

Photo 1. Facing north along Old SR 37 toward the intersection of Robinson Rd.



Photo 2. Facing south along Old SR 37 toward the intersection of Boltinghouse Rd.



Photo 3. Facing south along the Northern Branch of Muddy Fork from the east side of Old SR 37.



Photo 4. Facing northwest along Northern Branch of Muddy Fork from Old SR 37.



Photo 5. Facing southeast along Northern Branch of Muddy Fork from Old SR 37.



Photo 6. View of Sample Point (SP) 1.



Photo 7. Facing northwest from SP 1.



Photo 8. Facing east toward Old SR 37 bridge over Northern Branch of Muddy Fork.



Photo 9. View of SP 2.



Photo 10. Facing northeast along the Old SR 37 bridge over Northern Branch of Muddy Fork, from SP 2.



Photo 11. Facing northeast along Old SR 37 toward the crossing Northern Branch of Muddy Fork.



Photo 12. Facing northeast along the roadside of Old SR 37.



Photo 13. Facing southeast from Old SR 37 along Southern Branch of Muddy Fork.



Photo 14. Facing northwest from Old SR 37 along Southern Branch of Muddy Fork.



Photo 15. Facing southeast along Southern Branch of Muddy Fork, from under the Old SR 37 bridge.



Photo 16. View of SP 3.



Photo 17. Facing southwest from SP 3.



Photo 18. Facing northeast toward the Old SR 37 structure over UNT 2 to Muddy Fork.



Photo 19. Facing northwest along UNT 2 to Muddy Fork.



Photo 20. Facing south along UNT 2 to Muddy Fork, from under Old SR 37.



Photo 21. View of SP 4.



Photo 22. Facing southeast toward SP 4.



Photo 23. Facing southwest along Old SR 37.



Photo 24. Facing north along a roadside drainage swale and Old SR 37, with fire station on the left.



Photo 25. Facing southwest along Old SR 37, near Prairie Dr.



Photo 26. Facing northeast along the edge of the cemetery and Old SR 37.



Photo 27. Facing southwest along Old SR 37, from in front of the cemetery.



Photo 28. Facing east along Northern UNT to Griffy Creek, toward the structure under Old SR 37.



Photo 29. View of SP 5.



Photo 30. Facing west from SP 5.



Photo 31. Facing west toward the structure under Old SR 37, along the Northern UNT to Griffy Creek.



Photo 32. Facing east from Old SR 37 along the Northern UNT to Griffy Creek.



Photo 33. Facing southeast from where the Southern UNT to Griffy Creek begins.



Photo 34. Facing west along the Southern UNT to Griffy Creek toward the structure under Old SR 37.



Photo 35. Facing northeast toward the culvert opening on the west side of Old SR 37 for the Southern UNT of Griffy Creek.



Photo 36. Facing west along the Southern UNT of Griffy Creek.



Photo 37. Facing northeast along Old SR 37, from just north of Bethel Ln.



Photo 38. Facing northeast along Old SR 37 from Audubon Dr.



Photo 39. Facing north toward UNT 1 to Muddy Fork from Old SR 37.

Project/Site: Bicentennial Trail	City/County: Monroe County	Sampling Date: October 18, 2017
Applicant/Owner: Local	St	ate: <u>IN</u> Sampling Point: <u>1</u>
Investigator(s): E. Stulik, K. McLane	_ Section, Township, Range: <u>10, 9N,</u>	1W
Landform (hillslope, terrace, etc.): floodplain	ocal relief (concave, convex, none): _	concave Slope (%): <u>0-2</u>
Subregion (LRR or MLRA): LRR N Lat: 39.233800°	Long: <u>-86.50478</u>	1° Datum: WGS 84
Soil Map Unit Name: St - Stendal silt loam, 0-2% slopes, freq. flooded, b	rief duration	NWI classification: <u>N/A</u>
Are climatic / hvdrologic conditions on the site typical for this time of v	vear? Yes 🗙 No 🗌 (If nc	explain in Remarks.)
Are Vegetation Soil or Hydrology significant	v disturbed? Are "Normal Circ	umstances" present? Yes X No
Are Vegetation Soil or Hydrology asturally p	roblematic? (If needed, expla	in any answers in Remarks)
SUMMARY OF FINDINGS – Attach site map showin	a sampling point locations.	transects, important features, etc.
Hydrophytic Vegetation Present? Yes X No	- Is the Sampled Area	
Hydric Soil Present? Yes No X	- within a Wetland?	Yes No X
Vetland Hydrology Present? Yes No	-	
Community type: Floodplain forest		
HYDROLOGY		
Wetland Hydrology Indicators:	Sec	ondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		Surface Soil Cracks (B6)
Surface Water (A1)	Plants (B14)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	fide Odor (C1)	Drainage Patterns (B10)
	ospheres on Living Roots (C3)	Moss Trim Lines (B16)
Cardinaent Danasita (D2)	Reduced Iron (C4)	Dry-Season Water Table (C2)
Sediment Deposits (B2)		Crayiish Burrows (C8)
Algo Mat or Cruet (B4)		Stunted or Strossod Plants (D1)
Iron Deposits (B5)	In richards)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Ë	Shallow Aquitard (D3)
Water-Stained Leaves (B9)		Microtopographic Relief (D4)
Aquatic Fauna (B13)		FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes No X Depth (inche	s):	
Water Table Present? Yes No X Depth (inche	s):	
Saturation Present? Yes No X Depth (inche	s): Wetland Hydro	ology Present? Yes No 🔀
(includes capillary fringe)	tos previous inspections) if available	a.
		·.
Remarks:		
Point is within the floodolain of Muddy Fork		

Sampling Point: <u>1</u>_____

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30 ft radius</u>)	<u>% Cover</u>	Species?	Status	Number of Dominant Species
1. Platanus occidentalis	30	Yes	FACW	That Are OBL, FACW, or FAC: 4 (A)
2. Fraxinus pennsylvanica	10	No	FACW	Total Number of Dominant
3. Populus deltoides	10	No	FAC	Species Across All Strata: <u>6</u> (B)
4. Juglans nigra	15	Yes	FACU	
5.				Percent of Dominant Species
6.				
7.				Prevalence Index worksheet:
8				Total % Cover of:Multiply by:
0	65	- Total Cov		OBL species x 1 =
Sapling/Shrub Stratum (Plot size: <u>15 ft radius</u>)		- 10(a) 000	CI	FACW species x 2 =
1. Lonicera maackii	65	Yes	UPL	FAC species x 3 =
2 Juglans nigra	10	No	FACU	FACU species x 4 =
<u></u>				UPL species x 5 =
۵	·			Column Totals: (A) (B)
4	·			
5	·			Prevalence Index = B/A =
6	·			Hydrophytic Vegetation Indicators:
7	·			1 - Rapid Test for Hydrophytic Vegetation
8	·			\mathbf{X} 2 - Dominance Test is >50%
9				\square 3 - Prevalence Index is <3.0 ¹
10				\square 3 - Prevalence index is ≤ 3.0
	75	= Total Cov	er	data in Remarks or on a separate sheet)
Herb Stratum (Plot size: 5 ft radius)				
1. Verbesina alternifolia	30	Yes	FAC	
2. <u>Elymus virginicus</u>	25	Yes	FACW	¹ Indianters of budging of land wetlend budgeters much
_{3.} Solidago gigantea	20	Yes	FACW	be present unless disturbed or problematic.
4. Hydrophyllum virginianum	5	No	FAC	Definitions of Four Vegetation Strata:
5				Definitions of Four Vegetation offata.
6.				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
7.				more in diameter at breast height (DBH), regardless of height
8	·			noight
۵ ۵	·			Sapling/Shrub – Woody plants, excluding vines, less
10	·			than 3 in. DBH and greater than 3.28 ft (1 m) tail.
10:	·			Herb – All herbaceous (non-woody) plants, regardless
11	·			of size, and woody plants less than 3.28 ft tall.
12				Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30 ft radius)	80	= Total Cov	er	height.
1	·			
2	·			
3	·			
4	·			Hydrophytic
5	·			Vegetation
6				Present? Yes X No
		= Total Cov	er	
Remarks: (Include photo numbers here or on a separate s	sheet.)			
				 F-46

SOIL

Profile Desc	ription: (Describe	to the dept	h needed to docun	nent the i	ndicator	or confirn	n the absence	of indicators.)
Depth	Matrix		Redo	x Feature	s			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-9	10YR 3/2	100					SiCL	
9-10	10YR 4/3	75	10YR 5/8	5	С	М	SiCL	
	10YR 4/2	20						
·								
Type: C=Co	oncentration, D=De	pletion, RM=	Reduced Matrix, MS	S=Masked	Sand Gr	ains.	² Location: PL	_=Pore Lining, M=Matrix.
Hydric Soil	Indicators:			(0-)				ators for Problematic Hydric Soils":
	(A1)		Dark Surface	(S7) Iow Surfa				cm Muck (A10) (MLRA 147)
	stic (Δ 3)		Thin Dark Su	rface (SQ)	(MIRA)	/ILKA 147, 147 148)		
	en Sulfide (A4)			d Matrix ((INIEIXA	147, 140)	Пр	Viedmont Floodplain Soils (F19)
	Lavers (A5)		Depleted Mat	trix (F3))			(MLRA 136, 147)
2 cm Mu	ick (A10) (LRR N)		Redox Dark S	Surface (F	-6)		ΠR	Red Parent Material (TF2)
Depleted	d Below Dark Surfac	ce (A11)	Depleted Dar	k Surface	(F7)			ery Shallow Dark Surface (TF12)
🛄 Thick Da	ark Surface (A12)		Redox Depre	ssions (F	8)			Other (Explain in Remarks)
Sandy M	lucky Mineral (S1) (LRR N,	Iron-Mangan	ese Mass	es (F12) (LRR N,		
	A 147, 148)		MLRA 13	6) 			31	to the second development of the second of the second
Sandy G	Pedax (S5)			ce (FI3) (odnlain S	(MLKA 13 oile (E19)	MI PA 1/	Ina 18) va	reations of hydrophytic vegetation and
Stripped	Matrix (S6)						io) (nless disturbed or problematic.
Restrictive I	_ayer (if observed)):						······
Type: roc	k/fill							
Depth (inc	ches): 10						Hvdric Soil	Present? Yes No X
Remarks								
i tomanto.								

Project/Site: Bicentennial Trail	City/County: Monroe County	Sampling Date: October 18, 2017
Applicant/Owner: Local	Stat	e: <u>IN</u> Sampling Point: <u>2</u>
Investigator(s): E. Stulik, K. McLane	_ Section, Township, Range: <u>10, 9N, 1</u>	W
Landform (hillslope, terrace, etc.): floodplain	ocal relief (concave, convex, none): <u>c</u>	oncave Slope (%): <u>0-2</u>
Subregion (LRR or MLRA): LRR N Lat: _39.233672°	Long: -86.504461	° Datum: WGS 84
Soil Map Unit Name: St - Stendal silt loam, 0-2% slopes, freq. flooded, bi	rief duration	IWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of y	/ear? Yes X No (If no.	explain in Remarks.)
Are Vegetation Soil Or Hydrology Significant	v disturbed? Are "Normal Circu	mstances" present? Yes X No
Are Vegetation Soil or Hydrology asturally p	roblematic? (If needed explain	any answers in Remarks)
SUMMARY OF FINDINGS – Attach site map showin	a sampling point locations. t	ransects, important features, etc.
	<u> </u>	,,
Hydrophytic Vegetation Present? Yes X No	- Is the Sampled Area	
Hydric Soil Present? Yes No X	- within a Wetland?	Yes No X
Remarks: 0 is in the second se	-	
Community type: Floodplain forest		
HYDROLOGY		
Wetland Hydrology Indicators:		ndary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply		surface Soil Cracks (B6)
Surface Water (A1)	Plants (B14)	parsely Vegetated Concave Surface (B8)
High Water Lable (A2) Hydrogen Sur	ride Odor (C1)	Jrainage Patterns (B10)
Saturation (A3)	Cospheres on Living Roots (C3)	Toss Trim Lines (BT6)
	(C4)	ravfish Burrows (C8)
Drift Deposits (B3)	rface (C7)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	(0,1) in Remarks)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)		Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	🗖 s	hallow Aquitard (D3)
Water-Stained Leaves (B9)		licrotopographic Relief (D4)
Aquatic Fauna (B13)	F	AC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes No X Depth (inche	s):	
Water Table Present? Yes No X Depth (inche	s):	
Saturation Present? Yes No Compared Depth (inche	s): Wetland Hydrol	ogy Present? Yes No
Describe Recorded Data (stream gauge, monitoring well, aerial pho	tos, previous inspections), if available:	
Remarks:		
Point is within the floodplain of Muddy Fork.		

