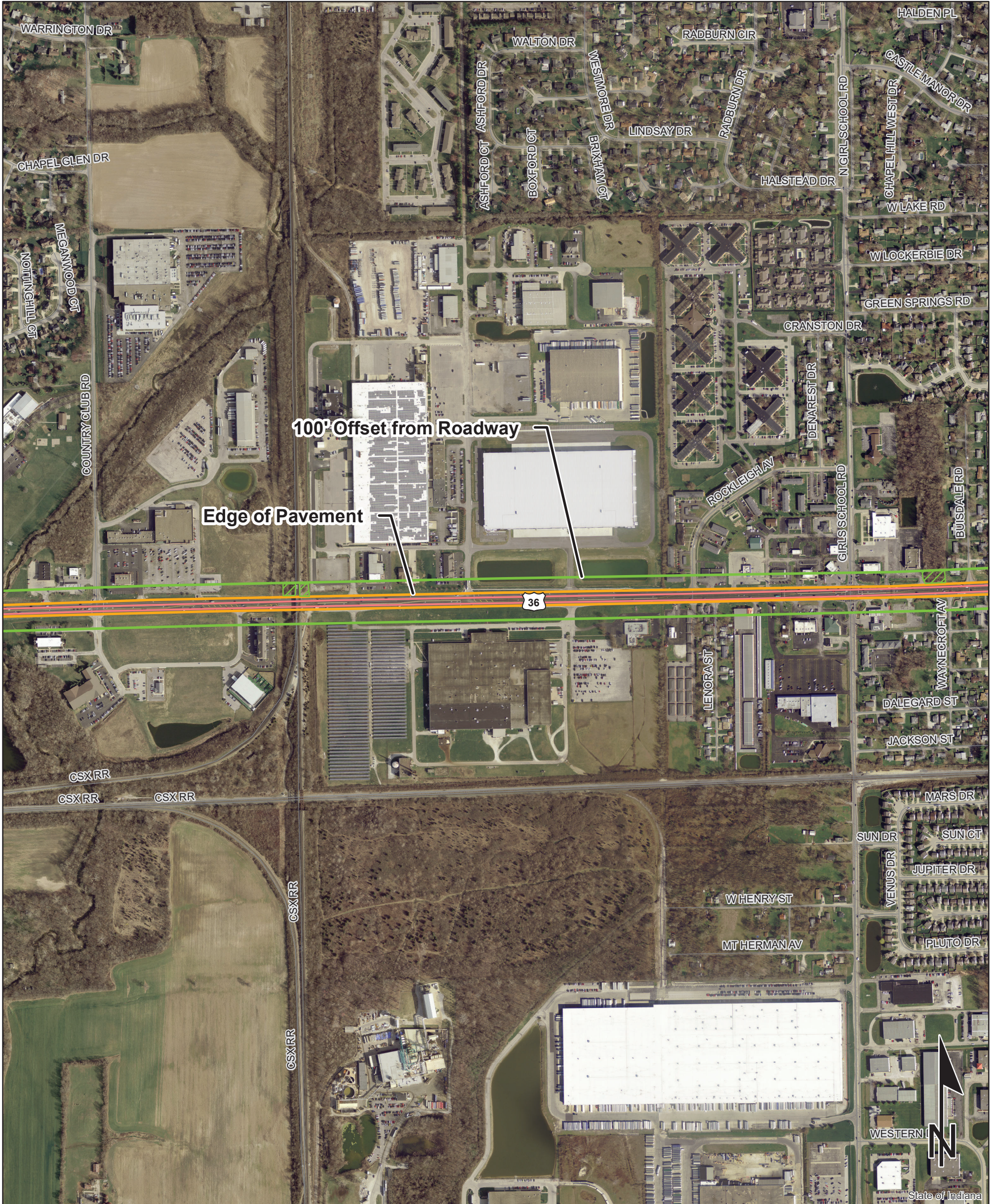
Sources: 0.1 0.05 0 0.1 Miles
Non Orthophotography
 Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
 Map Projection: UTM Zone 16 N Map Datum: NAD83
 This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

**INDIANA STATEWIDE AERIAL
 IMAGERY FLOWN 2016**

Legend

 Potential Tree Clearing Area

Tree Clearing Map (2 of 3)
 US 36, from Raceway Rd. to I-465
 Des. No's. 1800035 & 1800037, Corridor Improvements
 Marion County, Indiana



Sources:
Non Orthophotography
 Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
 Map Projection: UTM Zone 16 N Map Datum: NAD83

