Appendix A

Index of Biotic Integrity metrics

Index of Biotic Integrity metrics used to evaluate headwater stream (<20 square miles drainage area) sites in the St. Joseph River drainage:

1. Total number of species
2. Number of darter/madtom/sculpin species
3. % Headwater species
4. Number of minnow species
5. Number of sensitive species
6. % Tolerant
7. % Omnivores
8. % Insectivores
9. % Pioneer species (individuals)
10. Number of fish collected
11. % Simple lithophils
12. % DELT anomalies

Index of Biotic Integrity metrics used to evaluate wadeable stream (>20-<1,000 square miles drainage area) sites in the St. Joseph River drainage:

1. Total number of species
2. Number of darter species
3. Number of sunfish species
4. Number of sucker species
5. Number of sensitive species
6. % Tolerant
7. % Omnivores
8. % Insectivores
9. % Carnivores
10. Number of fish collected
11. % Simple lithophils
12. % DELT anomalies

Qualitative Habitat Evaluation Index categories and metrics used to evaluate sites in the St. Joseph River drainage:

1. Substrate
    - type
    - number of types present
    - origin
    - silt cover
    - extent of embeddedness

2. Instream Cover
    - type
    - amount

3. Channel Morphology
    - sinuosity
    - development
    - channelization
    - stability

4. Riparian Zone and Bank Erosion
    - riparian width
    - floodplain quality
    - bank erosion

5. Pool/Glide and Riffle/Run Quality
    - maximum pool depth
    - pool/riffle morphology
    - pool/riffle/run current velocity
    - riffle/run depth
    - riffle/run substrate
    - riffle/run embeddedness

6. Gradient

Appendix B

Fish tissue preparation and results

Materials needed:

- Reynolds aluminum foil
- freezer wrap
- deionized (DI) water
- 1/2 gallon, 1 gallon, and jumbo size freezer bags w/write-on labels
- skinners
- stainless steel fillet knives
- knife sharpener
- scalers
- ice
- cooler

A group of three fish per species was selected based on size. The smallest fish in each group was greater than or equal to 90% of the length of the largest fish in that group. The largest fish or fish that fell into a length range for species on the advisory were selected. The fish were kept as close in size as possible within a group because the tissue from the three fish in each group was composited (mixed together) before the analyses were completed.

All of the tissue was in the form of boneless fillets taken from the fish. All of the fish, except the channel catfish, had skin-on fillets taken. Before the tissue was removed, the fillet knives, scalers and skinners were cleaned and rinsed with DI water, and freezer wrap was placed where the fish were to be processed. The knives, scalers and skinners were washed in river water and rinsed with DI water after each species was processed and new freezer wrap was placed before another species was processed. For skin-on samples, the scales were removed before the fillet was taken. For skin-off samples, the skin was scored around the edge of the fillet and then removed before the fillet was taken. It was important to be consistent with where the cut of the fillet ended and to not include any of the body cavity or viscera. Once the fillets were removed, they were rinsed in river water and then rinsed with DI water before being placed on aluminum foil. The foil was large enough to hold the three fillets for each species at a site. When all three fillets were placed on the foil, it was then wrapped and placed in a labeled freezer bag and placed on ice in a cooler. The fish tissue was placed in a freezer upon returning to the lab, and kept frozen until sent to the contract lab for analyses.

Fish Tissue Results

Stream	Species / Year	Station	Length Range (inches, PW&U)	Advisory Length Range (State)	Mercury Group (PW&U)	Advisory Mercury Group (State)	PCB Group (PW&U)	Advisory PCB Group (State)
Elkhart River, Elkhart County								
	Golden Redhorse							
	2002	Oxbow Park (Below)	15.2-15.8	NONE	1	1	2	1
	2003	Oxbow Park (Below)	15.7-15.8	NONE	1	1	2	1
	2002	EEC (Above)	15.2-16.1	NONE	1	1	2	1
	2003	EEC (Above)	15.2-15.4	NONE	1	1	3	1
	Rock Bass							
	2001	Oxbow Park (Below)	7.0-7.6	7-9	---	2	1	2
	2002	Oxbow Park (Below)	7.1-7.8	7-9	1	2	1	2
	2003	Oxbow Park (Below)	7.4-7.7	7-9	1	1	1	2
	2001	EEC (Above)	7.0-7.6	7-9	---	2	3	2
	2002	EEC (Above)	7.7-8.3	7-9	1	2	1	2
	2003	EEC (Above)	6.9-7.3	7-9	1	1	2	2
	2001	Studebaker Park (Above)	7.1-7.8	7-9	---	2	1	2
St. Joseph River, Elkhart County								
	Black Redhorse							
	2001	Toll Road (Bristol)	17.8-17.9	17+	2	3	2	1
	2001	Lexington Avenue	17.6-18.2	17+	1	3	3	1
	2003	Lexington Avenue	17.8-18.1	17+	1	3	3	1
	Common Carp							
	2002	Toll Road (Bristol)	30.5-32.9	25+	2	5	3	5
	2003	Toll Road (Bristol)	30.9-33.3	28+	2	1	3	4
	2002	Lexington Avenue	29.4-31.1	25+	1	5	3	5
	2002	McNaughton Park	27.0-28.5	25+	1	5	3	5
	2001	Nappanee Street	26.6-27.1	25+	1	5	3	5
	2003	Nappanee Street	28.3-31.3	28+	1	1	2	4
	Largemouth Bass							
	2002	Nappanee Street	12.5-13.6	12+	2	3	1	1
	2003	Toll Road (Bristol)	13.5-15.0	13-14	2	2	1	1
	Rock Bass							
	2001	Toll Road (Bristol)	8.0-8.8	7-9	1	1	1	3
	2002	Toll Road (Bristol)	7.1-7.3	7-9	1	1	1	3
	2003	Toll Road (Bristol)	8.4-8.5	7+	1	2	1	1
	2001	Lexington Avenue	7.4-8.0	7-9	1	1	2	3
	2002	Lexington Avenue	7.9-8.1	7-9	1	1	1	3
	2003	Lexington Avenue	8.2-9.0	7+	1	2	1	1
	2001	McNaughton Park	7.4-7.8	7-9	1	1	1	3
	2002	McNaughton Park	7.3-7.4	7-9	1	1	2	3
	2003	McNaughton Park	7.6-7.9	7+	1	2	1	1