Sam	plina	Point:	2
00000			

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30 ft radius)	% Cover	Species?	Status	Number of Deminent Species
1 Platanus occidentalis	5	No	FACW	That Are OBL_EACW/ or EAC: 6 (A)
 Fravinus pennsylvanica 	5	No	FACW	
		Vee		Total Number of Dominant
3. Populus deitoides	20	res	FAC	Species Across All Strata: <u>8</u> (B)
4. Juglans nigra	15	Yes	FACU	Percent of Dominant Species
5. <u>Acer negundo</u>	15	Yes	FAC	That Are OBL, FACW, or FAC: 75 (A/B)
6				
7				Prevalence Index worksheet:
°				Total % Cover of: Multiply by:
8				OBL species x 1 =
Sopling/Shruh Stratum (Plot size: 15 ft radius)	60	= Total Cov	er	
	15	Voo		
		<u>165</u>		FAC species X 3 =
2. Acer negundo	10	Yes	FAC	FACU species x 4 =
3				UPL species x 5 =
4.				Column Totals: (A) (B)
5				
o	·			Prevalence Index = B/A =
0	·			Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
8				\sim 1 Rupid rest for Hydrophytic Vegetation
9				
10.				3 - Prevalence Index is ≤3.0
	25	= Total Cov		4 - Morphological Adaptations ¹ (Provide supporting
Herb Stratum (Plot size: 5 ft radius)			CI	data in Remarks or on a separate sheet)
1 Verbesina alternifolia	8	No	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
0. Tovicedendren redicens	10	Vac		
2. Toxicodendron radicans	12	Tes		¹ Indicators of hydric soil and wetland hydrology must
3. Solidago gigantea	15	Yes	FACW	be present, unless disturbed or problematic.
4. Lysimachia nummularia	5	No	FACW	Definitions of Four Vegetation Strata:
5. <u>Carex blanda</u>	10	Yes	FAC	
6 Eutrichium maculatum	5	No	FACW	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
7				more in diameter at breast height (DBH), regardless of
·	·			neight.
8	·			Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				
11				Herb – All herbaceous (non-woody) plants, regardless
12				
·	55	- Total Cav		Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: 30 ft radius)	- 55	= Total Cov	er	height.
1				
·	·			
2	·			
3				
4				
5.				Hydrophytic Vegetation
6				Present? Yes X No
0	·			
		= Total Cov	er	
Remarks: (Include photo numbers here or on a separate s	sheet.)			

Profile Desc	cription: (Describe	to the dept	h needed to docu	ment the i	ndicator	or confirm	the absence	of indicators.)
Depth	Matrix		Rede	ox Feature	s1			
(inches)	Color (moist)		Color (moist)	%	Type'	Loc ²	<u>Texture</u>	Remarks
0-10	10YR 3/2						SiCL	
¹ Type: C=C	oncentration D=Der	letion RM=I	Reduced Matrix M	– – IS=Masker	Sand Gr	ains	² Location: PL	=Pore Lining M=Matrix
Hvdric Soil	Indicators:					um s .	Indica	ators for Problematic Hydric Soils ³ :
Histosol	(A1)			e (S7)				cm Muck (A10) (MI RA 147)
Histic Fr	vinedon (A2)			elow Surfa	ce (S8) (N	II RA 147	148)	coast Prairie Redox (A16)
Black Hi	istic (A3)		Thin Dark S	urface (S9)) (MLRA 1	47. 148)		(MLRA 147, 148)
Hvdroge	en Sulfide (A4)		Loamy Glev	ed Matrix ((<u>-</u>	,,	ПР	Piedmont Floodplain Soils (F19)
Stratified	d Lavers (A5)		Depleted Ma	atrix (F3)	. ,			(MLRA 136, 147)
2 cm Mı	uck (A10) (LRR N)		Redox Dark	Surface (F	-6)		R	Red Parent Material (TF2)
Deplete	d Below Dark Surfac	e (A11)	Depleted Da	ark Surface	e (F7)			ery Shallow Dark Surface (TF12)
Thick Da	ark Surface (A12)		Redox Depr	essions (F	8)			Other (Explain in Remarks)
📃 🗌 Sandy N	/lucky Minera l (S1) (LRR N,	Iron-Mangar	nese Mass	es (F12) (LRR N,		
	A 147, 148)		MLRA 1	36)				
Sandy G	eved Matrix (S4)		Umbric Surf	ace (F13) ((MLRA 13	6, 122)	³ Ind	licators of hydrophytic vegetation and
Sandy F	Redox (S5)		Piedmont Fl	oodp l ain S	oi l s (F19)	(MLRA 14	·8) w	vetland hydrology must be present,
	Matrix (S6)						u	nless disturbed or problematic.
Restrictive	Layer (if observed) ∿k/fill	:						
Type: 100	, <u>10</u>							
Depth (in	ches): 10						Hydric Soil	Present? Yes No
Remarks:								

Project/Site: Bicentennial Trail	City/County: Monroe County	Sampling Date: October 18, 2017
Applicant/Owner: Local	<	State: <u>IN</u> Sampling Point: <u>3</u>
Investigator(s): _E. Stulik, K. McLane	_ Section, Township, Range: <u>10, 9</u>	N, 1W
Landform (hillslope, terrace, etc.): floodplain	ocal relief (concave, convex, none)	<u>concave</u> Slope (%): <u>0-2</u>
Subregion (LRR or MLRA): LRR N Lat: 39.231269°	Long: <u>-86.507</u>	192° Datum: <u>WGS 84</u>
Soil Map Unit Name: St - Stendal silt loam, 0-2% slopes, freq. flooded, b	rief duration	_ NWI classification: <u>N/A</u>
Are climatic / hydrologic conditions on the site typical for this time of	year? Yes 🔀 No 🦲 (If r	no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significant	ly disturbed? Are "Normal Ci	rcumstances" present? Yes 🗙 No
Are Vegetation Soil or Hydrology naturally c	vroblematic? (If needed exp	ain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showin	g sampling point locations	s, transects, important features, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Community type: Floodplain forest	Is the Sampled Area within a Wetland?	Yes No X
HYDROLOGY		
Wetland Hydrology Indicators:	Se	condary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply		Surface Soil Cracks (B6)
Surface Water (A1)	Plants (B14)	Sparsely Vegetated Concave Surface (B8)
		Moss Trim Lines (B16)
Water Marks (B1)	Reduced Iron (C4)	Dry-Season Water Table (C2)
Sediment Deposits (B2)	Reduction in Tilled Soils (C6)	Cravfish Burrows (C8)
Drift Deposits (B3)	Inface (C7)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	n in Remarks)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)		Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)		Shallow Aquitard (D3)
Water-Stained Leaves (B9)		Microtopographic Relief (D4)
Aquatic Fauna (B13)	L	FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes No X Depth (inche	es):	
Water Table Present? Yes No X Depth (inche	es):	
Saturation Present? Yes No Depth (inche	es): Wetland Hyd	rology Present? Yes NoX
Describe Recorded Data (stream gauge, monitoring well, aerial pho	otos, previous inspections), if availat	ole:
Remarks:		
Point is within the floodplain of Muddy Fork.		

Sam	plina	Point:	3

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: <u>30 ft radius</u>)	% Cover	Species?	Status	Number of Dominant Species	
1. Platanus occidentalis	5	No	FACW	That Are OBL, FACW, or FAC: 4	A)
2 Fraxinus pennsylvanica	5	No	FACW		,
3 Populus deltoides	5	No	FAC	Total Number of Dominant	D)
د ۸ Jualans nigra	25	Yes	FACU		0)
5 Acer negundo	20	Yes	FAC	Percent of Dominant Species	
6				I That Are OBL, FACW, or FAC: (A/B)
7	·			Prevalence Index worksheet:	
9.	·			Total % Cover of: Multiply by:	
8	60			OBL species x 1 =	
Sanling/Shrub Stratum (Plot size: 15 ft radius)	60	= Total Cov	er	FACW species x 2 =	
1 Lonicera maackii	20	Yes	UPL	FAC species x 3 =	
2 Acer negundo	5	No	FAC	FACU species x 4 =	
3 Fraxinus pennsvlvanica	5	No	FACW	UPL species x 5 =	
A				Column Totals: (A)	(B)
÷					
5	·			Prevalence Index = B/A =	
0	·			Hydrophytic Vegetation Indicators:	
/				1 - Rapid Test for Hydrophytic Vegetation	
8	·			2 - Dominance Test is >50%	
9	. <u> </u>			$3 - Prevalence Index is \leq 3.0^{1}$	
10				4 - Morphological Adaptations ¹ (Provide suppo	orting
Uset Otesture (Distained 5 ft radius	30	= Total Cov	er	data in Remarks or on a separate sheet)	, ang
Herb Stratum (Plot size: <u>Stratuus</u>)	10	No	EAC	Problematic Hydrophytic Vegetation ¹ (Explain)	
2. Eutrichium maculatum	20	Yes	FACW	¹ Indicators of hydric soil and wetland hydrology mu	ist
3. Solidago gigantea	30	Yes	FACW	be present, unless disturbed or problematic.	
4. Elymus virginicus		Yes	FACW	Definitions of Four Vegetation Strata:	
5					
6				I ree – Woody plants, excluding vines, 3 in. (7.6 cr	n) or
7				height.	5 01
8					
9.				Sapling/Shrub – Woody plants, excluding vines, li than 3 in DBH and greater than 3 28 ft (1 m) tall	ess
10.					
11				Herb – All herbaceous (non-woody) plants, regard	ess
12				of size, and woody plants less than 3.28 ft tall.	
	80	= Total Cov		Woody vine - All woody vines greater than 3.28 fl	in
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)		- 10(a) 000		height.	
1					
2.					
3	·				
4					
5	·			Hydrophytic	
5	·			Vegetation	
0					
		= Total Cov	er		
Remarks: (Include photo numbers here or on a separate s	sheet.)				
				F-	52

Profile Desc	ription: (Describe	to the dep	th needed to docur	ment the i	indicator	or confirn	n the absence o	f indicators.)
Depth	Matrix		Redo	x Feature	s 1		- (
		100	Color (moist)	%	Type	LOC		Remarks
	10TR 3/2	- 100						
2-20	10YR 4/4	100					SiL	
				_				
					·			
1 ¹ Type: C=C	ncentration D=Der	 Netion RM=	Reduced Matrix M	 S=Masker	- <u> </u>		² Location: PL =	Pore Lining M=Matrix
	Indicators:		-rteduced matrix, m	0-Masket		ann o.	Indicat	ors for Problematic Hydric Soils ³ :
Histosol	(A1)		Dark Surface	e (S7)				m Muck (A10) (MLRA 147)
Histic Er	pipedon (A2)		Polyvalue Be	elow Surfa	ice (S8) (N	ILRA 147,	, 148) Co	ast Prairie Redox (A16)
Black Hi	stic (A3)		Thin Dark Su	urface (S9) (MLRA 1	47, 148)	((MLRA 147, 148)
Hydroge	en Sulfide (A4)		Loamy Gleye	ed Matrix ((F2)		Pie	edmont Floodplain Soils (F19)
	d Layers (A5)		Depleted Ma	itrix (F3)	-0)		((MLRA 136, 147)
Depleter	ICK (A1U) (LKK N) d Below Dark Surfac	ο (Δ11)	Redox Dark	Surface (F	-6) (F7)			a Parent Material (TF2)
	ark Surface (A12)			essions (F	8)			ner (Explain in Remarks)
Sandy M	lucky Mineral (S1) (LRR N,	Iron-Mangan	iese Mass	es (F12) (l	LRR N,		
	A 147, 148)		MLRA 13	6)				
Sandy G	eyed Matrix (S4)		Umbric Surfa	ace (F13)	(MLRA 13	6, 122)	³ Indic	ators of hydrophytic vegetation and
Sandy F	Redox (S5)		Piedmont Flo	oodplain S	oi l s (F19)	(MLRA 14	18) we	tland hydrology must be present,
Bostrictive	Watrix (S6)						uni	less disturbed or problematic.
	k/fill	•						
Dopth (in	choc): 10						Hydric Soil F	
Deptil (III	ciles). <u>**</u>							
Remarks.								