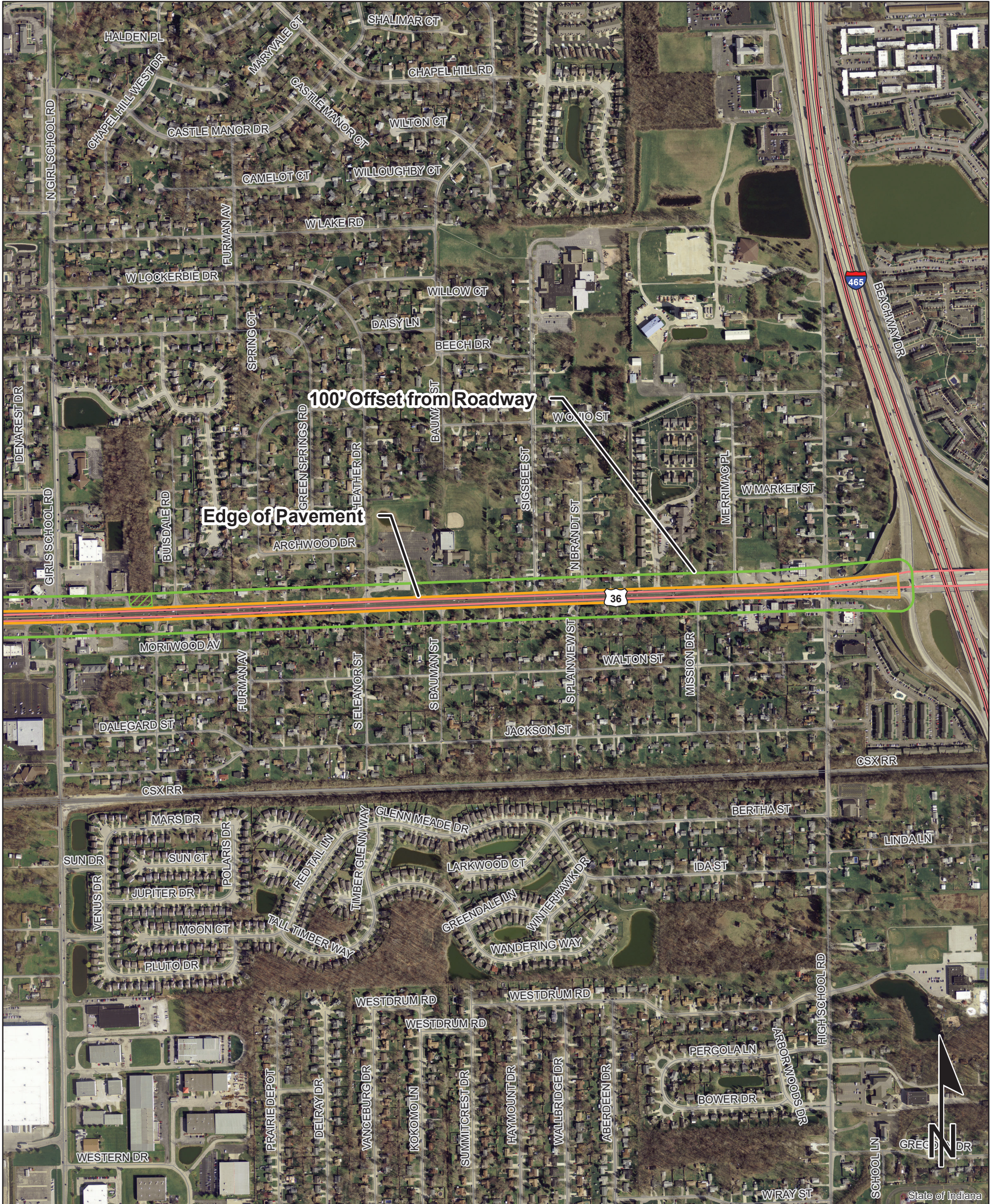
This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

**INDIANA STATEWIDE AERIAL
 IMAGERY FLOWN 2016**

Legend

 Potential Tree Clearing Area

Tree Clearing Map (3 of 3)
 US 36, from Raceway Rd. to I-465
 Des. No's. 1800035 & 1800037, Corridor Improvements
 Marion County, Indiana



Sources: 0.1 0.05 0 0.1 Miles
Non Orthophotography
 Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
 Map Projection: UTM Zone 16 N Map Datum: NAD83
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**INDIANA STATEWIDE AERIAL
 IMAGERY FLOWN 2016**

Legend

Potential Tree Clearing Area

Tree Clearing Map (Shiloh Creek)
 US 36, from Raceway Rd. to I-465
 Des. No's. 1800035 & 1800037, Corridor Improvements
 Marion County, Indiana



