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Environmental  
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Division of Surface Water

# Appendices to Biological and Water Quality Study of the Sunfish Creek Watershed and Selected Direct Ohio River Tributaries



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# APPENDICES

## Biological and Water Quality Study of the Sunfish Creek Watershed and Selected Ohio River Tributaries 2009

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**Appendix Table 1.** Sunfish Creek watershed chemical/physical surface water sampling results, 2009. NA = not analyzed. PT = result is estimated; sample not analyzed within required holding time. B = result is an estimate. Analyte was detected in the associated method/trip/field blank as well as in the sample.

		Site Location: <b>SUNFISH CREEK NW OF WOODSFIELD, ADJ. TR 923</b> River Mile: 27.10 Storet: C02K32					Site Location: <b>SUNFISH CREEK UPST. WTP, ADJ. TR 999</b> River Mile: 25.10 Storet: 300663				
Parameter	Units	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
Acidity	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Alkalinity	mg/L	65.5	95.8	92	107	280	68.8	97.5	97	108	284
Aluminum	ug/L	751	<200	450	268	<200	3960	<200	1670	<200	<200
Ammonia	mg/L	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05
Arsenic	ug/L	<2	<2	<2	<2	<2	2	<2	<2	<2	<2
Barium	ug/L	49	63	64	71	53	95	65	82	73	63
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	25	35	34	40	35	35	40	44	44	39
Chloride	mg/L	8	14.5	25.7	25.9	18.5	14.8	29.8	31.6	38.5	44.9
Chromium	ug/L	<2	<2	<2	<2	<2	4.1	<2	2.1	<2	<2
COD	mg/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Conductivity	umhos/cm	219	284	315	346	295	249	348	382	389	385
Copper	ug/L	<2	<2	2	<2	<2	7.4	<2	4.5	<2	<2
Hardness, Total	mg/L	87	120	118	137	120	124	137	151	151	134
Iron	ug/L	1220	195	611	481	107	5930	254	2720	214	247
Lead	ug/L	<2	<2	<2	<2	<2	11.2	<2	2.3	<2	<2
Magnesium	mg/L	6	8	8	9	8	9	9	10	10	9
Manganese	ug/L	107	48	67	60	23	444	34	102	24	17
Mercury	ug/L	<0.2	<0.2	<0.2	NA	<0.2	<0.2	<0.2	<0.2	NA	<0.2
Nickel	ug/L	<2	<2	<2	<2	<2	5.2	<2	3.7	<2	<2
Nitrate+nitrite	mg/L	<0.1	0.15	<0.1	<0.1	<0.1	0.43	<0.1	0.44	<0.1	<0.1
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	mg/L	2	3	3	3	2	3	3	4	4	2
Selenium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Sodium	mg/L	7	11	13	17	12	11	16	19	19	20
Strontium	ug/L	137	185	181	209	180	199	225	232	247	225
Sulfate	mg/L	21.1	21.3	20.9	20.9	24.7	22.9	23.4	36.4	22.2	26.6
TKN	mg/L	0.64	<0.2	0.3	<0.2	0.29	0.38	<0.2	0.48	0.29	0.2
Total Dissolved Solids	mg/L	134	162	200	192	168	154	220	256	220	222
Total Phosphorus	mg/L	0.09	0.02	0.04	0.02	0.01	0.15	0.02	0.1	0.02	0.01
Total Suspended Solids	mg/L	51	7	16	19	<5	232	5	70	<5	6
Zinc	ug/L	<10	<10	69	<10	<10	30	<10	16	<10	<10
<b>Field Measurements</b>											
Temperature	°C	22.39	26.48	21.3	22.7	11.33	22.42	27.83	20.88	24.15	12.02
Conductivity	umhos/cm	220.9	302	317.5	344.1	296.3	250.1	371.4	386.6	385.4	386.5
Dissolved Oxygen	mg/L	8.27	7.9	8.03	9.34	14.5	7.9	7.47	8.16	9.17	16.13
D.O. Saturation	%	95.4	98.3	90.7	108.3	132.6	91.2	95.3	91.5	109.3	149.9
pH	S.U.	8.3	8.21	7.67	7.51	7.9	8.42	8.26	7.68	6.64	8.03

Appendix Table 1. Continued.

Parameter	Units
Acidity	mg/L
Alkalinity	mg/L
Aluminum	ug/L
Ammonia	mg/L
Arsenic	ug/L
Barium	ug/L
Cadmium	ug/L
Calcium	mg/L
Chloride	mg/L
Chromium	ug/L
COD	mg/L
Conductivity	umhos/cm
Copper	ug/L
Hardness, Total	mg/L
Iron	ug/L
Lead	ug/L
Magnesium	mg/L
Manganese	ug/L
Mercury	ug/L
Nickel	ug/L
Nitrate+nitrite	mg/L
Nitrite	mg/L
Potassium	mg/L
Selenium	ug/L
Sodium	mg/L
Strontium	ug/L
Sulfate	mg/L
TKN	mg/L
Total Dissolved Solids	mg/L
Total Phosphorus	mg/L
Total Suspended Solids	mg/L
Zinc	ug/L
<b>Field Measurements</b>	
Temperature	°C
Conductivity	µmhos/cm
Dissolved Oxygen	mg/L
D.O. Saturation	%
pH	S.U.

Site Location: <b>SUNFISH CREEK N OF WOODSFIELD @ CO. RD. 76</b>					
River Mile: 23.85 Storet: C02S84					
	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
<5	<5	<5	<5	<5	<5
71.6	98.3	97.4	108	283	
<200	<200	385	<200	<200	
<0.05	<0.05	<0.05	<0.05	<0.05	
<2	<2	<2	<2	<2	
46	72	74	80	67	
<0.2	<0.2	<0.2	<0.2	<0.2	
28	42	41	46	41	
11.5	32.6	30.7	34.8	43.7	
<2	<2	<2	<2	<2	
<20	<20	20	<20	<20	
238	353	357	380	394	
<2	<2	<2	<2	<2	
99	142	139	156	144	
190	252	512	227	177	
<2	<2	<2	<2	<2	
7	9	9	10	10	
34	50	46	51	16	
<0.2	<0.2	<0.2	NA	<0.2	
<2	<2	<2	<2	<2	
<0.1	0.18	<0.1	<0.1	<0.1	
<0.02	<0.02	<0.02	<0.02	<0.02	
2	3	3	4	3	
<2	<2	<2	<2	<2	
9	17	15	20	21	
164	228	231	253	237	
20.3	23.3	24.3	21.6	27.3	
0.33	<0.2	0.23	0.3	0.39	
158	220	222	214	244	
0.02	0.03	0.03	0.02	0.01	
6	8	15	<5	<5	
<10	12	<10	<10	<10	
<b>Field Measurements</b>					
22.73	26.6	21.76	21.79	11.22	
238.6	377	359.1	376.4	395.3	
8.51	7.5	8.06	8.14	15.43	
98.7	93.6	91.8	92.8	140.8	
8.52	8.08	7.72	7.95	7.94	