Project/Site: Bicentennial Trail	City/County: Monroe County		Sampling Date: October 18, 2017
Applicant/Owner: Local		State: IN	Sampling Point: <u>4</u>
Investigator(s): E. Stulik, K. McLane	Section, Township, Range: <u>10</u>	, 9N, 1W	
Landform (hillslope, terrace, etc.): floodplain	Local relief (concave, convex, non	ie): concave	Slope (%): <u>0-2</u>
Subregion (LRR or MLRA): LRR N Lat: 39.230122	° Long:86.5	08244°	Datum: WGS 84
Soil Map Unit Name: Bu-Burnside silt loam, occasionally flooded		NWI classificat	ion: <u>N/A</u>
Are climatic / hydrologic conditions on the site typical for this time c	of year? Yes 🔀 No 🦲 (If no, explain in Rer	narks.)
Are Vegetation , Soil , or Hydrology , significa	antly disturbed? Are "Normal	Circumstances" pre	esent? Yes X No
Are Vegetation, Soil, or Hydrology naturally	y problematic? (If needed, e	xplain any answers	in Remarks.)
SUMMARY OF FINDINGS – Attach site map show	ing sampling point locatio	ns, transects, i	important features, etc.
Hydrophytic Vegetation Present? Yes No X Hydric Soil Present? Yes No X Wetland Hydrology Present? Yes No X Remarks: Community type: Floodplain forest	Is the Sampled Area within a Wetland?	Yes	No
Area appears disturbed from past roadside or roadside fill.	construction, drainage a	Itering, and p	lacement of
HYDROLOGY			
Wetland Hydrology Indicators:		Secondary Indicato	rs (minimum of two required)
Primary Indicators (minimum of one is required; check all that app Surface Water (A1) True Aquat High Water Table (A2) Hydrogen S Saturation (A3) Oxidized RI Water Marks (B1) Presence o Sediment Deposits (B2) Recent Iron Drift Deposits (B3) Thin Muck 3 Algal Mat or Crust (B4) Other (Expl Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13)	pty) ic Plants (B14) Sulfide Odor (C1) hizospheres on Living Roots (C3) of Reduced Iron (C4) n Reduction in Tilled Soils (C6) Surface (C7) lain in Remarks)	Surface Soil Cr Sparsely Vege Drainage Patte Moss Trim Line Dry-Season W Crayfish Burrov Saturation Visil Stunted or Stree Shallow Aquita Microtopograpi FAC-Neutral To	Facks (B6) tated Concave Surface (B8) Fins (B10) Es (B16) ater Table (C2) ws (C8) ble on Aerial Imagery (C9) Essed Plants (D1) osition (D2) Ird (D3) hic Relief (D4) est (D5)
Field Observations: Surface Water Present? Yes Water Table Present? Yes No X Depth (inc Saturation Present? Yes No X Depth (inc Gaturation Present? Yes No X Depth (inc (includes capillary fringe)	thes): thes): thes): Wetland H	ydrology Present?	? Yes No 🗶
Describe Recorded Data (stream gauge, monitoring weil, aenarp	notos, previous inspections), il avai		
Remarks: Point is within the floodway of an unnamed t	tributary of Middle Fork.		
Surface Water (A1) True Aquat High Water Table (A2) Hydrogen S Saturation (A3) Oxidized RI Water Marks (B1) Presence o Sediment Deposits (B2) Recent Iron Drift Deposits (B3) Thin Muck 3 Algal Mat or Crust (B4) Other (Expl Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13) Field Observations: Surface Water Present? Surface Water Present? Yes No Depth (inc (includes capillary fringe) Depth (inc Describe Recorded Data (stream gauge, monitoring well, aerial p Remarks: Point is within the floodway of an unnamed t	<pre>ic Plants (B14) Sulfide Odor (C1) hizospheres on Living Roots (C3) of Reduced Iron (C4) n Reduction in Tilled Soils (C6) Surface (C7) lain in Remarks) ches): thes): thes): thotos, previous inspections), if avai tributary of Middle Fork.</pre>	Sparsely Veger Drainage Patte Moss Trim Line Dry-Season W Crayfish Burrov Saturation Visil Stunted or Stre Geomorphic Pe Shallow Aquita Microtopograph FAC-Neutral Te ydrology Present?	tated Concave Surface (B8 rns (B10) is (B16) ater Table (C2) ws (C8) ble on Aerial Imagery (C9) issed Plants (D1) osition (D2) rd (D3) nic Relief (D4) est (D5) Yes No X

Sam	plina	Point:	4

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30 ft radius</u>)	% Cover	Species?	Status	Number of Dominant Species
1. Platanus occidentalis	15	No	FACW	That Are OBL, FACW, or FAC: 0 (A)
2. Ulmus americana	15	No	FACW	Total Number of Dominant
3. <u>Acer saccharum</u>	60	Yes	FACU	Species Across All Strata: <u>4</u> (B)
4. Juglans nigra	15	No	FACU	Percent of Deminent Species
5				That Are OBL, FACW, or FAC: 0 (A/B)
6				()
7				Prevalence Index worksheet:
8.				Total % Cover of:Multiply by:
	105	= Total Cov	er	OBL species x 1 =
Sapling/Shrub Stratum (Plot size: 15 ft radius)				FACW species x 2 =
1. Lonicera maackii	30	Yes	UPL	FAC species x 3 =
2. Cornus florida	15	Yes	FACU	FACU species x 4 =
3. Fraxinus pennsylvanica	5	No	FACW	UPL species x 5 =
4.				Column Totals: (A) (B)
5.				
6.				Prevalence Index = B/A =
7				Hydrophytic Vegetation Indicators:
8				1 - Rapid Test for Hydrophytic Vegetation
0	·			2 - Dominance Test is >50%
9				3 - Prevalence Index is ≤3.0 ¹
10:	50			4 - Morphological Adaptations ¹ (Provide supporting
Herb Stratum (Plot size: 5 ft radius	50	= Total Cov	er	data in Remarks or on a separate sheet)
1 Euonymus fortunei	10	No	UPL	Problematic Hydrophytic Vegetation ¹ (Explain)
2 Pilea numila	5	No	FACW	
2 Glechoma hederacea	10	No	FACU	¹ Indicators of hydric soil and wetland hydrology must
A Asarum canadense	40	Yes	FACU	be present, unless disturbed or problematic.
-			17.00	Definitions of Four Vegetation Strata:
5				Tree – Woody plants, excluding vines, 3 in, (7.6 cm) or
6				more in diameter at breast height (DBH), regardless of
7	·			height.
8				Sapling/Shrub – Woody plants, excluding vines, less
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
10				Herb All borbassaus (non weady) planta, regardless
11				of size, and woody plants less than 3.28 ft tall.
12				
	65	= Total Cov	er	Woody vine – All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)				
1				
2				
3				
4				
5				Hydrophytic Vegetation
6.				Present? Yes No X
		= Total Cov	er	
Remarks: (Include photo numbers here or on a separate s	theet)			
Remarks. (include photo numbers here of on a separate a	sneet.)			
				F-55

nches)	Color (moist)	%	Color (moist)	%	Type	Loc ²	Texture		Remarks	
-3	10YR 2/1	_ 100					SiL			
								_		
								_		
ype: C=C ydric Soil	oncentration, D=De _l Indicators:	oletion, RM	Reduced Matrix, M	S=Masked	d Sand Gra	ains.	² Location: Indi	PL=Pore Lini icators for P	ng, M=Matrix. roblematic Hydrid	c Soils³:
Histosol Histic Ej Black Hi Hydroge Stratified 2 cm Mu Depleted Thick Da Sandy M	(A1) pipedon (A2) istic (A3) en Sulfide (A4) d Layers (A5) uck (A10) (LRR N) d Below Dark Surface ark Surface (A12) fucky Mineral (S1) (A 147, 148)	ce (A11) L RR N,	Dark Surface Polyvalue Be Thin Dark Su Loamy Gleye Depleted Ma Redox Dark Depleted Da Redox Depre Iron-Mangan MLRA 13	e (S7) elow Surfa urface (S9 ed Matrix (trix (F3) Surface (F rk Surface essions (F ese Mass 6)	ce (S8) (N) (MLRA 1 (F2) = = 6) (F7) 8) es (F12) (ILRA 147 147, 148) LRR N,	, 148)	2 cm Muck (Coast Prairie (MLRA 14 Piedmont FI (MLRA 13 Red Parent Very Shallov Other (Expla	A10) (MLRA 147) e Redox (A16) 47, 148) oodplain Soils (F1) 36, 147) Material (TF2) w Dark Surface (TF ain in Remarks)	9) ⁻ 12)
Sandy G Sandy F Sandy F	Gleyed Matrix (S4) Redox (S5) I Matrix (S6)		Umbric Surfa	ace (F13) (bodp l ain S	(MLRA 13 ioils (F19)	6, 122) (MLRA 14	³ lı 48)	ndicators of h wetland hyd un l ess distu	nydrophytic vegeta rology must be pre rbed or problemati	tion and esent, c.
estrictive	Layer (if observed)	:								
Type: roa	adside fill									
Depth (in	ches): <u>3</u>						Hydric So	oil Present?	Yes N	
rea app	ears to be dis	sturbed	from placeme	ent of fi	ll along	roads	ide.			