Fish Tissue Results

Stream	Species / Year	Station	Length Range (inches, PW&U)	Advisory Length Range (State)	Mercury Group (PW&U)	Advisory Mercury Group (State)	PCB Group (PW&U)	Advisory PCB Group (State)
St. Joseph River, Elkhart County								
	Walleye							
	2000	Elkhart Area	17.4-18.7	17+	2	4	2	1
	2002	Bristol Area	17.2-17.9	17+	2	4	1	1
	2003	Bristol Area	16.1-16.4	16+	2	3	1	3
	2003	Bristol Area	19.3-19.9	16+	2	3	1	3
St. Joseph River, St. Joseph County								
	Black Redhorse							
	2001	Keller Park	15.9-16.6	14-17	1	2	1	3
	2003	Keller Park	17.2-18.1	16-18	1	1	4	3
	2003	Darden Road	16.1-16.6	16-18	1	1	4	3
	Channel Catfish							
	2003	Darden Road	26.1-28.7	22+	2	2	4	4
	Common Carp							
	2001	Ironwood Drive	31.9-33.1	20+	1	2	5	5
	2002	Ironwood Drive	31.6-32.6	20+	2	2	5	5
	2003	Ironwood Drive	29.7-32.4	20+	2	1	5	5
	2001	Jefferson Blvd.	30.4-32.4	20+	1	2	3	5
	2002	Veterans Park	29.9-30.9	20+	2	2	5	5
	2001	Keller Park	29.1-31.0	20+	1	2	4	5
	2002	Keller Park	30.9-31.4	20+	1	2	4	5
	2003	Keller Park	28.9-31.0	20+	1	1	5	5
	2001	Darden Road	25.7-27.8	20+	2	2	4	5
	2002	Darden Road	29.9-31.5	20+	2	2	5	5
	2003	Darden Road	28.3-30.1	20+	1	1	5	5
	Golden Redhorse							
	2001	Ironwood Drive	15.4-16.1	13-22	1	1	3	3
	2003	Ironwood Drive	17.8-18.2	13-22	1	1	3	3
	2001	Michigan Street	16.2-17.5	13-22	2	1	2	3
	2002	Michigan Street	17.6-17.8	13-22	2	1	3	3
	2003	Michigan Street	15.9-17.3	13-22	2	1	4	3
	2001	Darden Road	15.2-16.2	13-22	1	1	3	3
	2002	Darden Road	17.0-17.9	13-22	2	1	3	3
	2003	Darden Road	16.7-17.0	13-22	2	1	3	3
	Quillback							
	2002	Ironwood Drive	18.6-19.4	18+	2	1	4	3
	2003	Ironwood Drive	19.3-19.5	18+	2	1	3	3
	2003	Michigan Street	18.5-20.3	18+	2	1	4	3
	2002	Keller Park	19.0-20.2	18+	1	1	3	3
	2003	Keller Park	19.7-20.5	18+	1	1	3	3
	2001	Darden Road	19.7-20.0	18+	1	1	3	3
	2002	Darden Road	18.3-19.1	18+	2	1	3	3
	2003	Darden Road	18.8-19.6	18+	1	1	3	3