Site Location: <b>SUNFISH CREEK JUST UPST. BAKER FORK</b>					
River Mile: 22.91 Storet: C02S03					
	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
<5	<5	<5	<5	<5	<5
72.7	106	78.2	112	303	
<200	<200	3000	<200	221	
<0.05	<0.05	<0.05	<0.05	<0.05	
<2	<2	2	<2	<2	
47	70	89	76	68	
<0.2	<0.2	<0.2	<0.2	<0.2	
28	41	37	46	41	
10.5	20.3	22.3	28.9	36.7	
<2	<2	3	<2	<2	
<20	<20	<20	<20	<20	
240	329	303	366	374	
<2	<2	5.3	<2	<2	
99	139	129	156	139	
134	159	4070	166	485	
<2	<2	4.7	<2	<2	
7	9	9	10	9	
21	30	180	21	27	
<0.2	<0.2	<0.2	NA	<0.2	
<2	<2	4.3	<2	2	
1.33	<0.1	0.36	<0.1	<0.1	
<0.02	<0.02	<0.02	<0.02	<0.02	
2	3	4	3	2	
<2	<2	<2	<2	<2	
8	13	13	17	18	
163	219	197	248	228	
20.8	23.9	30.7	22.2	28.4	
0.3	<0.2	0.37	<0.2	<0.2	
146	202	194	206	232	
0.02	0.02	0.11	0.01	0.02	
<5	<5	104	<5	6	
<10	<10	25	<10	<10	
<b>Field Measurements</b>					
22.48	26.93	21.31	22.86	10.27	
241.1	345.5	301.2	363.8	376	
8.16	8.05	7.53	9.39	16.68	
94.2	101	85.1	109.3	148.9	
8.38	8.25	7.61	6.33	8.07	

Appendix Table 1. Continued.

		Site Location: <b>SUNFISH CREEK DST. STANDINGSTONE RUN, ADJ. CO. RD. 29</b>										
		River Mile: 17.30					Storet: C02S01					
Parameter	Units	Duplicate A/B					Duplicate A/B		Duplicate A/B			
		4/7/2009	5/28/2009	6/25/2009	7/29/2009	7/29/2009	8/26/2009	9/9/2009	9/16/2009	10/21/2009	12/14/2009	
Acidity	mg/L	<5	<5	<5	<5	NA	<5/ <5	NA	NA	<5	<5.0	
Alkalinity	mg/L	62.1	83.2	108	81.6	NA	110/ 108	NA	NA	309	69.6	
Aluminum	ug/L	<200	<200	<200	1640	1260/ 1140	<200/ <200	730/ 763	<200	<200	284	
Ammonia	mg/L	<0.05	<0.05	0.05	<0.05	<0.05/ <0.05	<0.05/ <0.05	<0.05/ <0.05	<0.05	<0.05	<0.050	
Arsenic	ug/L	<2	<2	<2	<2	<2/ <2	<2/ <2	<2/ <2	<2	<2	<2.0	
Barium	ug/L	41	54	67	69	65/ 63	69/ 71	73/ 72	62	61	49	
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2/ <0.2	<0.2/ <0.2	<0.2/ <0.2	<0.2	<0.2	<0.20	
Calcium	mg/L	27	34	43	35	33/ 32	43/ 46	40/ 39	40	42	29	
Chloride	mg/L	18.5	12.4	29.9	36.5	39.5/ 39.5	35.9/ 35.9	32.2/ 32.1	37.3	39.6	17.1	
Chromium	ug/L	<2	<2	<2	<2	<2/ <2	<2/ <2	<2/ <2	<2	<2	<2.0	
COD	mg/L	<20	<20	<20	<20	NA	<20/ <20	NA	NA	<20	<20	
Conductivity	umhos/cm	246	271	368	346	NA	391/ 390	NA	NA	397	249	
Copper	ug/L	<2	<2	<2	3.9	4.1/ 4.6	<2/ <2	2.2/ 2.3	2.2	<2	<2.0	
Hardness, Total	mg/L	92	118	149	120	115/ 113	149/ 160	137/ 134	141	146	101	
Iron	ug/L	79	120	156	2060	1660/ 1430	127/ 162	965 1000	54	82	427	
Lead	ug/L	<2	<2	<2	3.1	2/ 2.1	<2/ <2	<2/ <2	<2	<2	<2.0	
Magnesium	mg/L	6	8	10	8	8/ 8.0	10/ 11.0	9/ 9.0	10	10	7	
Manganese	ug/L	<10	16	29	74	55/ 53	16/ 17	50/ 50	<10	<10	22	
Mercury	ug/L	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	<0.2	<0.20	
Nickel	ug/L	<2	<2	<2	2.6	2.9/ 2.6	<2/ <2	<2/ <2	<2	<2	<2.0	
Nitrate+nitrite	mg/L	0.23	0.13	0.35	1.22	1.51/ 1.45	0.33/ 0.37	0.43/ 0.44	0.69	1.07	0.70	
Nitrite	mg/L	<0.02	0.04	<0.02	<0.02	<0.02/ <0.02	<0.02/ <0.02	<0.02/ <0.02	<0.02	<0.02	<0.020	
Potassium	mg/L	2	3	3	4	4/ 3.0	3/ 3.0	4/ 4.0	3	3	2	
Selenium	ug/L	<2	<2	<2	<2	<2/ <2	<2/ <2	<2/ <2	<2	<2	<2.0	
Sodium	mg/L	11	10	17	20	20/ 20	20/ 21	19/ 19	19	20	11	
Strontium	ug/L	153	205	245	207	203/ 199	246/ 264	224/ 224	235	240	152	
Sulfate	mg/L	24.1	22.1	24.7	22.5	22.9/ 24	23.7/ 23.7	23.4/ 22.9	28.4	28.5	23.8	
TKN	mg/L	<0.2	<0.2	<0.2	0.36	0.26/ 0.31	0.26/ 0.24	<0.2/ 0.25	0.25	0.33	0.36	
Total Dissolved Solids	mg/L	148	152	228	222	224/ 226	226/ 224	206/ 212	222	238	156	
Total Phosphorus	mg/L	<0.01	0.01	0.04	0.17	0.17/ 0.17	0.03/ 0.03	<0.01/ 0.05	0.02	0.03	0.033	
Total Suspended Solids	mg/L	<5	<5	5	55	42/ 40	5/ <5	19/ 19	<5	<5	<5	
Zinc	ug/L	<10	<10	<10	18	10/ <10	<10/ <10	<10/ <10	<10	<10	<10	
CBOD20	mg/L	NA	<3	3.9	NA	4.6 B/ 4 B	3.3/ 4.5	4.5/ 5	<3	NA	NA	
Field Measurements												
Temperature	°C	6.03	22.34	26.07	20.86	NA	21.96	NA	NA	10.8	4.49	
Conductivity	umhos/cm	222	273.7	386.5	346.7	NA	384.9	NA	NA	398	250	
Dissolved Oxygen	mg/L	15.28	8.48	9.46	8.32	NA	9.78	NA	NA	18.42	14.78	
D.O. Saturation	%	122.9	97.6	116.9	93.2	NA	111.8	NA	NA	166.4	155.6	
pH	S.U.	7.35	8.4	8.36	7.84	NA	7.38	NA	NA	8.04	7.96	

Appendix Table 1. Continued.