Project/Site: Bicentennial Trail	City/County: Monroe County		Sampling Date: October 18, 2017
Applicant/Owner: Local		State: IN	Sampling Point: <u>5</u>
Investigator(s): _E. Stulik, K. McLane	Section, Township, Range: _1	5 9N, 1W	
Landform (hillslope, terrace, etc.): <u>floodplain</u>	Local relief (concave, convex, no	one): <u>concave</u>	Slope (%): <u>2-4</u>
Subregion (LRR or MLRA): LRR N Lat: 39.220678°	Long: <u>-86</u>	.517936°	Datum: WGS 84
Soil Map Unit Name: <u>CaD-Caneyville silt loam, 12-18% slopes</u>		NWI classifie	cation: <u>N/A</u>
Are climatic / hydrologic conditions on the site typical for this time of	f year? Yes 🗙 No	(If no, explain in F	Remarks.)
Are Vegetation , Soil , or Hydrology significar	ntly disturbed? Are "Norm:	al Circumstances"	present? Yes X No
Are Vegetation , Soil , or Hydrology naturally	problematic? (If needed,	explain any answe	ers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showi	ng sampling point locati	ons, transects	s, important features, etc.
Hydrophytic Vegetation Present? Yes No X Hydric Soil Present? Yes No X Wetland Hydrology Present? Yes No X Remarks: Community type: Floodplain forest	Is the Sampled Area within a Wetland?	Yes	No X
HYDROLOGY Wetland Hydrology Indicators:		Secondary Indica	ators (minimum of two required)
Primary Indicators (minimum of one is required; check all that app	ly)	Surface Soil	Cracks (B6)
Surface Water (A1)	c Plants (B14)	Sparsely Ve	getated Concave Surface (B8)
High Vvater Table (A2) Hydrogen S	uffide Odor (C1) vizeenhoren en Living Boote (C2)		interns (B10)
Water Marks (B1)	Reduced Iron (C4)		Water Table (C2)
Sediment Deposits (B2)	Reduction in Tilled Soils (C6)		rows (C8)
Drift Deposits (B3)	Surface (C7)	Saturation V	(isible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	ain in Remarks)	Stunted or S	Stressed Plants (D1)
Iron Deposits (B5)		🔀 Geomorphic	Position (D2)
Inundation Visible on Aerial Imagery (B7)		Shallow Aqu	iitard (D3)
Water-Stained Leaves (B9)		Microtopogra	aphic Relief (D4)
Aquatic Fauna (B13)		FAC-Neutra	Test (D5)
Field Observations:			
Surface Water Present? Yes No Depth (inch	ies):		
Water Table Present? Yes No Depth (incr	ies):		
Saturation Present? Yes No Depth (incr (includes capillary fringe)	ies): Wetland	Hydrology Prese	nt? Yes No
Describe Recorded Data (stream gauge, monitoring well, aerial ph	iotos, previous inspections), if av	ailable:	
Demode			
Remarks.		_	
Point is within the floodway of an unnamed ti	ibutary of Griffy Creek	Κ.	

Sam	plina	Point:	5

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: <u>30 ft radius</u>)	% Cover	Species?	Status	Number of Dominant Species	
1. Platanus occidentalis	30	Yes	FACW	That Are OBL, FACW, or FAC: <u>3</u> (A)	
2. Ulmus rubra	10	No	FAC	Total Number of Deminent	
3. Acer saccharum	30	Yes	FACU	Species Across All Strata: 6 (B)	
4.				(-)	
5				Percent of Dominant Species	ים
6)
7				Prevalence Index worksheet:	
8	·			Total % Cover of: Multiply by:	
0	70	- Total Cau		OBL species <u>0</u> x 1 = <u>0</u>	
Sapling/Shrub Stratum (Plot size: 15 ft radius)	70	- Total Cov	ei	FACW species <u>30</u> x 2 = <u>60</u>	
1. Lonicera maackii	10	Yes	UPL	FAC species $60 \times 3 = 180$	
2 Ulmus rubra	15	Yes	FAC	FACU species 30 x 4 = 120	
3 Asimina triloba	25	Yes	FAC	UPL species $70 \times 5 = 350$	
۰				Column Totals: 190 (A) 710 (B	3)
۲	·				·/
5	·			Prevalence Index = B/A = <u>3.74</u>	
0				Hydrophytic Vegetation Indicators:	
/	·			1 - Rapid Test for Hydrophytic Vegetation	
8	·			2 - Dominance Test is >50%	
9	·			3 - Prevalence Index is ≤3.0 ¹	
10				4 - Morphological Adaptations ¹ (Provide supportin	na
Lieth Strature (Distainer 5 ft radius	50	= Total Cov	er	data in Remarks or on a separate sheet)	
Herb Stratum (Plot size: on radius)	60	Vec	LIPI	Problematic Hydrophytic Vegetation ¹ (Explain)	
	40				
2. Asimina triloba		INO	FAC	¹ Indicators of hydric soil and wetland hydrology must	
3	·			be present, unless disturbed or problematic.	
4	·			Definitions of Four Vegetation Strata:	
5				Tree Meedy plants evaluating vince 2 in (7.0 ers).	
6				more in diameter at breast height (DBH), regardless of	or of
7				height.	
8				Conting/Shrub Mady planta avaluding vince loss	
9				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	\$
10					
11.				Herb – All herbaceous (non-woody) plants, regardles	,s
12.				or size, and woody plants less than 5.20 it tall.	
	70	= Total Cov	er	Woody vine - All woody vines greater than 3.28 ft in	
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)				height.	
1					
2					
3.					
4.					
5.				Hydrophytic	
6				Present? Yes No X	
ö		= Total Cov			
Pomarka: (Include photo numbers here or on a congrate s	where t				
Remarks. (Include photo numbers here of on a separate s	sileet.)				
				F-58	

SUIL

Profile Desc	ription: (Describe	to the de	pth needed to docun	nent the	indicator	or confirn	n the absence o	of indicators.)
Depth	Matrix	07	Redox	x Feature	es T		Tevture	Demostre
		100		<u> </u>	iype	CC		remarks
	1011 3/2	- 100						
6-12	10YR 4/4	- 100						
12-20	10YR 4/3	20	5YR 5/8	5	<u> </u>	M	CL	
	10YR 4/4	75	·					
<u> </u>								
		- <u> </u>					2	
Hydric Soil	oncentration, D=Dep	etion, RI	I=Reduced Matrix, MS	S=Maske	d Sand Gr	ains.	Location: PL=	Pore Lining, M=Matrix.
Histosol	(A1)		Dark Surface	(\$7)				m Muck (A10) (MI RA 147)
	pipedon (A2)		Polyvalue Be	low Surfa	ace (S8) (N	ILRA 147,	148) Co	ast Prairie Redox (A16)
Black Hi	stic (A3)		Thin Dark Su	rface (SS	9) (MLRA 1	l47, 148) [°]		(MLRA 147, 148)
Hydroge	n Sulfide (A4)		Loamy Gleye	d Matrix	(F2)		Pie	edmont Floodplain Soils (F19)
Stratified	Layers (A5)		Depleted Mat	rix (F3)				(MLRA 136, 147)
	ICK (A10) (LRR N) 1 Below Dark Surfac	ο (Δ11)	Depleted Dark	surrace (k Surface	F0) e (F7)			d Parent Material (TF2)
Thick Da	ark Surface (A12)		Redox Depre	ssions (F	=8)			her (Explain in Remarks)
Sandy N	lucky Mineral (S1) (LRR N,	 Iron-Mangane	ese Mass	, ses (F12) (LRR N,		
MLRA	A 147, 148)		MLRA 136	6)				
Sandy G	Bleyed Matrix (S4)		Umbric Surfa	ce (F13)	(MLRA 13	6, 122)	³ Indic	ators of hydrophytic vegetation and
Sandy R	ledox (S5)		Piedmont Flo	odplain S	Soils (F19)	(MLRA 14	18) we	Itland hydrology must be present,
Restrictive I	aver (if observed)							
		•						
Depth (inc	ches):						Hydric Soil F	Present? Yes No 🗙
Remarks:	·							

ATTACHMENT PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): December 13, 2017

- B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: Kevin McLane Green3, LLC 1104 Prospect Street Indianapolis, IN 46203 (317) 634-4110
- C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

This Bicentennial Pathway Project, Phase 1 of the overall Griffy Lake to Lake Lemon bicycle improvements projects is located along Old State Road 37 in Bloomington Township, Monroe County, Indiana. The proposed pathway will involve the addition of paved shoulders with possible culvert extensions along approximately 2.3 miles of Old SR 37 from Audubon Road to Robinson Road.

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: INCounty/parish/borough: Porter CountyCity: South HavenCenter coordinates of site (lat/long in degree decimal format):

Lat. 39.228008° Long. -86.511475° Universal Transverse Mercator:

Name of nearest waterbody: Muddy Fork

Identify (estimate) amount of waters in the review area:

Non-wetland waters:

- Northern Branch of Muddy Fork, OHWM 20 ft wide, 1 ft deep, ~0.06 acre in investigated area.
- Southern Branch of Muddy Fork, OHWM 17 ft wide, 3 feet deep, ~0.06 acre in investigated area.
- UNT 1 to Muddy Fork, OHWM 4 ft wide, 3 inches deep, ~0.13 acre in investigated area.
- UNT 2 to Muddy Fork, OHWM 15 ft wide, 1 foot deep, ~0.05 acre in investigated area.
- Northern UNT to Griffy Creek, OHWM 12 ft wide, 0.5 ft deep, ~0.04 acre in investigated area.
- Southern UNT to Griffy Creek, OHWM 18 ft wide, 1 ft deep, ~0.04 acre in investigated area.
E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

In any circumstance where a permit applicant obtains an individual permit, or a Nationwide 2. General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the

site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply) - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Wetland/Stream

Delineation dated December 13, 2017

- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data

sheets/delineation report. 🗖 Data sheets prepared by the

Corps:

- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data. See Figure 4 of Waters of the U.S. Report
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name:

USDA Natural Resources Conservation Service Soil Survey. Citation: SSURGO Database Monroe County. See Figure 3 of Waters of the U.S. Report

- National wetlands inventory map(s). Cite name: Bicentennial Pathway
- State/Local wetland inventory map(s):
- FEMA/FIRM maps: See

FIRM layer data on Figure 4

Il 100-year Floodplain

Elevation is:

(National Geodectic Vertical Datum of 1929)

Photographs: I Aerial (Name & Date):

or I Other (Name & Date): Site Photos, 10/18/17

Previous determination(s). File no. and date of

response letter: Applicable/supporting case law:

- Applicable/supporting scientific literature:
- Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later iurisdictional determinations.

2. Mez

12/13/2017

Signature and date of Regulatory Project Manager (REQUIRED)

Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

Site Name	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
Northern Branch of Muddy Fork	39.233711°	-86.504662°	R2UBH	~0.6 acre	non-Section 10, likely Water of U.S.
Southern Branch of Muddy Fork	39.231023°	-86.507124°	R2UBH	~0.6 acre	non-Section 10, likely Water of U.S.
UNT 1 to Muddy Fork	39.234593°	-86.503993°	R4SBC likely	~0.13 acre	non-Section 10, likely water of U.S.
UNT 2 to Muddy Fork	39.229855°	-86.508156°	R4SBC likely	~0.05 acre	non-Section 10, likely Water of U.S.
Northern UNT to Griffy Creek	39.220956°	-86.517554°	R4SBC likely	~0.04 acre	non-Section 10, likely Water of U.S.
Southern UNT to Griffy Creek	39.21935 <mark>6</mark> °	-86.519013°	R4SBC	~0.04 acre	non-Section 10, likely Water of U.S.

APPENDIX G – PUBLIC INVOLVEMENT



May 2, 2017

Re: Site Investigation for the Unionville Bicentennial Trail Project Indiana Department of Transportation (INDOT) Designation Number (Des. No.) 0902215

Dear Property Owner,

The Unionville Bicentennial Trail project is being proposed by Monroe County, Indiana. The project The Bicentennial Pathway Project, Phase 1 of the overall Griffy Lake to Lake Lemon bicycle improvements project is to provide bicycle improvements along Old SR 37 from Audubon Drive to Robinson Road, approximately 2.3 miles in length. The proposed project generally consists of the addition of four- (4) or five-foot (5) wide asphalt shoulders with one- (1) or two-foot (2) graded shoulders to both sides of the existing mainline roadway pavement. The existing travel lanes may be narrowed or adjusted to allow for a best fit of the bicycle improvements. Existing culverts will be extended or modified as necessary to correspond with the new improvements. Existing bridges are to remain in place with no planned modifications. Construction is planned for 2020. Traffic is planned to be maintained on the existing roadway, although delays and modifications may occur during construction.

Green 3 LLC is currently working with IXOYE Engineering and Monroe County representatives to complete the required environmental and historic resource assessment and documentation, which is used to assess impacts to resources as a result of the proposed project.