Sources:
Non Orthophotography
 Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
 Map Projection: UTM Zone 16 N Map Datum: NAD83



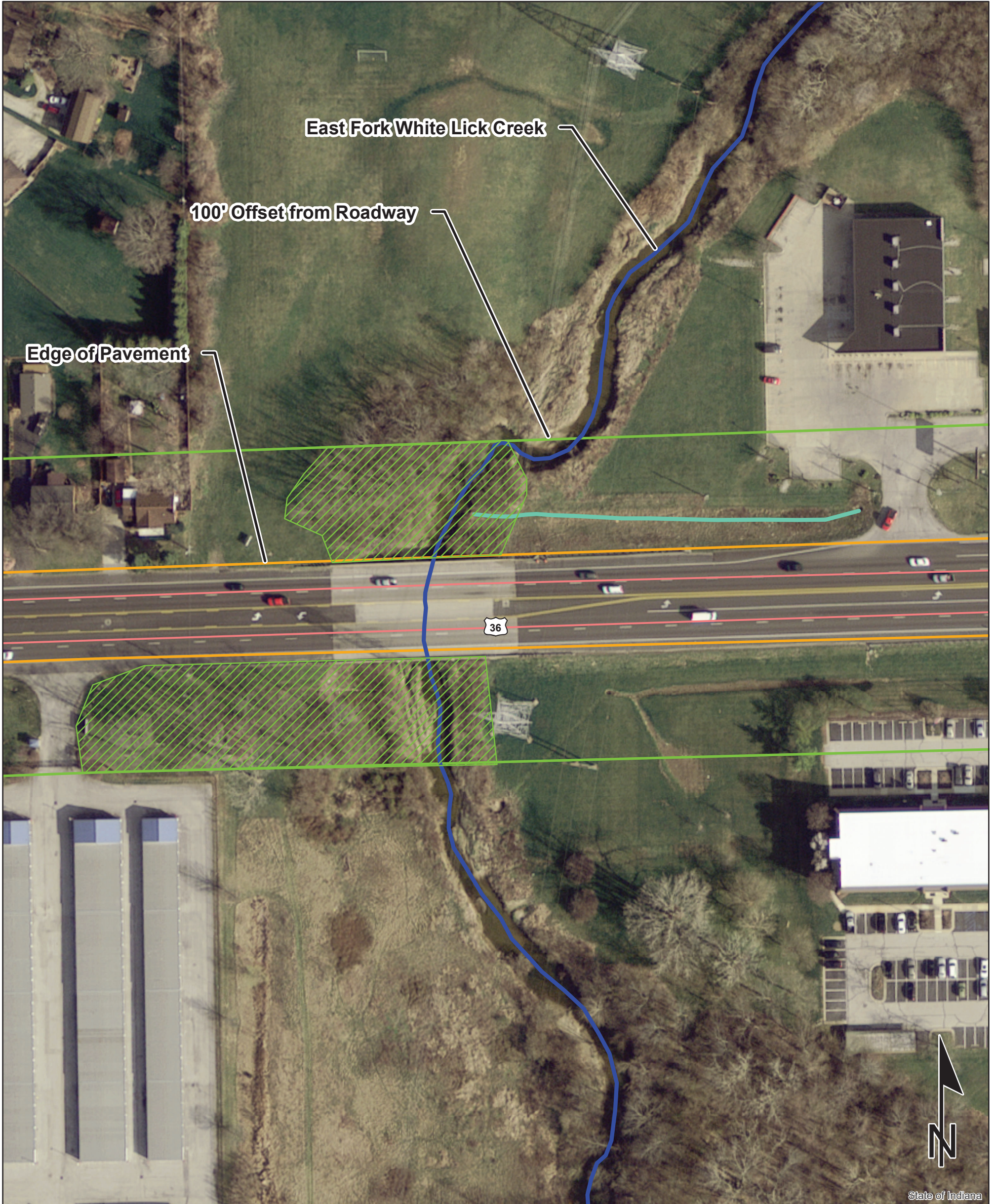
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INDIANA STATEWIDE AERIAL IMAGERY FLOWN 2016

Legend

Potential Tree Clearing Area

Tree Clearing Map (East Fork White Lick Creek)
 US 36, from Raceway Rd. to I-465
 Des. No's. 1800035 & 1800037, Corridor Improvements
 Marion County, Indiana



Sources:
Non Orthophotography
Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N **Map Datum:** NAD83



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INDIANA STATEWIDE AERIAL
IMAGERY FLOWN 2016

Legend

Potential Tree Clearing Area