Parameter	Units
Acidity	mg/L
Alkalinity	mg/L
Aluminum	ug/L
Ammonia	mg/L
Arsenic	ug/L
Barium	ug/L
Cadmium	ug/L
Calcium	mg/L
Chloride	mg/L
Chromium	ug/L
COD	mg/L
Conductivity	umhos/cm
Copper	ug/L
Hardness, Total	mg/L
Iron	ug/L
Lead	ug/L
Magnesium	mg/L
Manganese	ug/L
Mercury	ug/L
Nickel	ug/L
Nitrate+nitrite	mg/L
Nitrite	mg/L
Potassium	mg/L
Selenium	ug/L
Sodium	mg/L
Strontium	ug/L
Sulfate	mg/L
TKN	mg/L
Total Dissolved Solids	mg/L
Total Phosphorus	mg/L
Total Suspended Solids	mg/L
Zinc	ug/L
<b>Field Measurements</b>	
Temperature	°C
Conductivity	umhos/cm
Dissolved Oxygen	mg/L
D.O. Saturation	%
pH	S.U.

Site Location: <b>SUNFISH CREEK @ ALTITUDE-MILLER HILL RD.</b> River Mile: 15.10 Storet: 203457					
5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009	
<5	<5	<5	<5	<5	
86.6	108	97.6	110	329	
<200	<200	449	<200	<200	
<0.05	0.05	<0.05	<0.05	<0.05	
<2	<2	<2	<2	<2	
52	73	72	67	63	
<0.2	<0.2	<0.2	<0.2	<0.2	
33	44	39	41	43	
11.9	26.1	28.9	29.8	39.6	
<2	<2	<2	<2	<2	
<20	<20	<20	<20	<20	
274	354	343	369	395	
<2	<2	2.1	<2	<2	
115	151	134	144	149	
100	177	653	147	108	
<2	<2	<2	<2	<2	
8	10	9	10	10	
15	21	49	20	<10	
<0.2	<0.2	<0.2	NA	<0.2	
<2	<2	<2	<2	<2	
<0.1	0.17	0.2	0.12	<0.1	
<0.02	<0.02	<0.02	<0.02	<0.02	
2	3	3	3	2	
<2	<2	<2	<2	<2	
10	16	15	17	19	
199	250	228	239	238	
21.4	23.9	23.1	22.8	28.6	
<0.2	0.26	<0.2	0.23	<0.2	
160	208	224	202	234	
0.01	0.03	0.04	0.02	0.02	
<5	<5	19	5	<5	
<10	<10	<10	<10	<10	
<b>Field Measurements</b>					
23.1	25.22	21.66	21.66	9.15	
277	377.6	347.6	365.4	396.5	
8.33	8.68	8.4	9.57	15.39	
97.4	105.5	95.5	108.8	133.7	
8.52	8.32	8.03	6.28	8.01	

Site Location: <b>SUNFISH CR. UPST. CAMERON, 0.2 MI DST. TR 156</b> River Mile: 10.4 Storet: 203456					
Duplicate A/B					
5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009	
<5/ <5	<5	<5	<5	<5	
96.6/ 95	114	95.5	116	326	
<200/ <200	<200	695	<200	<200	
<0.05/ <0.05	<0.05	<0.05	<0.05	<0.05	
<2/ <2	<2	<2	<2	<2	
60/ 61	79	74	76	64	
<0.2/ <0.2	<0.2	<0.2	<0.2	<0.2	
37/ 38	45	36	44	43	
10.3/ 10.2	23.1	18.9	29.6	35	
<2/ <2	<2	<2	<2	<2	
<20/ <20	<20	<20	<20	<20	
292/ 291	362	312	387	394	
<2/ <2	<2	2.7	<2	<2	
129/ 132	154	127	155	149	
136/ 153	159	1020	129	60	
<2/ <2	<2	<2	<2	<2	
9/ 9.0	10	9	11	10	
21/ 22	26	46	15	<10	
<0.2/ <0.2	<0.2	<0.2	NA	<0.2	
<2/ <2	<2	<2	<2	<2	
<0.1/ <0.1	<0.1	1.08	<0.1	<0.1	
<0.02/ <0.02	<0.02	<0.02	<0.02	<0.02	
2/ 3.0	3	3	3	2	
<2/ <2	<2	<2	<2	<2	
10/ 10.0	15	12	17	19	
224/ 230	255	212	257	243	
23.6/ 23.5	25.9	24.8	25.5	30.3	
<0.2/ <0.2	0.31	0.23	<0.2	0.29	
162/ 162	216	206	214	238	
<0.01/ 0.01	0.03	0.03	<0.01	0.02	
5/ <5	5	24	<5	<5	
<10/ <10	<10	<10	<10	<10	
<b>Field Measurements</b>					
24.67	23.61	22.37	21.89	10.23	
295.5	381.6	315.6	382.8	394.2	
8.29	8.08	8.16	8.43	15.49	
99.8	95.4	94	96.3	138.2	
8.44	8.21	7.96	7.51	7.97	

Appendix Table 1. Continued.

Parameter	Units
Acidity	mg/L
Alkalinity	mg/L
Aluminum	ug/L
Ammonia	mg/L
Arsenic	ug/L
Barium	ug/L
Cadmium	ug/L
Calcium	mg/L
Chloride	mg/L
Chromium	ug/L
COD	mg/L
Conductivity	umhos/cm
Copper	ug/L
Hardness, Total	mg/L
Iron	ug/L
Lead	ug/L
Magnesium	mg/L
Manganese	ug/L
Mercury	ug/L
Nickel	ug/L
Nitrate+nitrite	mg/L
Nitrite	mg/L
Potassium	mg/L
Selenium	ug/L
Sodium	mg/L
Strontium	ug/L
Sulfate	mg/L
TKN	mg/L
Total Dissolved Solids	mg/L
Total Phosphorus	mg/L
Total Suspended Solids	mg/L
Zinc	ug/L
<b>Field Measurements</b>	
Temperature	°C
Conductivity	umhos/cm
Dissolved Oxygen	mg/L
D.O. Saturation	%
pH	S.U.