Therefore, representatives from the IDNR, USFWS, and Green 3 LLC will be on site in the near future to investigate the project area for environmental impacts, which might also include impacts to historic properties, if any are within the project area. These investigations may require representatives to enter your property. This is permitted by law per Indiana Code (IC) 8-23-7-26.

If you have any questions or concerns regarding the project or our visit to the site, please don't hesitate to contact me at (317) 634-4110 or direct e-mail, <u>connie@green3studio.com</u>.

Thank you in advance for your assistance.

Sincerely,

Czeyer

Connie Zeigler Architectural Historian Green 3 LLC

NOTICE OF PUBLIC MEETING

The Monroe County Highway Department will host a public information meeting regarding a proposed bicycle improvement project on Old S.R. 37 north of the City of Bloomington in Monroe County. Specifically, improvements are to be located along Old S.R. 37 from Audubon Drive to Robinson Road. The INDOT project number is Des. No. 0902215 and the project is partially funded with federal funds.

The improvements are to consist of new 5 foot asphalt shoulders with a 1 foot aggregate shoulder. Other related improvements will consist of grading, perpetuation of drainage, culvert replacements or extensions, driveway and street approach adjustments, a retaining wall and other related improvements. The proposed project is part of an overall plan to improve alternative transportation and safety in Monroe County, particularly between Bloomington and Lake Lemon.

The shoulder improvements will serve to allow bicyclists the opportunity to travel off of the main roadway travel lanes, particularly in steeper hilly areas.

The purpose of this meeting is to present information regarding proposed project and to engage the community in conversation with regard to the project. The Highway Department welcomes the opportunity to engage community members and solicit input regarding this proposed project.

<u>Please Join Us</u> Wednesday, December 4, 2019 (5:30 pm) Open House (6:00 pm) Formal Presentation Northern Monroe County Fire Territory's Fire Station No. 5 5081 N. Old State Road 37 Bloomington, IN 47408

The meeting will feature an open house session beginning at 5:30 pm followed by a formal presentation at 6:00 pm. During the open house session project representatives will be available to address questions and explain each intersection improvement. Project maps, displays and information packets will be available throughout the duration of the evening.

Monroe County looks forward to meeting with the community on Wednesday, December 4, 2019. Should you have additional questions regarding this meeting, please contact Roy Carlsgaard, Project Manager, IXOYE Trail & Greenways Engineering, Inc. at (317) 840-0026 roy@ixoyeengineering.com and/or Lisa Ridge, Highway Director, Monroe County Highway Department (812)349-2555 ljridge@co.monroe.in.us

In accordance with the "Americans with Disabilities Act", Monroe County can provide special accommodation for persons with disabilities and or limited English speaking ability and persons needing auxiliary aids or services such as interpreters, signers, readers, or large print. Should special accommodation be needed related to accessibility to project documents and/or participation at the public involvement venue, please contact the Highway Department by November 27, if possible.



Monroe County Highway Department 501 N. Morton St., Suite 216, Bloomington, IN 47404 (812) 349-2555 Fax (812) 349-2959

www.co.monroe.in.us

Wednesday, December 4, 2019

Dear Local Resident, Interested Citizen, and Elected/Local Public Official:

Welcome to the Monroe County Highway Department's Public Information Meeting regarding the proposed *Bicentennial Pathway Project, Phase 1*.

The purpose of this public information meeting is to informally offer the community the opportunity to comment on proposed plans to construct alternative transportation improvements along Old State Road 37, as a part of the federally required environmental review and public involvement processes. The Monroe County Highway Department welcomes the opportunity to hear from the community during this public information meeting and looks forward to continuing community engagement as a part of this process.

There are several ways your comments may be presented this evening and over the next several weeks. You may submit comments in the following manner:

- 1. Complete a comment form and return it to the sign-in table or to a project Team Member attending the public meeting. Comment forms are available at the sign-in table.
- 2. Mail your comments to the project consultant, IXOYE Trail & Greenways Engineering, Inc., Attention Roy Carlsgaard, P.O. Box 48, Bargersville, Indiana 46106.
- 3. Verbally participate as a speaker during the Public Comment Session.
- 4. Comments may also be e-mailed to the Project Manager at **roy@ixoyeengineering.com**.

The County respectfully requests that comments be submitted or post-marked no later than Thursday, December 19, 2019.

Thank you for attending tonight's public information meeting.

PUBLIC INFORMATION MEETING						
for						
Bicentennial Pathway Project Phase 1						
Des. No. 0902215						
Northern Monroe County Fire Territory's Fire Station No. 5						
Wednesday, December 4, 2019 at 6:00 p.m.						
D 🙆 KOYE 🛉 💳 👀						











Project Description								
 Purpose & Need: Provide shoulders for bicyclists; reduce exposure of bicyclists to vehicles 								
Overall Project – Audubon Dr. to Robinson Rd								
 Phase 1 Project – fiscally constrained Uphill portions 								
Asphalt Shoulders - 5 foot wide, 1 foot stone								











Project Funding & Costs Funding The project is funded with both local funds and federal-aid funds programmed through INDOT, the agency responsible for selecting, allocating and distributing rural funds to local public agencies (LPA's) like Monroe County. Federal funds for this project are Transportation Enhancement/Transportation Alternative Program (TE/TAP) funds. Costs The total project cost is currently estimated at approximately \$2.8M, with approximately \$2.14M programmed through INDOT for federal-aid funding.

IXOYE



- Public Information Meeting (today): 12/4/19
- Public comments requested by close-of-business (5:00 p.m.) on 12/19/19
- Right-of-way acquisition activities follow after INDOT approval of Environmental Document
- Completion of Design Phase
- Bid Letting: Summer 2021
- Construction: Fall 2021



How Can You Participate?

Verbally as a Public Statement

Participate during public comment session via microphone

Comment Form

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 (\mathbf{J})

- Submit form or written document via mail
- Email
 - roy@ixoyeengineering.com

Please feel free to use any and all methods.







Public Comment								
 Speakers Sign-in Sheet 								
Open to the floor for verbal public comment.								
Please come forward to the podium so that we may hear your statements adequately.								
Please be courteous and mindful of appropriate language.								
🕖 🙆 Exoye 📭 🖚								



Thank You

- Please visit with project members following the public presentation.
 Informal questions and answers
- View displays and preliminary plans
- Real Estate Process

Thank you for your attendance this evening.

This public meeting is adjourned.







Summary of Public Comments Received in Response to Public Information Meeting on 12/4/19

The project sponsor, the Monroe County Highway Department, hosted a public information meeting regarding the proposed project on December 4, 2019 at the Northern Monroe County Fire Territory's Fire Station No. 5, 5081 N Old State Road (SR) 37, Bloomington, Indiana 47408. Notices were mailed to adjacent property owners and published in the *Herald-Times* and *Ellettsville Journal* on November 20, 2019 and November 27, 2019. Those in attendance were given the opportunity to complete comment forms, mail or email comments to the project designer, or verbally participate as a speaker during the public comment session.

Numerous members of the public participated during the public comment session of the meeting. Comments and questions included: a request to see plans available online, a question about any future meetings, questions regarding the extent of the scope and impacts, questions regarding the funding, comments regarding the beneficial nature of the improvements, a question regarding utility impacts, a question regarding vegetation trimming and removal, a question regarding the usage of the shoulders, a question regarding moving mailboxes, questions regarding right-of-way acquisition, and comments on past accidents.

One email was received from a property owner prior to the information meeting that requested that the project correct the visibility problem near the end of their driveway (by removing trees).

No other comments or questions were received during the comment period ending on December 19, 2019.

Subject: Fwd: Re: Dec 4/ N Old State Road 37 From: Roy Carlsgaard - IXOYE <ixoye-eng@comcast.net> Date: 12/9/2019, 11:39 AM To: eligabiff@gmail.com CC: Lisa Ridge <ljridge@co.monroe.in.us>, Paul Satterly satterly@co.monroe.in.us>

Ms. Ruh,

Not sure what happened but below is the email that I had replied with on 11/27... I hope this one goes through...

Sincerely,

Roy N Condegenese SC President INOTE Civil Engineering, Inc. INOVE Trail & Greenways Engineering, Inc. P.O. Box 40 Bargersettie, Indiana 46106-0048 Cell: 31~840-0026 Jean and "Come to us all pen who are more and burdened, and I will give parcent," 30 11/22

------ Forwarded Message -------Subject:Re: Dec 4/ N Old State Road 37 Date:Wed, 27 Nov 2019 10:42:37 -0500 From:Roy Carlsgaard - IXOYE <roy@ixoyeengineering.com> To:Elizabeth Ruh <<u>eligabiff@gmail.com></u> CC:ljridge@co.monroe.in.us, Paul Satterly@co.monroe.in.us>

Hello Ms. Ruh,

We wanted to let you know that the plans still include work along your frontage that will remove most, if not all of the trees and will improve the visibility along there to the north from your driveway. The project does anticipate right-of-way acquisition at your property and so further coordination with you will take place during that process next year.

Please feel free to contact me any time with any further questions or inquiries.

Thank you, *Hoy I Configurate The President PXOYE Civil Engineering, Inc. PXOYE Trail & Greenways Engineering, Inc. P.O. Box 18 Bargersville, Indiana 46106-0048 Cell: 11⁻⁵840-0026 Irans solt, "Come to use all you who are many and inclosed, and I will give roursek," 30:11:23*

On 11/25/2019 6:24 PM, Elizabeth Ruh wrote:

Hi,

I am unable to attend your meeting on December 4th. I own the home at 4799 N Old State Road 37.

A few years ago, when we were first notified about project I spoke to Paul at County Planning. My driveway is blind and people come flying around the corner. He told me that when this project came through you would be able to take the land (and trees) on my side in an attempt to correct the visibility problem.

Would you please confirm that this is still the plan?

Thank you,

Elizabeth Ruh

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'S CLAIM
s, neither of which shall total e body of the advertisement
295 Pork (50 per cept of above amount)
) N

TOTAL AMOUNT OF CLAIM ...

DATA FOR COMPUTING COST

Width of single column in picas 9.4 Number of insertions 2

Size of type 8 point

Pursuant to the provisions and penalties of IC 5-11-10-1, I hereby certify that the foregoing account is just and correct, that the amount claimed is legally due, after allowing all just credits, and that no part of the same has been paid.

I also certify that the printed matter attached hereto is a true copy, of the same column width and type size, which was duly published in said paper 2 times. The dates of publication being as follows: 11/20/19, 11/27/19

Additionally, the statement checked below is true and correct

Newspaper does not have a Web site.

Newspaper has a Web site and this public notice was posted on the same day as it was published in the newspaper.

Newspaper has a Web site, but due to technical problem or error, the public notice was posted on.... Newspaper has Web site but refuses to post the public notice.

12-8-19

Date.

Leok Lichy

General Form No. 99P (Rev

.\$57.82

Title: Public Notice Clerk

G-11

I certify that the within claim is line and correct; that the serv-lices there in itemized and for which charge is made were ordered by me and were necessary to the public business

ID# 83-2810977 I have examined the within claim and hereby certify as That it is duly authenticated as required by law.

That it is based upon statutory authority.

That it is in proper form.

follows:

IN FAVOR OF To: Herald Times 1900 S. Walnut St. Bloomington, IN 47402

ON ACCOUNT OF APPROPRIATION FOR

IN THE SUM OF \$-

Appropriation No..

ALLOWED -

Claim No.

improvements are to be located along Old S.R. 37 from Audubon Drive to Robinson Road. The INDOT project number is Des. No. 0902215 and the project is partially funded with federal funds.