Fish Tissue Results

Stream	Species / Year	Station	Length Range (inches, PW&U)	Advisory Length Range (State)	Mercury Group (PW&U)	Advisory Mercury Group (State)	PCB Group (PW&U)	Advisory PCB Group (State)
St. Joseph River, St. Joseph County								
	Shorthead Redhorse							
	2002	Ironwood Drive	17.5-18.0	15-19	2	2	4	3
	2003	Ironwood Drive	17.9-19.3	15-19	1	2	4	3
	2001	Michigan Street	16.5-17.3	15-19	2	2	4	3
	2002	Michigan Street	16.5-17.6	15-19	2	2	3	3
	2003	Michigan Street	17.6-18.4	15-19	2	2	5	3
	2001	Darden Road	17.3-18.1	15-19	2	2	4	3
	2002	Darden Road	17.6-18.2	15-19	2	2	3	3
	2003	Darden Road	17.9-18.1	15-19	2	2	4	3
	Smallmouth Bass							
	2001	Ironwood Drive	10.0-10.9	9+	1	2	3	3
	2002	Ironwood Drive	9.6-10.6	9+	1	2	3	3
	2003	Ironwood Drive	10.6-11.8	9+	1	2	2	3
	2001	Keller Park	10.3-10.8	9+	1	2	2	3
	2002	Keller Park	11.1-11.5	9+	1	2	3	3
	2003	Keller Park	11.3-12.4	9+	1	2	3	3
	2001	Darden Road	12.9-13.7	9+	2	2	1	3
	2002	Darden Road	10.7-11.3	9+	2	2	2	3
	2003	Brick Road	11.4-11.9	9+	1	2	3	3
	Steelhead							
	2001	Darden Road	26.3-28.6	26+	1	1	3	4
	2002	Darden Road	27.6-28.1	26+	2	1	3	4
	2003	Darden Road	25.6-27.2	26+	1	1	3	4
	White Sucker							
	2003	Ironwood Drive	15.4-16.5	14-16	1	1	3	3
	2002	Veterans Park	15.9-17.4	16+	2	1	3	4
	2001	Jefferson Boulevard	14.8-15.1	14-16	1	1	3	3
	2001	Jefferson Boulevard	16.6-17.8	16+	1	1	3	4
	2002	Jefferson Boulevard	14.3-14.8	14-16	1	1	3	3
	2001	Darden Road	16.9-17.9	16+	1	1	3	4
	2002	Darden Road	16.5-17.6	16+	2	1	3	4
	2003	Darden Road	14.8-15.9	14-16	1	1	3	3
	2003	Darden Road	16.3-17.9	16+	1	1	3	4
Juday Creek, St. Joseph County								
	White Sucker							
	2001	SR 23	14.4-14.8	12-17	1	1	1	2
	2003	SR 23	14.3-15.5	12-17	1	1	1	2
	2002	Douglas Road	12.9-14.2	12-17	1	1	1	2

Appendix C

Summary of fish collected by county, 2003

Summary of species captured at index sites in Elkhart County, 2003

Common Name	Total Number	% by Number	Total Weight (g)	Total Weight (lbs)	% by Weight
White Sucker	1,763	11.94	146,320	322.29	9.38
Mimic Shiner	1,534	10.39	2,367	5.21	0.15
Common Shiner	1,338	9.06	19,241	42.38	1.23
Creek Chub	1,038	7.03	11,741	25.86	0.75
Rock Bass	1,014	6.87	76,802	169.17	4.92
Smallmouth Bass	965	6.53	117,229	258.21	7.51
Bluegill	868	5.88	21,513	47.39	1.38
Hornyhead Chub	804	5.44	17,337	38.19	1.11
Striped Shiner	705	4.77	13,098	28.85	0.84
Blacknose Dace	559	3.78	2,682	5.91	0.17
Golden Redhorse	472	3.20	304,230	670.11	19.50
Northern Hog Sucker	369	2.50	64,904	142.96	4.16
Spotfin Shiner	351	2.38	1,923	4.24	0.12
Bluntnose Minnow	336	2.27	1,283	2.83	0.08
Mottled Sculpin	310	2.10	2,042	4.50	0.13
Johnny Darter	251	1.70	382	0.84	0.02
Logperch	203	1.37	1,780	3.92	0.11
Stoneroller, Central	163	1.10	1,873	4.13	0.12
Green Sunfish	150	1.02	3,269	7.20	0.21
Longear Sunfish	145	0.98	4,340	9.56	0.28
Chestnut Lamprey	138	0.93	1,503	3.31	0.10
Largemouth Bass	122	0.83	21,268	46.85	1.36
River Chub	111	0.75	1,568	3.45	0.10
Shorthead Redhorse	109	0.74	72,818	160.39	4.67
Blackside Darter	84	0.57	244	0.54	0.02
Common Carp	79	0.53	323,199	711.89	20.71
Rosyface Shiner	68	0.46	195	0.43	0.01
Fathead Minnow	58	0.39	225	0.50	0.01
Spotted Sucker	55	0.37	17,878	39.38	1.15
Yellow Bullhead	55	0.37	4,506	9.93	0.29
River Redhorse	51	0.35	130,924	288.38	8.39
Silver Redhorse	48	0.32	74,700	164.54	4.79
Brown Trout	47	0.32	3,799	8.37	0.24
Silverjaw Minnow	42	0.28	81	0.18	0.01
Grass Pickerel	36	0.24	559	1.23	0.04
Black Crappie	32	0.22	2,849	6.28	0.18
Redear Sunfish	29	0.20	1,894	4.17	0.12
Rainbow Darter	28	0.19	54	0.12	0.00
Steelcolor Shiner	26	0.18	145	0.32	0.01
Walleye	20	0.14	8,449	18.61	0.54
Sand Shiner	19	0.13	30	0.07	0.00
Central Mudminnow	16	0.11	107	0.24	0.01
Hybrid Sunfish	15	0.10	890	1.96	0.06
Pumpkinseed	15	0.10	402	0.89	0.03
Orangethroat Darter	14	0.09	14	0.03	0.00
Warmouth	12	0.08	215	0.47	0.01
Black Redhorse	11	0.07	9,137	20.13	0.59
Greater Redhorse	10	0.07	16,681	36.74	1.07
Yellow Perch	10	0.07	201	0.44	0.01
Quillback	9	0.06	11,408	25.13	0.73
Bowfin	8	0.05	14,767	32.53	0.95
Channel Catfish	8	0.05	11,749	25.88	0.75
Tadpole Madtom	8	0.05	62	0.14	0.00
Brown Bullhead	6	0.04	4,058	8.94	0.26
Longnose Gar	6	0.04	3,600	7.93	0.23
Black Bullhead	6	0.04	1,084	2.39	0.07
Stonecat	5	0.03	155	0.34	0.01
American Brook Lamprey	4	0.03	31	0.07	0.00
Brook Silverside	4	0.03	16	0.04	0.00
Rainbow Trout	3	0.02	790	1.74	0.05
Northern Pike	2	0.01	3,650	8.04	0.23
Longnose Dace	1	0.01	16	0.04	0.00
Pirate Perch	1	0.01	14	0.03	0.00
Brook Stickleback	1	0.01	2	0.00	0.00
Sub-Total	**14,770**	**100.00**	**1,560,293**	**3,436.83**	**100.00**