Site Location: <b>SUNFISH CREEK E OF CAMERON @ ST. RT. 78</b>					
River Mile: 6.97 Storet: 609200					
	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
<5	<5	<5	<5	<5	<5
102	136	122	130	372	
<200	<200	362	<200	<200	
<0.05	<0.05	<0.05	<0.05	<0.05	
<2	<2	<2	<2	<2	
58	73	77	71	65	
<0.2	<0.2	<0.2	<0.2	<0.2	
38	47	43	45	46	
10.1	16.5	18.6	22.2	31.4	
<2	<2	<2	<2	<2	
<20	<20	<20	<20	<20	
314	393	380	390	413	
<2	<2	<2	<2	<2	
132	163	149	158	160	
95	168	568	205	58	
<2	<2	<2	<2	<2	
9	11	10	11	11	
14	38	58	26	<10	
<0.2	<0.2	<0.2	NA	<0.2	
<2	<2	<2	<2	<2	
<0.1	<0.1	<0.1	<0.1	<0.1	
<0.02	<0.02	<0.02	<0.02	<0.02	
2	3	3	3	2	
<2	<2	<2	<2	<2	
15	20	20	19	21	
257	308	280	272	269	
27.9	35.8	35	30.5	34	
0.23	<0.2	0.27	<0.2	0.35	
178	226	220	218	242	
0.01	0.01	0.02	<0.01	0.01	
<5	6	15	7	<5	
<10	<10	<10	<10	<10	
<b>Field Measurements</b>					
22.59	24.38	22.87	22.73	10.03	
317	414.7	386.8	387	413	
8.65	8.07	7.88	8.71	17.18	
100.1	96.7	91.7	101.1	152.4	
8.36	8.19	7.82	6.18	7.86	

Site Location: <b>SUNFISH CREEK W OF POWHATAN POINT</b>					
River Mile: 1.80 Storet: C02S79					
	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
<5	<5	<5	<5	<5	<5
98	126	115	127	359	
<200	304	595	248	<200	
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<2	<2	<2	<2	<2	<2
60	77	81	78	65	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
37	45	41	46	44	
14	18	20.1	21.3	30.8	
<2	<2	<2	<2	<2	<2
<20	<20	<20	<20	<20	20
322	378	375	384	410	
<2	<2	2.1	2.1	<2	<2
129	154	144	160	151	
136	451	864	323	78	
<2	<2	<2	<2	<2	<2
9	10	10	11	10	
20	61	73	32	12	
<0.2	<0.2	<0.2	NA	<0.2	<0.2
<2	<2	<2	<2	<2	<2
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.02 PT	<0.02	<0.02	<0.02	<0.02	<0.02
2	3	3	3	2	
<2	<2	<2	<2	<2	<2
15	19	19	20	20	
247	289	274	284	260	
27.7	32.8	33.4	30.3	33.8	
0.33	<0.2	0.27	0.4	0.24	
190	222	206	222	242	
0.01	0.03	0.03	0.24	0.01	
<5	44	30	7	<5	
<10	<10	<10	<10	<10	<10
<b>Field Measurements</b>					
23.27	28.78	23.84	23.57	12.55	
325.7	402.9	380.2	382.1	408.9	
8	7.94	6.97	7.59	12.97	
93.9	102.9	82.6	89.5	122	
8.33	8.2	7.88	7	7.73	

Appendix Table 1. Continued.

		Site Location: <b>BAKER FORK ADJ. TWP. RD. 81 @ TOWNSHIP LINE</b> River Mile: 1.20 Storet: 203458					Site Location: <b>PINER FORK AT KINGS ROAD, CR 1</b> River Mile: 4.20 Storet: 300665				
Parameter	Units	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
Acidity	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Alkalinity	mg/L	65.2	81.8	80.6	90.1	248	74.9	93.3	81.3	96.2	265
Aluminum	ug/L	<200	<200	215	<200	<200	<200	284	229	<200	<200
Ammonia	mg/L	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Barium	ug/L	50	63	71	69	60	54	75	68	66	61
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	26	32	36	37	34	27	33	29	33	34
Chloride	mg/L	10.4	13	16.6	16.2	21.1	5	8.9	6.9	9.6	9.4
Chromium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
COD	mg/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Conductivity	umhos/cm	226	266	286	298	293	220	253	240	264	263
Copper	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hardness, Total	mg/L	90	109	123	125	118	96	115	101	115	118
Iron	ug/L	102	140	271	98	73	773	638	521	180	113
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Magnesium	mg/L	6	7	8	8	8	7	8	7	8	8
Manganese	ug/L	23	35	51	28	10	216	78	81	17	11
Mercury	ug/L	<0.2	<0.2	<0.2	NA	<0.2	<0.2	<0.2	<0.2	NA	<0.2
Nickel	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nitrate+nitrite	mg/L	<0.1	0.18	0.1	<0.1	<0.1	<0.1	0.21	0.14	1.02	<0.1
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	mg/L	2	2	2	2	2	2	3	3	3	3
Selenium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Sodium	mg/L	9	9	9	10	11	5	8	6	7	7
Strontium	ug/L	157	175	194	202	183	161	190	165	178	176
Sulfate	mg/L	21.2	22.1	28.8	25.4	27.1	19	16.8	20	17.1	23.3
TKN	mg/L	<0.2	0.2	<0.2	<0.2	0.21	<0.2	0.22	0.39	<0.2	0.27
Total Dissolved Solids	mg/L	126	152	188	174	182	136	158	136	150	158
Total Phosphorus	mg/L	<0.01	0.01	0.01	0.02	<0.01	0.03	0.03	0.03	0.01	0.02
Total Suspended Solids	mg/L	<5	<5	<5	<5	<5	11	9	10	<5	<5
Zinc	ug/L	<10	<10	20	<10	<10	<10	<10	27	<10	<10
<b>Field Measurements</b>											
Temperature	°C	21.87	24.6	20.45	19.9	11.56	22.26	25.54	22.23	22.56	10.89
Conductivity	umhos/cm	227.4	281.9	291.1	295.7	293.7	221.9	270.2	244.3	261.8	268.6
Dissolved Oxygen	mg/L	7.46	7.58	8.49	8.71	13.98	7.51	6.76	7.87	8.76	13.17
D.O. Saturation	%	85.1	91.1	94.2	95.7	128.5	86.4	82.6	90.4	101.4	119.2
pH	S.U.	8.45	8.23	7.5	5.92	8.05	8.14	8.19	7.86	5.8	8.21



Appendix Table 1. Continued.