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State Board of Accounts

ATTACH COPY OF ADVE

No of

General Form No. 99P

osting and sole and wrovement meeting		
por Office (C) of the standard	To: Herald Times 1900 S. Walnut St. Bloomington, IN 47401	
	PUBLISHER'S CLAIM	
LINE COUNT Display Master (Must not e more than four solid lines o is set) number of equival Head number of lines Body number of lines Tail number of lines Total number of lines in not	ixceed two actual lines, neither of which shall total of the type in which the body of the advertisement ent lines	
COMPUTATION OF CHARGES 98 lines, 1 column(s) wide equals 9 cents per line Additional charges for notices conta Charge for extra proofs of publicatio TOTAL AMOUNT OF CLAIM	8 equivalent lines at 0.59 aining rule or tabular work (50 per cent of above amount) on (\$1.00 for each proof in excess of two) V	\$57.82
DATA FOR COMPUTING COST Width of single column in picas 9.4 Number of insertions 2	Size of type 8 point	
Pursuant to the provisions and pena correct, that the amount claimed is legally du	alties of IC 5-11-10-1, I hereby certify that the foregoing ac ue, after allowing all just credits, and that no part of the sa	count is just and me has been paid.
l also certify that the printed matter attached published in said paper 2 times. The dates o 11/20/19, 11/27/19	I hereto is a true copy, of the same column width and type of publication being as follows:	size, which was duly

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12 8-19 Date ************************************

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cans with Disabilities Act", Monroe County can provide special accommodation for persons APPENDIX H – AIR QUALITY

Indiana Departmenti of Transportation (INDOT)

State Preservation	anvil ocal	initialari.	Draiocle	EV 2020	- 201
SIDE MESERAIU		THE REC	PUBUS		- 214

State Preservanic Sponsor	CONTR ACT#J LEAD DES	STIP NAME	ROUTE	WORK TYPE	LOCATION	DISTRICT	MILES	FEDERAL CATEGORY	Estimated Cosilieft fo Complete Project*	PROGRAM	PHASE	FEDERAL	MATCH	2020	2021	2022	2023	2024
Bloomingfon	1900401	irii.	ST 1064	New Road Constitution	Adams Singel belween Countyside Lane and Allen Silvent	Snymaut	(Multiple		local Funds	FE	\$0.00	\$578,066.00			\$578,066.00		
indiana Railread	1900409	irit	IR 1067	Raircad Profestion	Gamison Chapel Rd al INRO RR DDT 292445E near Blocmington	Snymaut	(STFBG		Local Safety Program + 138	CN	\$342,000.00	\$0.00	\$342,000.01				
										l oral Safety Program 130	PE	\$18,000.00	\$1 <u>-00</u>	\$18,000.00				
										l oral Funds	CN	\$0.02	\$38,000.00	\$38,000.00				
		22								Local Funds	PE	30.00	\$2,000.00	\$2,000.00	1. Carlot			-
Monroe County	34096 / 0902215	Iril.	IR 1030	Bike/Pedestrian Facilities	Bicentennial Trail- Phase 1 (Pre viously Unionville Trail)	Seymour	1.73	SISTPEG		Local Trans Enhancement Ptoposm	CN	\$1,858,240.00	\$0.00		\$1,858,210.00			
	1				A. Links					Local Funds	CN	\$0.00	\$442,800.00		\$442,600.00			1
Monree Calimy	37596 / 1400783	THE.	10.59	Anial Astorication (JRU4R Standards)	Sample Mosd, Prises 1 - Did 37 N to SR 37	Seymour	2.5	STPad		Calcal Punds	CN	\$0.50	saw.oodroo	\$597,000.00				
										Group IV Program	CN.	\$3,588,000.00	\$0.00	\$3,588,000.00				
Mannar Caunty	37596 1400783	AC7	IR 1039	Road Reconstruction (3PMIR Standards)	Sample Road, Phase 1 - Old 37 N to SR 37	Seymaur	2.5	STBG	\$6,914,912.00) I oral Funds	RW	\$0.00	\$185,720.00	\$185,720.01				
										Group IV Program	RW	\$742,880.00	\$0.00	\$742,890.01				
Comments III phas	e (g r 928,600	I, NO MP	a															
Mannae County	37596 I 1400783	MC3	R 1039	Road Reconstituction (3RMR Standards)	Sample Road, Philipe 1 - Old 37 N th SIR 37	Seymour	2.5	STEG	\$17,902,490.00	lonalFunds	CN	\$0.C0	\$1,533,991.00	(\$897,000.00)	\$2,430,990.00			
										Group IV Peogram	<u>6</u> r	\$6,135,960.00	\$0.00	(53,688,000.00)	\$9,723,960.00			
Comments:Moving C	N funcing for	mFY20	70 1c FY 20	21 foo a icial of \$12,154,	950. Na MPÔ					1								
Mannar County	38180 1500210	irit.	WA WAR	Bridge Inspections	Co. ntywide Bridge Inspection and Inventory Programmin Cycle Wars 2018-2021	Seymaut	0	Multiple		l anal Bridge Proptern	PE	\$97,128.24	SN-00	\$91,115.24	\$6,013,00			
					general digeneration and the induced of		_			Local Funds	PE	\$0.00	\$24,282.06	\$22,778.81	\$1,503.25			
Bloomington	38348 I 1500384	lril.	ST 1047	BikolFecesitian Facilities	Siónpath CN on S Hendelson from castern formini of Black Lumbra Trail to Winstow	Seymour	0	STFBG		Beamington MPO - PYB	CN	\$618,007.00)	\$1.00	\$618,000.01				
				I	The second state of the second state	<u>.</u>		<u>I</u>		Hiconingian MPC	2	\$1,416,133.00)	\$1.00	\$1,416,133.00				
										loral Funds	CN	\$0.00	\$764,767.00	\$764,767.01				

Page 228 dl 375 Report Created:12/17/2019 11:18:02AM

*Entimated Cents left to Complete Project column is list cents its army extend beyond the fiture years of a STIP. This column is not facally constrained and is fait information pageses.

APPENDIX I – ADDITIONAL STUDIES

Table 1	. LWCF	Properties	in Monroe	County, IN
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objectid	State	County	Grant ID Element	Туре	Grant Element Title	Grant Sponsor	Fiscal Year	Amount
47325	Indiana	MONROE	26	D	SOUTH FAIRFAX DEPT. OF BEACH NATURAL RESOURCES		1968	79244.5
47327	Indiana	MONROE	33	D	PAYNETOWN BEACH	DEPT. OF NATURAL RESOURCES	1968	63224.94
47361	Indiana	MONROE	158	D	CRESTMONT PARK	BLOOMINGTON PARK BOARD	1974	17657
47495	Indiana	MONROE	423	R	BRYAN PARK POOL RENOVATION	BLOOMINGTON PARK BOARD	1984	45046.8
47692	Indiana	MONROE	509	С	D/THOMSON PARK - PHASE III	BLOOMINGTON PARK BOARD	1995	110381
51334	Indiana	Monroe	190	A	CASCADES COMMUNITY PARK	BLOOMINGTON PARK BOARD	1975	4250
51335	Indiana	Monroe	190	A	PARK RIDGE EAST PARK	BLOOMINGTON PARK BOARD	1975	20500
51336	Indiana	Monroe	190	A	PARK RIDGE WEST PARK	BLOOMINGTON PARK BOARD	1975	5000
51337	Indiana	MONROE	190	C	WINSLOW SPORT COMPLEX & TRAIL	BLOOMINGTON PARK BOARD	1975	170250
51409	Indiana	MONROE	504	C	D/THOMSON COMMUNITY PARK - PHASE II	BLOOMINGTON PARK BOARD	1994	147000
60696	Indiana	MONROE	157	C	SOUTHEAST PARK	BLOOMINGTON PARK BOARD	1974	32900
60698	Indiana	MONROE	160	D	PARK SQUARE PARK	BLOOMINGTON PARK BOARD	1974	9011.5

60791	Indiana	MONROE	490	С	D/JACKSON CREEK PARK	MONROE COUNTY PARK BOARD	1993	52500
60813	Indiana	Monroe	572	С	WILL DETMER PARK	MONROE COUNTY PARK BOARD	2011	200000
78874	Indiana	MONROE	39	D	SEWAGE TREATMENT SYSTEM	DEPT. OF NATURAL RESOURCES	1968	261172.9
78884	Indiana	MONROE	84	D	MONROE RESERVOIR SAILBOAT HARBOR	DEPT. OF NATURAL RESOURCES	1970	65579
78892	Indiana	MONROE	129	D	COUNTY FARM PARK - Expired Lease	MONROE COUNTY PARK BOARD	1973	45280
78914	Indiana	MONROE	232	D	ALLENS CREEK PRIMITIVE CAMPGROUND	DEPT. OF NATURAL RESOURCES	1976	20100
78982	Indiana	MONROE	487	C	D/THOMSON COMMUNITY PARK	BLOOMINGTON PARK BOARD	1992	75000

Source: <u>https://www.lwcfcoalition.com/map-of-lwcf</u> (checked on 2/5/20)





Des. No. 0902215



Your Selections

2017 boundaries were used to map 'Your Selections'

Selection Results

No Legend

2018 Boundaries

- 🔲 Census Tract
- Block Group





Environmental Justice Analysis for Old SR 37 Bicentennial Pathway Project (Des 0902215)

		COC	AC1 Census Tract 7
		Monroe County,	Monroe County,
	LOW-INCOME	malana	Indiana
B 17001001	Population for whom poverty status is determined: Total Population for whom poverty status is determined: Income in past 12 months below	129,312	3,021
B 17001002	poverty	31,974	316
	Percent Low-Income	24.7%	10.5%
	125 Percent of COC	30.9%	AC<125% COC
	Potential Low-Income EJ Impact?		No
	MINORITY		
B 03002001	Total population: Total	144,436	3,021
B 03002002	Total population: Not Hispanic or Latino	139,637	2,994
B 03002003	Total population: Not Hispanic or Latino; White alone	121,518	2,792
B 03002004	Total population: Not Hispanic or Latino; Black or African American alone	4,395	45
B 03002005	Total population: Not Hispanic or Latino; American Indian and Alaska Native alone	260	0
B 03002006	Total population: Not Hispanic or Latino; Asian alone	9,093	10
B 03002007	Total population: Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander	44	8
B 03002008	Total population: Not Hispanic or Latino; Some other race alone	85	0
B 03002009	Total population: Not Hispanic or Latino; Two or more races	4,242	139
B 03002010	Total population: Hispanic or Latino	4,799	27
B 03002011	Total population: Hispanic or Latino; White alone	3,462	27
B 03002012	Total population: Hispanic or Latino; Black or African American alone	107	0
B 03002013	Total population: Hispanic or Latino; American Indian and Alaska Native alone	27	0
B 03002014	Total population: Hispanic or Latino; Asian alone	33	0
B 03002015	Total population: Hispanic or Latino; Native Hawaiian and Other Pacific Islander alone	0	0
B 03002016	Total population: Hispanic or Latino; Some other race alone	737	0
B 03002017	Total population: Hispanic or Latino; Two or more races	433	0
	Number Non-White/Minority (P007001-P007003)	22,918	229
	Percent Non-White/Minority	15.9%	7.6%
	125 Percent of COC	19.8%	AC<125% COC
	Potential Minority EJ Impact?		No



Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

	Monroe County, Indiana		Census Tract 7, Monroe County, Indiana	
	Estimate	Margin of Error	Estimate	Margin of Error
Total:	144,436	****	3,021	+/-271
Not Hispanic or Latino:	139,637	****	2,994	+/-272
White alone	121,518	+/-69	2,792	+/-287
Black or African American alone	4,395	+/-313	45	+/-45
American Indian and Alaska Native alone	260	+/-124	0	+/-11
Asian alone	9,093	+/-379	10	+/-17
Native Hawaiian and Other Pacific Islander alone	44	+/-37	8	+/-13
Some other race alone	85	+/-52	0	+/-11
Two or more races:	4,242	+/-519	139	+/-93
Two races including Some other race	51	+/-56	0	+/-11
Two races excluding Some other race, and three or more races	4,191	+/-512	139	+/-93
Hispanic or Latino:	4,799	****	27	+/-44
White alone	3,462	+/-314	27	+/-44
Black or African American alone	107	+/-106	0	+/-11
American Indian and Alaska Native alone	27	+/-30	0	+/-11
Asian alone	33	+/-55	0	+/-11
Native Hawaiian and Other Pacific Islander alone	0	+/-27	0	+/-11
Some other race alone	737	+/-250	0	+/-11
Two or more races:	433	+/-174	0	+/-11

	Monroe County, Indiana		Census Tract 7, Monroe County, Indiana	
	Estimate	Margin of Error	Estimate	Margin of Error
Two races including Some other race	199	+/-126	0	+/-11
Two races excluding Some other race, and three or more races	234	+/-138	0	+/-11

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

While the 2013-2017 American Community Survey (ACS) data generally reflect the February 2013 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

Explanation of Symbols:

1. An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.

2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.