Summary of species captured at investigative sites in Elkhart County, 2003

Common Name	Total Number	% by Number
White Sucker	1,139	12.12
Creek Chub	862	9.17
Bluegill	630	6.70
Blacknose Dace	593	6.31
Rock Bass	547	5.82
Smallmouth Bass	532	5.66
Fathead Minnow	451	4.80
Golden Redhorse	407	4.33
Green Sunfish	353	3.76
Bluntnose Minnow	327	3.48
Common Shiner	299	3.18
Mimic Shiner	289	3.07
Sand Shiner	289	3.07
Hornyhead Chub	220	2.34
Silverjaw Minnow	202	2.15
Mottled Sculpin	197	2.10
Longear Sunfish	184	1.96
Spotfin Shiner	183	1.95
Common Carp	162	1.72
Striped Shiner	146	1.55
Johnny Darter	134	1.43
Stoneroller, Central	119	1.27
Northern Hog Sucker	110	1.17
Spotted Sucker	110	1.17
Shorthead Redhorse	97	1.03
Largemouth Bass	88	0.94
Central Mudminnow	86	0.91
Logperch	85	0.90
Blackside Darter	48	0.51
Chestnut Lamprey	47	0.50
Walleye	44	0.47
Brown Trout	38	0.40
Silver Redhorse	37	0.39
Grass Pickerel	35	0.37
Rosyface Shiner	33	0.35
Pirate Perch	32	0.34
Gizzard Shad	26	0.28
Yellow Bullhead	23	0.24
Brook Silverside	22	0.23
Channel Catfish	20	0.21
Black Crappie	18	0.19
Rainbow Darter	15	0.16
Longnose Gar	14	0.15
Pumpkinseed	14	0.15
Hybrid Sunfish	12	0.13
Northern Pike	10	0.11
Rainbow Trout	10	0.11
Quillback	9	0.10
River Redhorse	7	0.07
Greater Redhorse	6	0.06
Emerald Shiner	5	0.05
Black Redhorse	4	0.04
Blackstripe Topminnow	4	0.04
Redear Sunfish	4	0.04
Bowfin	3	0.03
Orangethroat Darter	3	0.03
Spottail Shiner	3	0.03
Stonecat	3	0.03
Warmouth	3	0.03
American Brook Lamprey	2	0.02
Spotted Gar	2	0.02
Steelcolor Shiner	2	0.02
Brook Stickleback	1	0.01
Sub-total	**9,400**	**100.00**