		Site Location: <b>PINEY FORK AT MOUTH @ CO. RD. 29</b>										
		River Mile: 0.02 Storet: C02S04										
Parameter	Units	Duplicate A/B										Duplicate A/B
		4/7/2009	5/28/2009	6/25/2009	7/29/2009	7/29/2009	8/26/2009	9/9/2009	9/16/2009	10/21/2009	12/14/2009	
Acidity	mg/L	<5/ <5	<5	<5	NA	<5	<5	NA	NA	<5	<5.0/ <5.0	
Alkalinity	mg/L	64.4/ 63.7	93.2	130	NA	110	137	NA	NA	392	62.6/ 62.5	
Aluminum	ug/L	<200/ <200	<200	<200	303	343	<200	<200	<200	<200	273/ 276	
Ammonia	mg/L	<0.05/ <0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05/ <0.05	
Arsenic	ug/L	<2/ <2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0/ <2.0	
Barium	ug/L	42/ 44	63	100	71	75	100	76	96	78	48/ 47	
Cadmium	ug/L	<0.2/ <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20/ <0.2	
Calcium	mg/L	24/ 26	35	53	35	37	54	41	53	44	25/ 24	
Chloride	mg/L	5.5/ 5.3	8.4	23.7	14	13.9	31.1	13.7	26.6	20.1	6.7/ 6.8	
Chromium	ug/L	<2/ <2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0/ <2.0	
COD	mg/L	<20/ <20	<20	<20	NA	<20	<20	NA	NA	<20	<20/ <20	
Conductivity	umhos/cm	214/ 210	289	431	NA	333	471	NA	NA	398	209/ 210	
Copper	ug/L	<2/ <2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0/ <2.0	
Hardness, Total	mg/L	85/ 90	124	182	124	129	184	144	186	155	87/ 85	
Iron	ug/L	98/ 109	53	121	351	435	<50	96	50	<50	413/ 347	
Lead	ug/L	<2/ <2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0/ <2.0	
Magnesium	mg/L	6/ 6.0	9	12	9	9	12	10	13	11	6/ 6.0	
Manganese	ug/L	<10/ <10	<10	10	15	18	<10	<10	<10	<10	12/ 12.0	
Mercury	ug/L	<0.2/ <0.2	<0.2	<0.2	NA	<0.2	NA	NA	NA	<0.2	<0.20/ <0.2	
Nickel	ug/L	<2/ <2	<2	<2	<2	<2	<2	<2	<2	2.4	<2.0/ <2.0	
Nitrate+nitrite	mg/L	0.16/ 0.16	<0.1	0.29	0.15	0.13	<0.1	0.1	<0.1	0.12	0.61/ 0.59	
Nitrite	mg/L	<0.02/ <0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02/ <0.02	
Potassium	mg/L	<2/ <2	2	3	2	2	3	3	3	3	2/ 2.0	
Selenium	ug/L	<2/ <2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0/ <2.0	
Sodium	mg/L	6/ 6.0	12	23	16	16	29	19	24	22	7/ 6.0	
Strontium	ug/L	140/ 146	226	308	224	228	315	247	309	264	138/ 133	
Sulfate	mg/L	24.1/ 23.7	27	45.1	32.3	30.9	47.6	30	45.8	41.8	25.8/ 25.9	
TKN	mg/L	<0.2/ <0.2	<0.2	<0.2	<0.2	0.21	0.21	0.24	<0.2	0.29	0.32/ 0.34	
Total Dissolved Solids	mg/L	128/ 126	150	254	194	190	282	196	280	230	128/ 134	
Total Phosphorus	mg/L	<0.01/ <0.01	<0.01	0.03	<0.01	0.02	<0.01	0.01	<0.01	0.01	0.023/ 0.025	
Total Suspended Solids	mg/L	6/ <5	<5	<5	7	10	<5	<5	<5	<5	<5/ <5	
Zinc	ug/L	<10/ <10	<10	<10	<10	10	<10	<10	<10	<10	<10/ <10	
CBOD20	mg/L	NA	<3	3	3.2 B	3.6	4.2	3.2	<3	<2	NA	
<b>Field Measurements</b>												
Temperature	°C	6.08	22.23	21.54	NA	20.39	19.7	NA	NA	11.14	4.16	
Conductivity	umhos/cm	187	292.2	452.7	NA	338.2	464.3	NA	NA	398.7	214	
Dissolved Oxygen	mg/L	14.73	9.09	8.6	NA	8.78	8.79	NA	NA	13.97	15.62	
D.O. Saturation	%	119.4	104.5	97.6	NA	97.4	96.2	NA	NA	127.2	119.7	
pH	S.U.	8.92	8.56	8.25	NA	7.85	7.96	NA	NA	8.12	8.1	

Appendix Table 1. Continued.

Parameter	Units
Acidity	mg/L
Alkalinity	mg/L
Aluminum	ug/L
Ammonia	mg/L
Arsenic	ug/L
Barium	ug/L
Cadmium	ug/L
Calcium	mg/L
Chloride	mg/L
Chromium	ug/L
COD	mg/L
Conductivity	umhos/cm
Copper	ug/L
Hardness, Total	mg/L
Iron	ug/L
Lead	ug/L
Magnesium	mg/L
Manganese	ug/L
Mercury	ug/L
Nickel	ug/L
Nitrate+nitrite	mg/L
Nitrite	mg/L
Potassium	mg/L
Selenium	ug/L
Sodium	mg/L
Strontium	ug/L
Sulfate	mg/L
TKN	mg/L
Total Dissolved Solids	mg/L
Total Phosphorus	mg/L
Total Suspended Solids	mg/L
Zinc	ug/L
<b>Field Measurements</b>	
Temperature	°C
Conductivity	µmhos/cm
Dissolved Oxygen	mg/L
D.O. Saturation	%
pH	S.U.

Site Location: <b>LEITH RUN 1.9 MI. N OF LEITH, ADJ. LEITH RUN RD.</b>					
River Mile: 2.80 Storet: C01S02					
	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
<5	<5	<5	<5	<5	<5
77.5	96	103	115	324	
<200	<200	<200	<200	<200	<200
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<2	<2	<2	<2	<2	<2
70	79	83	86	77	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
30	36	37	41	39	
6.6	9.8	9.1	12.5	17.2	
<2	<2	<2	<2	<2	<2
<20	<20	<20	<20	<20	<20
238	273	284	310	307	
<2	<2	<2	<2	<2	<2
104	119	121	135	130	
59	60	253	146	85	
<2	<2	<2	<2	<2	<2
7	7	7	8	8	
13	26	56	46	15	
<0.2	<0.2	<0.2	NA	<0.2	<0.2
<2	<2	<2	<2	<2	<2
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2	2	2	2	2	
<2	<2	<2	<2	<2	<2
8	9	9	10	10	
183	190	195	207	197	
20.7	21.1	20.5	18.8	21.2	
0.22	0.21	0.2	<0.2	0.21	
142	154	166	178	182	
0.01	0.01	0.02	2.35	0.02	
<5	<5	11	<5	<5	
<10	<10	<10	<10	<10	<10
19.61	20.5	20.29	18.77	8.07	
239.3	290.5	288.1	307.2	311.9	
8.42	7.85	8.37	9.1	12.98	
92	87.2	92.7	97.7	109.9	
7.92	7.98	7.42	6.02	7.72	

Site Location: <b>NEWELL RUN DST. PEGGS FORK</b>					
River Mile: 1.70 Storet: 203392					
	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
	<5	<5	<5	<5	<5/ <5
	94.3	114	125	134	374/ 372
	<200	<200	<200	<200	<200/ <200
	<0.05	<0.05	<0.05	<0.05	<0.05/ <0.05
	<2	<2	<2	<2	<2/ <2
	72	79	94	91	86/ 89
	<0.2	<0.2	<0.2	<0.2	<0.2/ <0.2
	42	46	52	54	55/ 56
	6.2	5.9	8.1	11.4	17/ 16.9
	<2	<2	<2	<2	<2/ <2
	<20	<20	<20	<20	<20/ <20
	328	352	374	394	405/ 405
	<2	<2	5.9	2.7	<2/ <2
	146	156	175	180	187/ 189
	149	68	148	94	54/ 102
	<2	<2	<2	<2	<2/ <2
	10	10	11	11	12/ 12.0
	<10	16	27	23	15/ 18
	<0.2	<0.2	<0.2	NA	<0.2/ <0.2
	<2	<2	<2	<2	2.6/ 2.1
	<0.1	0.3	<0.1	<0.1	<0.1/ 0.1
	0.04	<0.02	<0.02	<0.02	<0.02/ <0.02
	2	2	2	2	2/ 2.0
	<2	<2	<2	<2	<2/ <2
	8	8	9	9	11/ 11.0
	248	241	266	263	266/ 269
	47.9	45.3	43.8	41.4	46.8/ 46.4
	1.25	0.34	0.2	<0.2	<0.2/ 0.23
	224	212	240	236	258/ 250
	<0.01	<0.01	0.02	<0.01	0.02/ 0.02
	<5	<5	<5	<5	<5/ <5
	<10	<10	<10	<10	<10/ <10
	18.62	19.49	20.3	19.42	9.41
	331.7	362.4	384.5	393.5	409.5
	8.79	8.06	7.57	7.17	11.52
	94.1	87.8	83.9	78.1	100.8
	7.76	7.84	7.01	8.33	7.81

Appendix Table 1. Continued.