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5. An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.

6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.

7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.

8. An '(X)' means that the estimate is not applicable or not available.

U.S. Census Bureau AMERICAN FactFinder B17001 POVERTY STATUS IN THE PAST 12 MONTHS BY SEX BY AGE Universe: Population for whom poverty status is determined 2013-2017 American Community Survey 5-Year Estimates

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

	Monroe Cour	Monroe County, Indiana		Census Tract 7, Monroe County, Indiana	
	Estimate	Margin of Error	Estimate	Margin of Error	
Total:	129,312	+/-946	3,021	+/-271	
Income in the past 12 months below poverty level:	31,974	+/-1,311	316	+/-159	
Male:	15,442	+/-833	145	+/-67	
Under 5 years	854	+/-213	8	+/-13	
5 years	126	+/-87	10	+/-16	
6 to 11 years	841	+/-196	32	+/-34	
12 to 14 years	265	+/-109	13	+/-21	
15 years	109	+/-76	0	+/-11	
16 and 17 years	188	+/-89	0	+/-11	
18 to 24 years	8,539	+/-571	7	+/-12	
25 to 34 years	1,769	+/-289	42	+/-47	
35 to 44 years	951	+/-228	17	+/-28	
45 to 54 years	837	+/-165	8	+/-13	
55 to 64 years	669	+/-167	8	+/-11	
65 to 74 years	250	+/-112	0	+/-11	
75 years and over	44	+/-41	0	+/-11	
Female:	16,532	+/-944	171	+/-113	
Under 5 years	872	+/-211	0	+/-11	
5 years	168	+/-73	0	+/-11	

	Monroe County, Indiana		Census Tract 7, Monroe County, Indiana	
	Estimate	Margin of Error	Estimate	Margin of Error
6 to 11 years	580	+/-174	0	+/-11
12 to 14 years	207	+/-90	45	+/-55
15 years	72	+/-68	0	+/-11
16 and 17 years	270	+/-133	10	+/-17
18 to 24 years	8,344	+/-651	8	+/-14
25 to 34 years	2,585	+/-329	51	+/-46
35 to 44 years	1,145	+/-230	7	+/-11
45 to 54 years	910	+/-226	11	+/-18
55 to 64 years	761	+/-199	0	+/-11
65 to 74 years	325	+/-109	18	+/-20
75 years and over	293	+/-112	21	+/-25
Income in the past 12 months at or above poverty level:	97,338	+/-1,311	2,705	+/-297
Male:	49,607	+/-832	1,351	+/-168
Under 5 years	2,465	+/-232	63	+/-37
5 years	403	+/-130	7	+/-11
6 to 11 years	3,048	+/-291	88	+/-51
12 to 14 years	1,696	+/-234	81	+/-54
15 years	540	+/-168	37	+/-47
16 and 17 years	1,120	+/-166	23	+/-27
18 to 24 years	5,475	+/-537	88	+/-63
25 to 34 years	8,857	+/-343	175	+/-84
35 to 44 years	6,293	+/-269	136	+/-60
45 to 54 years	6,222	+/-198	181	+/-75
55 to 64 years	6,408	+/-193	228	+/-70
65 to 74 years	4,329	+/-124	148	+/-57
75 years and over	2,751	+/-83	96	+/-48
Female:	47,731	+/-924	1,354	+/-176
Under 5 years	2,160	+/-215	53	+/-38
5 years	520	+/-171	7	+/-10
6 to 11 years	2,716	+/-266	86	+/-46
12 to 14 years	1,660	+/-266	43	+/-48
15 years	541	+/-152	30	+/-27
16 and 17 years	1,068	+/-177	0	+/-11
18 to 24 years	4,307	+/-538	67	+/-45
25 to 34 years	7,106	+/-320	155	+/-64
35 to 44 years	5,850	+/-277	204	+/-61
45 to 54 years	6,427	+/-228	212	+/-81
55 to 64 years	6,839	+/-211	303	+/-74
65 to 74 years	4,826	+/-150	109	+/-49
75 years and over	3,711	+/-163	85	+/-45

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling

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Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

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PARSONS

Karst Study

Old SR 37 Bicentennial Pathway

Monroe County, Indiana Designation Number 0902215



Prepared for IXOYE and the Indiana Department of Transportation

May 2019

delivering a better world

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Section 1 Introduction

1.1 PURPOSE AND SCOPE

Karst is a landscape feature that is formed by the dissolution of a layer or layers of soluble rock by water. Karst features contain sensitive ecological communities that are susceptible to environmental changes that may be caused by construction or use of roadways. This report has been prepared to review karst information relevant to the Bicentennial Pathway Project, Phase 1 in Monroe County, Indiana. The report documents the presence of karst features in and adjacent to the project area identified through a desktop study and a site reconnaissance; evaluation of impacts of the roadway on the identified karst features; and minimization and mitigation of unavoidable impacts. The study methodology was developed to be consistent with the objectives identified in the *Karst Geological Resources and INDOT Construction* manual (INDOT 2017) and the 1993 *Memorandum of Understanding* (MOU) between the Indiana Department of Transportation (INDOT), the Indiana Department of Natural Resources (IDNR), the Indiana Department of Environmental Management (IDEM), and the U.S. Fish and Wildlife Service (USFWS) for the purpose of delineating guidelines for construction of transportation projects in karst regions of the State (included as Appendix A).

1.2 DESCRIPTION OF PROJECT

Project Location

The Bicentennial Pathway Project, Phase 1 of the overall Griffy Lake to Lake Lemon Bicycle Improvements project is located along Old State Road (SR) 37 in Bloomington Township, Monroe County, Indiana (Figure 1). The project begins approximately 0.6 mile north of the City of Bloomington at Audubon Road and continues approximately 2.3 miles north to Robinson Road. The project is located in Sections 2, 3, 10, 11, 15, and 16, Township 9 North, Range 1 West. It can be found on the United States Geological Survey (USGS) Bloomington and Unionville 7.5 minute quadrangle topographic maps (Figure 2). Monroe County, the project sponsor, has been awarded federal funds from the Federal Highway Administration (FHWA) for this project.

Purpose & Need

The need for this project is due to the current conditions of Old SR 37 as a narrow, winding road, which in many places does not allow for an upcoming view of bicyclists who may be occupying the travel lanes. The road also has considerable drop-off from the shoulder in some locations, and these conditions create safety issues for bicyclists. Currently, a significant number of bicyclists utilize this route for travel north out of Bloomington, and no continuous paved shoulders or bicycle lanes exists on this section of the road. The purpose of this project is to address the lack of cyclist accommodations and safety issues along Old SR 37.

Project Description

The project involves the addition of paved shoulders along a 2.3-mile length of Old SR 37 from Audubon Road to Robinson Road (Figure 1). The proposed project generally consists of the addition of four- to six-foot wide asphalt shoulders with one- or two-foot graded shoulders to both sides of the existing mainline roadway pavement. The existing travel lanes may be narrowed or adjusted to allow for a best fit of the bicycle improvements. The project will also include foreslope grading, ditch grading, and backslopes in various locations along the route, modified to match the new improvements. Curb and gutter may be utilized in certain areas to minimize adjacent impacts. Street and driveway approaches will be adjusted accordingly. Existing guardrail in most areas will be removed and replaced to meet current standards; complete removal of guardrail may occur in other areas. Existing culverts will be extended or modified as necessary to correspond with the new improvements. Existing bridges are to remain in place with no planned modifications. It is anticipated that tree removal will be required along the roadside. The current proposed method for maintenance of traffic during construction is temporary lane closures and flagging.

1.3 METHODOLOGY

This report was prepared by a qualified licensed professional geologist (LPG) Juliet Port (Indiana LPG #2214), in general accordance with INDOT's *Karst Geological Resources and INDOT Construction* manual dated November 21, 2017, and in coordination with the INDOT Ecology and Waterway Permitting Office (EWPO). Activities included a desk-top survey of readily available geological sources, a review of applicable agency correspondence, field reconnaissance, and field oversight of geotechnical borings. Where karst features were identified, the proposed impacts were evaluated, and avoidance and minimization measures were developed.

Section 2 Site Setting

2.1 KARST STUDY AREA

Based on early coordination, only a portion of the project area contains suspect karst. Therefore, a Karst Study Area was defined. Early coordination was initiated for this project with a letter sent to applicable agencies on October 31, 2017 (Green 3, LLC 2017a) (Appendix C-1). IDEM responded on January 26, 2018, recommending a karst study from Audubon Drive to just west of Old Myers Road (Appendix C-13). This area aligns with suspect karst areas based on the desktop survey (see Sections 2.3 and 2.4). Therefore, the Karst Study Area was defined as beginning at the southern terminus, Audubon Drive, and extending approximately 1.6 miles north to Old Myers Road (see Figure 2).

2.2 LAND USE

The project begins approximately 0.6 mile north of the City of Bloomington. The area is primarily residential suburban in the southern portion of the project, which transitions to a more rural setting as the project heads north and away from the City of Bloomington. Surrounding land use is primarily residential and wooded land, with some agricultural use. A *Wetland Delineation and Waters of the U.S. Determination Report* was prepared for this project by Green 3, LLC. Within the Karst Study Area, there are several streams that cross the project area: Southern Unnamed Tributary (UNT) to Griffy Creek, Northern UNT to Griffy Creek, UNT 2 to Muddy Fork, and Southern Branch of Muddy Fork. These streams are labeled on the Photo Orientation maps, Figure 7.

2.3 PHYSIOGRAPHIC SETTING

Physiographic Region

The project area is situated within the Southern Hills and Lowlands Physiographic Region of Indiana, and travels along the boundary of the Mitchell Karst Plateau and Norman Upland physiographic regions (Figure 3). The Southern Hills and Lowlands region of Indiana is south of the Wisconsin glacial boundary, where the landforms are primarily formed by erosion of the underlying bedrock (Indiana Geological and Water Survey (IGWS) 2019). Most of the Karst Study Area is within the Mitchell Plateau, which is characterized as a limestone plateau dissected by major stream systems, many of which are deeply entrenched, and in places, deep and extensive karst development. As the project area travels north, it transitions to the Norman Upland region, which is characterized by rugged topography, high relief, and deeply entrenched valleys (Gray 2000).

Topography

The topography of the site and surrounding area is shown on the USGS topographic map (Figure 2), Light Detection and Ranging (LiDAR) Hillshade maps (Figure 4), and project plans (Appendix B). Within the project area, elevations range from approximately 780 feet above mean sea level (m.s.l.) (NAVD88), near the fire station, to approximately 585 feet m.s.l., at the crossing of Southern Branch of Muddy Fork.

The topography of the southern end of the project area is upland that slopes toward an off-site UNT to Griffy Creek (Sheet 1, Figure 4). From East Northcliff Avenue to Southern UNT to Griffy Creek, the project area is located along a karst plain, with a rolling topography and several sinkholes visible on the topographic and LiDAR maps (Figures 2 and 4). North of Southern UNT to Griffy Creek, the project area is located along a rolling upland dissected by streams, which transitions to

a steep ridge as the project area travels north to the Muddy Fork valley. The northern project area is mostly flat and situated within the Muddy Fork valley.