Index Sites	14,770
Investigative Sites	9,400
Elkhart County Total	24,170

Summary of species captured at index sites in St. Joseph County, 2003

Common Name	Total Number	% by Number	Total Weight (g)	Total Weight (lbs)	% by Weight
Smallmouth Bass	551	12.84	65,269	143.76	4.08
Creek Chub	499	11.63	6,908	15.22	0.43
Mimic Shiner	498	11.61	757	1.67	0.05
Golden Redhorse	406	9.46	285,700	629.30	17.84
Longear Sunfish	357	8.32	15,420	33.96	0.96
Rock Bass	328	7.65	28,048	61.78	1.75
Shorthead Redhorse	220	5.13	180,632	397.87	11.28
Bluegill	185	4.31	5,949	13.10	0.37
White Sucker	176	4.10	43,567	95.96	2.72
Common Carp	122	2.84	568,401	1,251.98	35.49
Quillback	122	2.84	173,450	382.05	10.83
Mottled Sculpin	94	2.19	631	1.39	0.04
Northern Hog Sucker	86	2.00	26,802	59.04	1.67
Green Sunfish	80	1.86	2,524	5.56	0.16
Spotfin Shiner	72	1.68	318	0.70	0.02
Blacknose Dace	70	1.63	310	0.68	0.02
Rainbow Trout	56	1.31	20,143	44.37	1.26
Bluntnose Minnow	51	1.19	115	0.25	0.01
Silver Redhorse	42	0.98	78,194	172.23	4.88
Walleye	41	0.96	17,179	37.84	1.07
Black Redhorse	36	0.84	22,125	48.73	1.38
Pumpkinseed	34	0.79	1,240	2.73	0.08
Yellow Bullhead	29	0.68	4,900	10.79	0.31
Largemouth Bass	22	0.51	2,530	5.57	0.16
Logperch	21	0.49	376	0.83	0.02
Chestnut Lamprey	16	0.37	225	0.50	0.01
Spotted Sucker	11	0.26	5,724	12.61	0.36
Johnny Darter	11	0.26	10	0.02	0.00
Longnose Gar	9	0.21	10,181	22.43	0.64
Hybrid Sunfish	9	0.21	785	1.73	0.05
Channel Catfish	4	0.09	11,896	26.20	0.74
River Redhorse	3	0.07	7,850	17.29	0.49
Greater Redhorse	3	0.07	5,417	11.93	0.34
Brown Trout	3	0.07	666	1.47	0.04
Steelcolor Shiner	3	0.07	13	0.03	0.00
Rainbow Darter	3	0.07	10	0.02	0.00
Sand Shiner	3	0.07	7	0.02	0.00
Bowfin	2	0.05	3,350	7.38	0.21
Brown Bullhead	2	0.05	1,190	2.62	0.07
Black Crappie	2	0.05	313	0.69	0.02
Gizzard Shad	2	0.05	1	0.00	0.00
Northern Pike	1	0.02	1,950	4.30	0.12
Goldfish	1	0.02	290	0.64	0.02
White Crappie	1	0.02	180	0.40	0.01
Striped Shiner	1	0.02	14	0.03	0.00
Spottail Shiner	1	0.02	5	0.01	0.00
Blackside Darter	1	0.02	3	0.01	0.00
Sub-Total	**4,290**	**100.00**	**1,601,568**	**3,527.69**	**100.00**

Summary of species captured at investigative sites in St. Joseph County, 2003

Common Name	Total Number	% by Number
Smallmouth Bass	376	18.28
Longear Sunfish	367	17.84
Creek Chub	240	11.67
Golden Redhorse	184	8.95
Rock Bass	134	6.51
Blacknose Dace	109	5.30
Spotfin Shiner	92	4.47
Common Carp	71	3.45
White Sucker	71	3.45
Bluegill	60	2.92
Mottled Sculpin	49	2.38
Shorthead Redhorse	48	2.33
Mimic Shiner	43	2.09
Quillback	38	1.85
Green Sunfish	23	1.12
Largemouth Bass	18	0.88
Pumpkinseed	16	0.78
Black Redhorse	15	0.73
Chestnut Lamprey	13	0.63
Northern Hog Sucker	13	0.63
Yellow Bullhead	13	0.63
Walleye	9	0.44
Rainbow Trout	8	0.39
Spotted Sucker	8	0.39
Johnny Darter	6	0.29
Silver Redhorse	5	0.24
Blackside Darter	4	0.19
Bluntnose Minnow	4	0.19
Logperch	3	0.15
Orangethroat Darter	3	0.15
Steelcolor Shiner	3	0.15
Spottail Shiner	2	0.10
Brook Silverside	1	0.05
Brown Trout	1	0.05
Channel Catfish	1	0.05
Emerald Shiner	1	0.05
Greater Redhorse	1	0.05
Longnose Gar	1	0.05
Rainbow Darter	1	0.05
Stonecat	1	0.05
Warmouth	1	0.05
Sub-total	**2,057**	**100.00**