Parameter	Units
Acidity	mg/L
Alkalinity	mg/L
Aluminum	ug/L
Ammonia	mg/L
Arsenic	ug/L
Barium	ug/L
Cadmium	ug/L
Calcium	mg/L
Chloride	mg/L
Chromium	ug/L
COD	mg/L
Conductivity	umhos/cm
Copper	ug/L
Hardness, Total	mg/L
Iron	ug/L
Lead	ug/L
Magnesium	mg/L
Manganese	ug/L
Mercury	ug/L
Nickel	ug/L
Nitrate+nitrite	mg/L
Nitrite	mg/L
Potassium	mg/L
Selenium	ug/L
Sodium	mg/L
Strontium	ug/L
Sulfate	mg/L
TKN	mg/L
Total Dissolved Solids	mg/L
Total Phosphorus	mg/L
Total Suspended Solids	mg/L
Zinc	ug/L
<b>Field Measurements</b>	
Temperature	°C
Conductivity	umhos/cm
Dissolved Oxygen	mg/L
D.O. Saturation	%
pH	S.U.

Site Location: <b>MILL CREEK NE OF NEW MATAMORAS @ TR 66</b>					
River Mile: 0.70 Storet: 203411					
	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
<5	<5	<5	<5	<5	<5
77.2	106	124	126	310	
<200	NA	<200	<200	<200	
<0.05	NA	<0.05	<0.05	<0.05	
<2	NA	<2	<2	<2	
53	NA	87	80	69	
<0.2	NA	<0.2	<0.2	<0.2	
29	NA	43	43	41	
7.1	11	12.4	16.3	24.7	
<2	NA	<2	<2	<2	
<20	NA	<20	<20	<20	
248	301	333	340	335	
<2	NA	<2	<2	<2	
105	NA	153	149	144	
50	NA	137	97	100	
<2	NA	<2	<2	<2	
8	NA	11	10	10	
<10	NA	36	18	10	
<0.2	NA	<0.2	NA	<0.2	
<2	NA	<2	<2	<2	
<0.1	NA	<0.1	<0.1	<0.1	
<0.02	<0.02	<0.02	<0.02	<0.02	
2	NA	2	2	2	
<2	NA	<2	<2	<2	
7	NA	9	9	10	
190	NA	259	244	229	
23.7	22	21.2	20.1	23.8	
<0.2	NA	1.46	<0.2	0.39	
148	176	210	184	200	
<0.01	NA	0.02	0.01	0.02	
<5	<5	17	<5	5	
<10	NA	<10	<10	<10	
<b>Field Measurements</b>					
20.74	20.91	21.5	21.25	8.25	
249.2	309.5	340.4	346.8	335.8	
9.14	9.16	8.33	8.96	14.35	
102	102.7	94.5	101.1	122	
8.34	7.82	7.93	6.82	7.77	

Site Location: <b>NARROWS RUN ADJ. NARROWS RUN ROAD</b>					
River Mile: 0.10 Storet: 300639					
	5/28/2009	6/25/2009			
<5	<5				
79.3	123				
202	<200				
<0.05	<0.05				
<2	<2				
44	58				
<0.2	<0.2				
33	48				
<5	<5				
<2	<2				
181	<20				
249	333				
<2	<2				
115	161				
229	74				
<2	<2				
8	10				
32	120				
<0.2	<0.2				
<2	<2				
0.77	<0.1				
<0.02	<0.02				
2	2				
<2	<2				
7	8				
216	266				
30.1	35.3				
<0.2	<0.2				
152	198				
0.01	0.01				
7	<5				
<10	<10				
<b>Field Measurements</b>					
19.7	20.92				
249.4	351.4				
7.87	8.04				
86.1	90.1				
8.24	7.93				

Appendix Table 1. Continued.

Parameter	Units
Acidity	mg/L
Alkalinity	mg/L
Aluminum	ug/L
Ammonia	mg/L
Arsenic	ug/L
Barium	ug/L
Cadmium	ug/L
Calcium	mg/L
Chloride	mg/L
Chromium	ug/L
COD	mg/L
Conductivity	umhos/cm
Copper	ug/L
Hardness, Total	mg/L
Iron	ug/L
Lead	ug/L
Magnesium	mg/L
Manganese	ug/L
Mercury	ug/L
Nickel	ug/L
Nitrate+nitrite	mg/L
Nitrite	mg/L
Potassium	mg/L
Selenium	ug/L
Sodium	mg/L
Strontium	ug/L
Sulfate	mg/L
TKN	mg/L
Total Dissolved Solids	mg/L
Total Phosphorus	mg/L
Total Suspended Solids	mg/L
Zinc	ug/L
<b>Field Measurements</b>	
Temperature	°C
Conductivity	umhos/cm
Dissolved Oxygen	mg/L
D.O. Saturation	%
pH	S.U.

Site Location: <b>OPOSSUM CR. ADJ. BEAUTIFUL RIDGE RD</b>					
River Mile: 2.20 Storet: 203415					
	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
<5	<5	<5	<5	<5	<5
72.7	84.8	89.1	93.5	261	
<200	<200	<200	<200	<200	<200
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<2	<2	<2	<2	<2	<2
41	49	52	49	47	
<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
30	34	36	35	35	
<5	<5	<5	<5	6.3	
<2	<2	<2	<2	<2	<2
<20	<20	<20	<20	<20	<20
240	257	275	271	265	
<2	<2	<2	<2	<2	<2
100	114	119	116	116	
73	59	<50	55	101	
<2	<2	<2	<2	<2	<2
6	7	7	7	7	
11	15	<10	<10	16	
<0.2	<0.2	<0.2	NA	<0.2	<0.2
<2	<2	<2	<2	<2	<2
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2	2	2	2	2	
<2	<2	<2	<2	<2	<2
7	8	9	9	8	
182	183	192	183	184	
29.5	27	31.7	28.1	31.3	
<0.2	<0.2	<0.2	<0.2	0.23	
142	158	176	150	154	
0.01	<0.01	0.01	<0.01	<0.01	<0.01
<5	<5	<5	<5	<5	<5
<10	<10	<10	<10	<10	<10
<b>Field Measurements</b>					
20.43	21.09	22.07	20.96	9.77	
240.4	265.5	279.7	268.2	264.9	
8.83	8.18	7.69	8.71	13.03	
98	91.9	88.2	97.7	114.9	
8.2	8.02	7.87	8.97	7.75	