2.4 GEOLOGIC SETTING

Soils and Unconsolidated Deposits

According to the Soil Survey of Monroe County, most of the soils within the Karst Study Area are identified as the Crider-Caneyville soil association, characterized by deep and moderately deep, gently sloping to strongly sloping, well drained soils formed in loess and residuum from limestone, formed on uplands. This map unit is mainly rolling plain with some sinkholes and dissected areas along streams. The sinkholes range from slight sags and watertight basins to huge hollows more than 50 feet deep. The northern portion of the Karst Study Area is identified as the Haymond-Stendal soil association, characterized by deep, nearly level, well drained and somewhat poorly drained soils formed on alluvium on floodplains (USDA 1981).

Beneath the soil lies unconsolidated deposits that consist of weathered bedrock residuum. This material is dominated by clay and is typically one to three feet thick (Maier 2003). Based on the *Geotechnical Evaluation*, this section of Old SR 37 is underlain by two to over 30 feet of fill (Earth Exploration, Inc. (EarthEx) 2019).

Bedrock

As shown on the Bedrock Geology Map (Figure 5), the bedrock within the Karst Study Area is mostly underlain by the Mississippian-aged Sanders Group. The Sanders Group consists of a variety of carbonate rocks in complex facies relationships. Specifically, the Karst Study Area is underlain by the bottom of the Sanders Group, known as the Ramp Creek formation. The Ramp Creek formation is a mixture of fine-grained dolostone and limestone that in places contains abundant fossil fragments. Cherty and siliceous intervals are common, and minor amounts of siltstone and shale are present. In Monroe County, the Ramp Creek formation averages 26 to 36 feet in thickness. Above that interval is the Harrodsburg Limestone, which consists of a variety of carbonates with some shale. The abundance of geodes and chert decreases upward in the group. In Monroe County, the Harrodsburg Limestone ranges in thickness from 30 to 60 feet (Hasenmueller 2009).

The northern Karst Study Area is underlain by the Mississippian-aged Borden Group of mostly siltstone, fine-grained sandstone, and sandy shale. In Monroe County, the Borden group is on average 663 feet thick (Hasenmueller 2009).

The bedrock surface within the project area is highly variable and generally matches topography (except beneath Old SR 37, which is underlain by fill). During the *Geotechnical Evaluation*, depth to bedrock beneath Old SR 37 ranged from zero (locations HA-5 and Structure 1) to over 30 feet below grade (location RB-18) (Appendix D).

GIS-Mapped Karst Features

The desktop survey also included a review of karst features mapped by IGWS and IDNR. As shown on the GIS-Mapped Karst Features map, Figure 6, there are sinkholes mapped within 1,000 feet of the southern Karst Study Area. The nearest GIS-mapped sinkhole is approximately 100 feet east of the project area. An area identified as a "sinkhole area" crosses the project area between Bethel Lane and the crossing of Southern UNT to Griffy Creek. No other karst features, such as cave entrances or karst springs, were identified by the GIS review. There are no underground streams, mapped karst drainage, sensitive habitat areas (such as hibernacula), or other extensive features identified by the desktop survey (IGWS 2019, Maier 2003, and Schmidt 2017). Likewise, responses to early coordination did not identify significant, extensive karst features, nor sensitive habitats (Appendix C).

2.6 WATER SUPPLY

The project area is supplied drinking water by City of Bloomington Utilities. The primary source of drinking water for the county is the Monroe Lake reservoir. Based on IDNR aquifer system maps, the project area does not contain a viable groundwater aquifer, and there are no wells within the project area (Maier 2003 and Schmidt 2017). The nearest mapped well is located approximately 0.4 mile west of the project area (IGWS 2019).

2.7 AGENCY CORRESPONDENCE

Early coordination for this project was initiated by Green 3, LLC on October 31, 2017 (Appendix C-1 to C-3). Applicable responses to early coordination include:

- IDNR Division of Fish and Wildlife (DFW) responded on November 30, 2017 recommending a karst assessment by a qualified geologist, avoiding karst features where possible, increased erosion control measures, and filtering discharge to karst (Appendix C-4 to C-6).
- IGWS (formerly IGS) responded on November 6, 2017 identifying the project area as a potential karst area (Appendix C-7 to C-9).
- USFWS responded on November 21, 2017 that the project contains a potential karst area, a karst survey is recommended, and mitigation measures should be implemented as necessary (Appendix C-10 to C-12).
- IDEM responded on January 16, 2018 that a karst assessment is needed from Audubon Drive to just west of Old Myers Road, and recommended following the *Karst Geological Resources and INDOT Construction* manual (Appendix C-13 to C-14).

2.8 FIELD RECONNAISSANCE AND GEOTECHNICAL INVESTIGATION

On January 11, 14, and 15, 2019, Juliet Port, LPG accompanied the EarthEx geotechnical drilling crew to observe rock cores within the Karst Study Area. Excerpts from the *Geotechnical Evaluation* are provided in Appendix D. On February 4, 2019, Parsons returned to the Karst Study Area to make observations on-foot, collect photographs, and map karst features with a global positioning system (GPS) unit. Adjacent areas that might be impacted by runoff from the alignment were also evaluated. The mapped karst features are shown on Figure 7, the site plans (Appendix B), and site photographs (Figure 8).

Section 3 Findings

3.1 NON-KARST AREAS

Karst features were absent from the southern project terminus, Audubon Road, to East Northcliff Avenue. Karst features were also absent from about 20 feet north of Southern UNT to Griffy Creek to the end of the Karst Study Area at Old Myers Road.

3.2 KARST FEATURES

Based on the literature review, oversight of borings, and field reconnaissance, karst features are within the proposed construction limits from East Northcliff Avenue to 20 feet north of Southern UNT to Griffy Creek (from Station 106+50 to Station 129). This area has been designated the "sensitive karst area" on project plans (Appendix B). These features are further described below.

Sinkholes

Numerous sinkholes are located along the west side of Old SR 37, which form a sinkhole plain. The sinkholes range from approximately three to 13 feet in depth and from five to 50 feet across (most are irregular-shaped). The sinkhole plain is a mixture of maintained lawn and wooded areas, with a few paved drives and a circular foundation (Photos 5 to 25). Some of the western sinkholes also contain debris, such as concrete block and leaves, which may be covering an open-throat (Photo 16). Along the east side of Old SR 37, there are roadside ditches near Bethel Avenue, and karst features are not apparent until approximately 300 feet north of Bethel Avenue, where a flat drainage area was identified (Photos 18 and 19). One small, shallow, open-throated feature with fresh erosion was noted along the east side of Old SR 37 (Photos 26 and 27). The sinkhole features are marked on the draft project plans (Appendix B) and Figure 7.

Springs

There was very light precipitation on the day of the field reconnaissance, February 4th, 2019. According to the National Weather Service (NWS), the measured precipitation in Bloomington was zero on February 2nd and 3rd, 2019, and 0.07 inch on February 4th, 2019 (NWS 2019). A spring was flowing from exposed carbonate bedrock approximately 13 feet north of Southern UNT to Griffy Creek (Photo 29). Additionally, adjacent to the project area, on the bedrock outcrop west of Old SR 37 along the incline south of Old Myers Road, evidence of seeps were noted (Photo 38). No other seeps or springs were observed; however, they likely exist within the streams. The karst spring is marked on project plans (Appendix B-7). The seeps do not appear to be associated with karst, and are outside the construction limits. Therefore, they are not mapped.

Caves, Extensive Karst, or Sensitive Habitats

During the geotechnical investigation, no evidence of large voids (e.g., sudden drops in tooling) were encountered (EarthEx 2019). Based on the literature review and agency correspondence, there is no evidence of mapped caves, underground streams, or other sensitive features, such as critical habitats, within 0.5 mile of the project area.

3.2 DRAINAGE

For most of the project area, stormwater is expected to sheet flow via ditches and streams, with limited subsurface infiltration in nonpaved areas. However, within the sensitive karst area, from East Northcliff Avenue to approximately 700 feet north of Bethel Lane, stormwater is expected to drain through the subsurface. It is likely storm water in this area drains through the voids in the shallow carbonate bedrock (e.g., sinkholes, cracks, crevices, etc.), and discharges to nearby surface streams via springs. The sensitive karst area is marked on the draft project plans (Appendix B) and Figures 4 and 7.

Section 4 Conclusion

4.1 KARST IMPACTS

The proposed trail project for most of the sensitive karst area involves widening the existing shoulder by approximately 6 feet on each side of Old SR 37, with associated grading and structural work. However, near Southern UNT to Griffy Creek, the alignment will shift only to the east to avoid impacts to a historic property (Appendix B-7). The spring is also located in this area and impacts should be avoided or minimized (see Section 4.2, Commitments). Of the 2.3-mile long project, the trail will cross approximately 0.41 mile of karst (from Station 106+50 to Station 129).

Direct impacts to mapped karst features were calculated to total approximately 0.32 acre. Impacts mostly include grading and paving. Current plans show the sinkholes extend outside construction boundaries (Appendix B). No sinkhole plugging is anticipated; the existing sinkholes will be partially regraded. The proposed increased pavement will likely create minor amounts of increased runoff. This increased runoff could degrade water quality within the karst system by introducing more contaminants (such as dissolved solids).

Based on the project scope and the limited extent of karst, the overall impacts are low. Direct impacts to karst are unavoidable, because a portion of Old SR 37 passes through a karst area. There are no known caves, habitats, or fauna that would be affected by changes in water quality. Residences in the area are served by public water supply, so any changes in overall water quality would have a limited potential to impact human receptors. Impacts to karst should be further minimized by following the Commitments (Section 4.2).
4.2 COMMITMENTS

The following project commitments are recommended.

- Karst features will be labeled on project plans and contractors will be aware of the sensitive karst area. During construction, the beginning and end of the sensitive karst area should be marked with signs stating "environmentally sensitive area", or similar (Station 106+50 to Station 129).
- Re-grading of the area around the spring (Station 128+25) will be designed to perpetuate its flow towards Southern UNT to Griffy Creek. If possible, the spring should be avoided, labeled "Do Not Disturb", and demarcated in the field with snow fencing or similar. If direct impacts are not avoidable, an outlet pipe, spring box, or similar will be designed in accordance with the Karst Geological Resources and INDOT Construction manual pages 26 to 28 (INDOT 2017).
- The Rule 5 permit and Stormwater Pollution Prevention Plan (SWPPP) must address the karst features. Within the sensitive karst area, robust sediment control measures are needed, such as filter strips, rock rings, fiber rolls, temporary berms, accelerated vegetation of completed areas, erosion control blankets, and other best management practices. Diligent monitoring should be required to ensure the measures remain effective.
- Contractor staging, loading, and cleanup should avoid the sensitive karst area. Waste containers and hazardous
 materials/petroleum products, such as dumpsters or fueling tanks, should be stored outside the sensitive karst
 area.
- Excavation and filling activities should follow best practices for karst, such as those described in the Karst Geological Resources and INDOT Construction manual pages 24 to 26 (INDOT 2017).
- Where possible, impervious drainage conveyance, such as curb and gutter, should be used within the sensitive karst area to minimize direct runoff into sinkholes and the subsurface.
- Consider implementing a "no mowing and no spray" zone for the sensitive karst area to increase vegetative cover and buffering of runoff.

Section 5 References

Earth Exploration, Inc.

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2019	Geoleciiiicai Evaluation -	Dicentennial Patriwa	$v - Phase \perp$
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Gray, H.H.

2000 Physiographic divisions of Indiana: Indiana Geological Survey Special Report 61. https://igws.indiana.edu/bookstore/details.cfm?Pub_Num=SR61

Green 3, LLC

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