Index Sites	4,290
Investigative Sites	2,057
St. Joseph County Total	6,347

Appendix D

Summary of fish collected by site, 2003

Stream	St. Joseph River, Elkhart County												
Site Number	1		2	3		4	5		6		7		8
	1st Pass	2nd Pass		1st Pass	2nd Pass		1st Pass	2nd Pass	1st Pass	2nd Pass	Day	Night	
▲American Brook Lamprey						X							
•Black Bullhead	X												
Black Crappie		X		X	X	X	X	X	X		X	X	X
▲Black Redhorse		X	X	X			X	X					
Blackside Darter	X			X	X		X	X	X			X	
Bluegill	X	X	X	X	X	X	X	X	X	X	X	X	X
•Bluntnose Minnow	X		X	X	X		X				X	X	X
Bowfin	X	X		X							X	X	
Brook Silverside						X	X					X	
Brown Bullhead	X	X		X									
•Channel Catfish		X	X			X		X		X		X	X
Chestnut Lamprey	X	X	X	X	X	X	X	X	X	X		X	
•Common Carp	X	X	X	X	X	X	X	X	X	X	X	X	X
Common Shiner								X					
Emerald Shiner											X	X	X
•Gizzard Shad						X							
Golden Redhorse	X	X	X	X	X	X	X	X	X	X	X	X	X
Grass Pickerel		X				X	X	X					
▲Greater Redhorse									X	X			
•Green Sunfish			X	X	X		X	X	X	X			
▲Hornyhead Chub	X												
Hybrid Sunfish			X	X			X			X	X	X	
Johnny Darter	X	X											
Largemouth Bass	X	X	X	X	X	X	X	X		X	X	X	X
Logperch	X	X	X	X	X	X	X	X	X	X		X	X
Longear Sunfish	X	X	X	X	X	X	X	X	X	X	X	X	X
Longnose Dace													
•Longnose Gar			X	X					X		X	X	
▲Mimic Shiner	X	X	X	X	X	X	X	X	X		X	X	X
Northern Hog Sucker	X	X	X	X	X		X	X	X		X		
Northern Pike			X	X		X		X				X	
Orangethroat Darter					X			X					
Pumpkinseed							X	X			X	X	X
•Quillback							X		X	X	X	X	X
Rainbow Darter	X				X			X					
Rainbow Trout									X				
Redear Sunfish		X											
▲River Redhorse	X	X	X	X	X		X	X	X	X		X	
Rock Bass	X	X	X	X	X	X	X	X	X	X	X	X	X
▲Rosyface Shiner							X						
Sand Shiner	X										X	X	X
Shorthead Redhorse	X	X	X	X	X	X	X	X	X	X	X	X	
Silver Redhorse	X	X	X	X	X	X	X	X	X	X	X	X	X
Smallmouth Bass	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotfin Shiner	X	X	X	X	X	X	X	X	X	X	X	X	X
Spottail Shiner													X
Spotted Gar			X								X		
Spotted Sucker	X	X		X	X	X					X	X	X
Steelcolor Shiner		X	X	X	X		X						
▲Stonecat								X					
Striped Shiner							X	X				X	X
Walleye			X	X		X	X	X	X		X	X	
Warmouth		X	X							X		X	
•White Sucker				X		X		X	X	X	X	X	X
Yellow Bullhead		X	X		X	X				X			X
Yellow Perch					X								

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Stream	St. Joseph River, St. Joseph County													
Site Number	9		10		11		12		13	14		15		16
	1st Pass	2nd Pass	1st Pass	2nd Pass	Night	Day	1st Pass	2nd Pass		1st Pass	2nd Pass	1st Pass	2nd Pass	
Black Crappie										X				
▲Black Redhorse			X				X		X	X	X	X	X	X
Blackside Darter					X	X					X			
Bluegill	X	X		X	X	X	X	X	X	X	X	X	X	X
•Bluntnose Minnow	X	X	X	X					X	X	X			X
Bowfin	X												X	
Brook Silverside						X								
Brown Bullhead	X													
•Channel Catfish		X									X		X	X
Chestnut Lamprey			X			X	X		X	X	X	X	X	X
•Common Carp	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emerald Shiner						X								
•Gizzard Shad		X												
Golden Redhorse	X	X	X	X	X	X	X	X	X	X	X	X	X	X
•Goldfish											X			
▲Greater Redhorse			X						X			X	X	
•Green Sunfish	X	X	X	X	X	X		X			X			X
Hybrid Sunfish	X	X	X											
Johnny Darter									X					
Largemouth Bass	X	X	X					X	X	X	X		X	X
Logperch							X	X	X		X	X	X	X
Longear Sunfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X
•Longnose Gar				X		X	X			X	X			
▲Mimic Shiner	X	X		X		X			X	X	X	X	X	X
Northern Hog Sucker							X	X	X	X	X	X	X	X
Northern Pike										X				
Pumpkinseed	X	X	X	X		X		X	X	X	X		X	X
•Quillback	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rainbow Darter									X					
Rainbow Trout	X		X	X	X		X			X		X	X	
▲River Redhorse								X			X			
Rock Bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sand Shiner										X				
Shorthead Redhorse	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Silver Redhorse	X	X	X	X		X	X		X	X	X	X	X	X
Smallmouth Bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotfin Shiner	X	X	X	X		X	X		X	X	X	X	X	X
Spottail Shiner		X												X
Spotted Sucker	X	X	X	X	X	X				X				X
Steelcolor Shiner			X			X	X	X						
▲Stonecat					X									
Striped Shiner													X	
Walleye	X		X	X		X	X	X	X	X	X	X	X	X
Warmouth														X
White Crappie										X				
•White Sucker	X	X	X	X	X		X		X	X	X	X	X	X
Yellow Bullhead	X	X	X	X	X	X	X	X	X			X	X	