Site Location: <b>OPOSSUM CREEK at Ford upstream Gilmore Run</b>					
River Mile: 1.05 Storet: 300664					
	Duplicate A/B		Duplicate A/B		
	5/28/2009	6/25/2009	7/29/2009	8/26/2009	10/21/2009
<5	<5/ <5	<5/ <5	<5	<5	<5
76.8	97/ 96.4	105/ 105	104	280	
<200	<200/ <200	<200/ <200	<200	<200	<200
<0.05	<0.05/ <0.05	<0.05/ <0.05	<0.05	<0.05	<0.05
<2	<2/ <2	<2/ <2	<2	<2	<2
42	52/ 52	53/ 53	49	48	
<0.2	<0.2/ <0.2	<0.2/ <0.2	<0.2	<0.2	<0.2
32	40/ 40	44/ 44	42	42	
<5	<5/ <5	<5/ <5	<5	5.8	
<2	<2/ <2	<2/ <2	<2	<2	<2
<20	<20/ <20	<20/ <20	<20	<20	<20
254	293/ 292	334/ 334	322	321	
<2	<2/ <2	<2/ <2	<2	<2	<2
109	133/ 133	143/ 143	138	138	
92	107/ 122	113/ 128	115	63	
<2	<2/ <2	<2/ <2	<2	<2	<2
7	8/ 8.0	8/ 8.0	8	8	
33	62/ 59	178/ 181	165	87	
<0.2	<0.2/ <0.2	<0.2/ <0.2	NA	<0.2	<0.2
<2	<2/ <2	<2/ <2	<2	<2	<2
<0.1	<0.1/ <0.1	<0.1/ <0.1	<0.1	<0.1	<0.1
<0.02 PT	<0.02/ <0.02	<0.02/ <0.02	<0.02	<0.02	<0.02
2	2/ 2.0	2/ 2.0	2	2	
<2	<2/ <2	<2/ <2	<2	<2	<2
8	9/ 9.0	11/ 11.0	11	10	
195	215/ 214	222/ 223	210	220	
32.2	38.2/ 38	47/ 48.5	42.2	51.4	
<0.2	<0.2/ <0.2	<0.2/ 0.22	<0.2	<0.2	<0.2
148	174/ 168	222/ 228	194	196	
0.02	<0.01/ 0.01	0.02/ 0.02	0.01	<0.01	<0.01
<5	<5/ 5	<5/ <5	<5	<5	<5
<10	<10/ <10	<10/ <10	<10	<10	<10
<b>Field Measurements</b>					
21.92	23.89	22.71	22.38	9.92	
256.6	313.7	340.8	321.1	319.4	
8.03	6.73	5.47	7.71	14.2	
91.8	79.8	63.4	88.9	125.7	
8.18	8.11	7.47	9	7.68	

**Appendix Table 2.** Surface water results for semivolatile organic compounds and herbicides from the Sunfish Creek study area, 2009. NA = not analyzed.

Stream	SUNFISH CREEK	SUNFISH CREEK	SUNFISH CREEK
River Mile	17.3	7.1	7.1
STORET Number	C02S01	609200	609200
Date Sampled	5/18/2009	5/18/2009	8/18/2009
<b>Semivolatile Organic Compounds (ug/l) USEPA 8270/ USEPA 625</b>			
Acenaphthene	<2.1	<2.0	<5.4
Acenaphthylene	<2.1	<2.0	<5.4
Acetophenone	<2.1	<2.0	NA
2-Acetylaminofluorene	<2.1	<2.0	NA
Aniline	<2.1	<2.0	NA
Anthracene	<2.1	<2.0	<2.2
Benz[a]anthracene	<2.1	<2.0	<2.2
Benzo[a]pyrene	<2.1	<2.0	<2.2
Benzo[b]fluoranthene	<2.1	<2.0	<2.2
Benzo[g,h,i]perylene	<2.1	<2.0	<2.2
Benzo[k]fluoranthene	<2.1	<2.0	<2.2
Benzyl alcohol	<2.1	<2.0	NA
bis(2-Chloroethoxy)methane	<2.1	<2.0	<5.4
bis(2-Chloroethyl)ether	<2.1	<2.0	<2.2
bis(2-Chloroisopropyl)ether	<2.1	<2.0	<2.2
bis(2-Ethylhexyl)phthalate	<2.1	<2.0	<10.8
4-Bromophenyl-phenylether	<2.1	<2.0	<5.4
Butylbenzylphthalate	<2.1	<2.0	<2.2
4-Chloro-3-methylphenol	<2.1	<2.0	<10.8
2-Chloronaphthalene	<2.1	<2.0	<5.4
2-Chlorophenol	<2.1	<2.0	<2.2
4-Chlorophenyl-phenylether	<2.1	<2.0	<2.2
Chrysene	<2.1	<2.0	<2.2
Di-n-butylphthalate	<2.1	<2.0	<5.4
Di-n-octylphthalate	<2.1	<2.0	<2.2
Dibenz[a,h]anthracene	<2.1	<2.0	<2.2
Dibenzofuran	<2.1	<2.0	NA
1,3-Dichlorobenzene	<2.1	<2.0	<2.2
1,4-Dichlorobenzene	<2.1	<2.0	<2.2
1,2-Dichlorobenzene	<2.1	<2.0	<2.2
3,3'-Dichlorobenzidine	<2.1	<2.0	NA
2,6-Dichlorophenol	<2.1	<2.0	NA
2,4-Dichlorophenol	<2.1	<2.0	<2.2
Diethylphthalate	<2.1	<2.0	<5.4
p-Dimethylaminoazobenzene	<2.1	<2.0	NA
7,12-Dimethylbenz[a]anthracene	<2.1	<2.0	NA
2,4-Dimethylphenol	<2.1	<2.0	<10.8
Dimethylphthalate	<2.1	<2.0	<5.4
4,6-Dinitro-2-methylphenol	<2.1	<2.0	<5.4
1,3-Dinitrobenzene	<2.1	<2.0	NA
2,4-Dinitrophenol	<2.1	<2.0	<21.5
2,6-Dinitrotoluene	<2.1	<2.0	<2.2
2,4-Dinitrotoluene	<2.1	<2.0	<2.2
Dinoseb	<2.1	<2.0	NA
Diphenylamine	<2.1	<2.0	NA
Ethyl methanesulfonate	<2.1	<2.0	NA

Appendix Table 2. Continued.