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Stream	Little Elkhart River						Rowe-Eden Ditch	Pine Creek				
Site Number	17	18		19		20	21	22	23	24	25	
		1st Pass	2nd Pass	1st Pass	2nd Pass						1st Pass	2nd Pass
▲American Brook Lamprey		X								X		
▲Black Redhorse												X
•Blacknose Dace	X	X	X				X	X	X	X	X	X
Blackside Darter				X	X	X					X	X
Bluegill	X	X	X	X	X	X		X	X	X	X	X
•Bluntnose Minnow	X	X	X			X						
Brook Silverside		X										
Brown Trout	X	X	X	X	X	X	X					
•Central Mudminnow	X	X	X		X		X		X	X	X	X
Chestnut Lamprey	X	X	X	X	X	X	X					
•Common Carp		X										
Common Shiner	X		X	X	X		X					
•Creek Chub	X	X	X	X	X		X	X	X	X	X	
Golden Redhorse			X		X	X						
Grass Pickerel	X	X				X	X		X	X		X
•Green Sunfish	X	X	X	X	X	X	X			X		X
▲Hornyhead Chub			X									
Hybrid Sunfish											X	
Johnny Darter	X	X	X		X	X	X	X	X		X	X
Largemouth Bass		X	X	X	X	X						
Logperch			X	X	X	X					X	X
Mottled Sculpin	X	X	X	X	X	X	X	X	X	X	X	X
Northern Hog Sucker	X	X	X	X	X	X	X					
Orangethroat Darter						X					X	X
Pumpkinseed			X									
Rainbow Darter				X	X						X	X
Rainbow Trout				X		X	X					
Rock Bass				X	X	X						X
▲Rosyface Shiner					X							
Sand Shiner						X						
Shorthead Redhorse		X		X	X	X						
Silver Redhorse				X	X							
Smallmouth Bass				X	X	X					X	X
Spotfin Shiner				X	X	X						
Steelcolor Shiner					X							
▲Stonecat				X								
Stoneroller	X	X	X									
Striped Shiner		X										
Warmouth		X	X		X							
•White Sucker	X	X	X	X	X	X	X		X	X	X	X
Yellow Bullhead				X		X						

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Stream	Puterbaugh Creek			Lily Creek		Christiana Creek					Cobus Creek
Site Number	26	27		28		29		30	31		32
		1st Pass	2nd Pass	1st Pass	2nd Pass	1st Pass	2nd Pass		1st Pass	2nd Pass	
•Black Bullhead						X					
•Blacknose Dace											X
Bluegill	X	X	X	X	X	X	X	X	X	X	X
Bluntnose Minnow						X	X				
•Central Mudminnow	X		X								X
Channel Catfish									X		
Chestnut Lamprey						X	X		X		
•Common Carp						X		X	X	X	
Common Shiner							X				X
•Creek Chub			X	X							X
Golden Redhorse								X	X		
Grass Pickerel	X	X	X	X	X			X		X	
•Green Sunfish		X						X	X		X
▲Hornyhead Chub						X	X		X	X	X
Hybrid Sunfish	X		X							X	
Johnny Darter		X	X								
Largemouth Bass	X		X							X	
Logperch						X	X	X	X	X	
Longear Sunfish									X	X	
Mottled Sculpin			X								
Northern Hog Sucker						X	X	X	X	X	
Orangethroat Darter						X	X			X	
Pirate Perch	X										
Pumpkinseed		X				X					
Rainbow Darter						X	X			X	
Redear Sunfish		X	X								
▲River Chub						X	X				
Rock Bass						X	X	X	X	X	
Sand Shiner							X				
Shorthead Redhorse									X	X	
Silver Redhorse							X	X			
Smallmouth Bass						X	X	X	X	X	
Spotfin Shiner									X	X	
▲Stonecat						X			X	X	
Stoneroller			X								
Striped Shiner						X		X	X	X	
Tadpole Madtom						X	X				
Warmouth		X	X								
•White Sucker		X	X				X	X	X	X	
Yellow Bullhead			X			X	X	X		X	X

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Stream	Elkhart River													
Site Number	33	34	35	36		37	38		39		40		41	42
				1st Pass	2nd Pass		1st Pass	2nd Pass	1st Pass	2nd Pass	1st Pass	2nd Pass		
▲American Brook Lamprey				X			X							
Black Crappie			X	X	X	X		X			X			X
Blackside Darter	X	X		X		X	X	X	X	X				
Blackstripe Topminnow			X											
Bluegill	X	X	X		X	X	X	X	X	X	X	X	X	X
•Bluntnose Minnow	X	X	X		X	X	X			X	X		X	
Bowfin			X					X						
•Central Mudminnow		X												
Channel Catfish		X												X
Chestnut Lamprey				X	X	X	X		X	X	X	X	X	X
•Common Carp	X	X	X					X						X
Common Shiner	X	X	X	X	X	X	X	X	X			X		X
•Creek Chub		X		X			X							
•Fathead Minnow				X										
Golden Redhorse	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Grass Pickerel		X	X	X	X	X								
▲Greater Redhorse					X	X	X				X		X	
•Green Sunfish		X	X	X	X	X	X	X	X	X	X	X	X	X
▲Hornyhead Chub	X	X		X	X	X	X	X	X	X	X	X	X	
Hybrid Sunfish				X		X	X	X						
Johnny Darter	X	X												
Largemouth Bass		X	X	X	X	X	X	X	X	X	X	X		X
Logperch														X
Longear Sunfish	X	X	X	X			X		X	X	X	X	X	X
▲Mimic Shiner			X				X							
Northern Hog Sucker	X	X		X	X	X	X	X	X	X	X	X	X	X
Northern Pike	X	X	X											
Orangethroat Darter	X	X												
Pirate Perch		X	X											
Pumpkinseed			X	X	X							X	X	X
Quillback														X
Rainbow Darter	X	X												
Rainbow Trout														X
Redear Sunfish							X	X		X		X	X	
▲River Redhorse				X			X							X
Rock Bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X
▲Rosyface Shiner	X		X	X	X		X		X	X	X		X	
Sand Shiner	X			X	X		X				X		X	
Shorthead Redhorse														X
Smallmouth Bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotfin Shiner	X	X	X	X	X	X	X		X	X	X		X	X
Spotted Sucker		X	X	X		X	X	X			X	X	X	
Steelcolor Shiner					X					X				
▲Stonecat	X					X								
Striped Shiner		X		X	X	X	X	X	X	X	X	X	X	X
Walleye														X
Warmouth				X										
•White Sucker	X	X	X	X	X	X	X	X	X	X	X	X	X	
Yellow Bullhead						X			X					X

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Stream	Stoney Creek	Solomon Creek		Turkey Creek		Rock Run Creek		Yellow Creek								
Site Number	43	44	45	46	47	48	49	50	51		52		53	54		55
									1st Pass	2nd Pass	1st Pass	2nd Pass		1st Pass	2nd Pass	
•Black Bullhead											X			X		
Black Crappie				X					X	X		X				
•Blacknose Dace	X	X	X				X		X	X	X	X	X	X	X	X
Blackside Darter			X	X	X							X				
Bluegill	X	X	X	X	X	X	X		X	X	X	X			X	X
•Bluntnose Minnow	X					X	X		X	X	X	X	X	X	X	X
Brook Stickleback									X				X			
Brown Trout			X													
•Central Mudminnow	X	X	X	X	X	X			X							
Chestnut Lamprey						X					X		X			X
•Common Carp		X	X		X											
Common Shiner	X			X		X	X		X	X	X	X	X	X	X	X
•Creek Chub	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
•Fathead Minnow	X							X	X	X	X	X		X		X
Golden Redhorse			X	X										X		
Grass Pickerel		X	X	X	X											
•Green Sunfish	X			X	X	X	X		X	X	X	X			X	X
▲Hornyhead Chub				X	X	X	X		X		X	X	X	X	X	X
Johnny Darter	X		X	X	X	X	X			X	X	X	X	X	X	X
Largemouth Bass				X								X			X	X
Longear Sunfish					X											
▲Longnose Dace											X					
▲Mimic Shiner																X
Northern Hog Sucker			X	X	X		X									X
Orangethroat Darter											X	X				
Pirate Perch				X	X							X				
Pumpkinseed				X		X			X	X						X
Rainbow Darter			X		X	X	X					X				
Rainbow Trout			X													
Rock Bass				X	X		X									X
▲Rosyface Shiner																X
Sand Shiner																X
Silverjaw Minnow									X	X	X	X	X	X	X	X
Smallmouth Bass					X		X							X	X	X
Spotfin Shiner										X						
Stoneroller	X	X	X						X	X	X	X	X	X	X	
Striped Shiner	X						X				X					X
•White Sucker	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
Yellow Bullhead				X	X				X		X					
Yellow Perch											X	X				

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Stream	Baugo Creek		Phillips Ditch	Bowman Creek		Juday Creek								
Site Number	56	57	58	59		60	61		62	63		64	65	
				1st Pass	2nd Pass		1st Pass	2nd Pass		1st Pass	2nd Pass		1st Pass	2nd Pass
•Blacknose Dace	X	X				X		X	X	X	X	X	X	X
Bluegill	X	X						X			X			
•Bluntnose Minnow	X	X												
Brown Trout							X	X	X					
•Central Mudminnow	X													
•Common Carp		X												
Common Shiner	X	X												
•Creek Chub	X	X				X	X	X	X	X	X	X	X	X
•Fathead Minnow	X	X												
•Green Sunfish	X	X				X	X	X	X		X	X		
Hybrid Sunfish		X					X							
Johnny Darter	X	X				X		X			X	X		X
Largemouth Bass								X						X
Mottled Sculpin						X	X	X	X	X	X	X	X	X
Orangethroat Darter												X		
Quillback		X												
Rainbow Darter													X	X
Rainbow Trout										X		X	X	X
Rock Bass							X	X		X	X			
Sand Shiner		X												
Silver Redhorse		X												
Silverjaw Minnow	X	X												
Smallmouth Bass							X	X				X		
Stoneroller	X	X												
Striped Shiner	X													
•White Sucker		X				X	X	X	X	X	X	X	X	X
Yellow Bullhead	X													

COLLECTED FISH NO

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