Stream	SUNFISH CREEK	SUNFISH CREEK	SUNFISH CREEK
River Mile	17.3	7.1	7.1
STORET Number	C02S01	609200	609200
Date Sampled	5/18/2009	5/18/2009	8/18/2009
<b>Semivolatile Organic Compounds (ug/l) USEPA 8270/ USEPA 625</b>			
Fluoranthene	<2.1	<2.0	<2.2
Fluorene	<2.1	<2.0	<2.2
Hexachlorobenzene	<2.1	<2.0	<2.2
Hexachlorobutadiene	<2.1	<2.0	<2.2
Hexachlorocyclopentadiene	<2.1	<2.0	<2.2
Hexachloroethane	<2.1	<2.0	<5.4
Hexachloropropene	<2.1	<2.0	NA
Indeno[1,2,3-cd]pyrene	<2.1	<2.0	<2.2
Isophorone	<2.1	<2.0	<2.2
Methyl methanesulfonate	<2.1	<2.0	NA
3-Methylcholanthrene	<2.1	<2.0	NA
2-Methylnaphthalene	<2.1	<2.0	NA
3&4-Methylphenol	<2.1	<2.0	NA
2-Methylphenol	<2.1	<2.0	NA
N-Nitroso-di-n-butylamine	<2.1	<2.0	NA
N-Nitroso-di-n-propylamine	<2.1	<2.0	<2.2
N-Nitrosomorpholine	<2.1	<2.0	NA
N-Nitrosopiperidine	<2.1	<2.0	NA
N-Nitrosopyrrolidine	<2.1	<2.0	NA
N-Nitrosodiphenylamine	NA	NA	<5.4
Naphthalene	<2.1	<2.0	<2.2
1,4-Naphthoquinone	<2.1	<2.0	NA
2-Nitroaniline	<2.1	<2.0	NA
4-Nitroaniline	<2.1	<2.0	NA
Nitrobenzene	<2.1	<2.0	<2.2
4-Nitrophenol	<2.1	<2.0	<21.5
2-Nitrophenol	<2.1	<2.0	<2.2
Pentachlorobenzene	<2.1	<2.0	NA
Pentachlorophenol	<2.1	<2.0	<10.8
Phenacetin	<2.1	<2.0	NA
Phenanthrene	<2.1	<2.0	<2.2
Phenol	<2.1	<2.0	<2.2
2-Picoline	<2.1	<2.0	NA
Pronamide	<2.1	<2.0	NA
Pyrene	<2.1	<2.0	<2.2
Safrole	<2.1	<2.0	NA
1,2,4,5-Tetrachlorobenzene	<2.1	<2.0	NA
2,3,4,6-Tetrachlorophenol	<2.1	<2.0	NA
1,2,4-Trichlorobenzene	<2.1	<2.0	<2.2
2,4,6-Trichlorophenol	<2.1	<2.0	<5.4
2,4,5-Trichlorophenol	<2.1	<2.0	NA
<b>Herbicides (ug/l) USEPA 525.2</b>			
Cyanazine	<0.20	<0.20	<0.24
Acetochlor	<0.20	<0.20 UJ	<0.23
Alachlor	<0.20	<0.20 UJ	<0.23
Atrazine	<0.20	<0.20 UJ	<0.23
Benzo[a]pyrene	<0.51	<0.51 UJ	<0.58

**Appendix Table 2.** Continued.

<b>Stream</b>	<b>SUNFISH CREEK</b>	<b>SUNFISH CREEK</b>	<b>SUNFISH CREEK</b>
River Mile	17.3	7.1	7.1
STORET Number	C02S01	609200	609200
Date Sampled	5/18/2009	5/18/2009	8/18/2009
<b>Herbicides (ug/l) USEPA 525.2</b>			
bis(2-Ethylhexyl)adipate	<0.51	<0.51 UJ	<0.58
bis(2-Ethylhexyl)phthalate	1.49 B	1.06 B J	<0.58
Butachlor	<0.20	<0.20 UJ	<0.23
Metolachlor	<0.20	<0.20 UJ	<0.23
Metribuzin	<0.20	<0.20 UJ	<0.23
Pentachlorophenol	<5.05	<5.05 UJ	<5.75
Propachlor	<0.20	<0.20 UJ	<0.23
Simazine	<0.20	<0.20 UJ	<0.23

< - Not detected at or above the method detection limit (MDL value reported with the less than symbol).

J - The analyte was positively identified, the associated value is estimated.

UJ - The analyte was not detected above the sample quantitation limit (QL). The reported QL is estimated.

B - Analyte result is estimated. Analyte was detected in the associated method/trip/field blank as well as in the sample.

Appendix Table 3. Hourly measurements of dissolved oxygen, pH, temperature, and conductivity at stream locations in the Sunfish Creek watershed and direct Ohio River Tributaries study area using Datasonde© continuous recorders, 2009.

<b>SUNFISH CREEK - RM 23.85</b>					
STORET: C02S84					
Date M/DD/YEAR	Time HHMM	Temp. °C	pH SU	Spec.Conduct. mS/cm	D.O. mg/l
7/28/2009	13:00	22.91	7.98	0.386	9.33
7/28/2009	14:00	23.68	8.08	0.383	9.71
7/28/2009	15:00	24.43	8.2	0.382	9.87
7/28/2009	16:00	25.1	8.21	0.381	9.76
7/28/2009	17:00	25.47	8.17	0.38	9.46
7/28/2009	18:00	25.53	8.15	0.38	9.07
7/28/2009	19:00	25.48	8.07	0.381	8.67
7/28/2009	20:00	25.26	8.03	0.382	8.25
7/28/2009	21:00	24.89	7.95	0.383	7.81
7/28/2009	22:00	24.45	7.9	0.384	7.43
7/28/2009	23:00	24.07	7.84	0.385	7.15
7/29/2009	0:00	23.74	7.79	0.385	6.91
7/29/2009	1:00	23.42	7.76	0.386	6.84
7/29/2009	2:00	23.08	7.75	0.386	6.69
7/29/2009	3:00	22.8	7.71	0.386	6.7
7/29/2009	4:00	22.53	7.7	0.387	6.64
7/29/2009	5:00	22.26	7.69	0.383	6.7
7/29/2009	6:00	21.89	7.73	0.358	7.21
7/29/2009	7:00	21.71	7.7	0.353	7.05
7/29/2009	8:00	21.47	7.69	0.361	7.21
7/29/2009	9:00	21.26	7.72	0.337	7.52
7/29/2009	10:00	21.3	7.73	0.335	7.61
7/29/2009	11:00	21.3	7.72	0.332	7.61
7/29/2009	12:00	21.34	7.7	0.325	7.58
7/29/2009	13:00	21.39	7.68	0.311	7.5
7/29/2009	14:00	21.43	7.66	0.298	7.4
7/29/2009	15:00	21.42	7.64	0.287	7.35
7/29/2009	16:00	21.48	7.65	0.281	7.42
7/29/2009	17:00	21.42	7.75	0.269	7.6
7/29/2009	18:00	21.55	7.7	0.28	7.54
7/29/2009	19:00	21.61	7.7	0.301	7.61
7/29/2009	20:00	21.35	7.77	0.324	7.77
7/29/2009	21:00	21.25	7.78	0.341	7.71
7/29/2009	22:00	21.07	7.74	0.347	7.61
7/29/2009	23:00	20.83	7.7	0.341	7.53
7/30/2009	0:00	20.93	7.68	0.322	7.79
7/30/2009	1:00	21.02	7.72	0.317	7.92
7/30/2009	2:00	20.92	7.74	0.318	7.95
7/30/2009	3:00	20.77	7.76	0.323	7.98
7/30/2009	4:00	20.63	7.77	0.329	8.01
7/30/2009	5:00	20.51	7.78	0.336	8
7/30/2009	6:00	20.41	7.78	0.343	8.02
7/30/2009	7:00	20.34	7.79	0.35	8.03
7/30/2009	8:00	20.32	7.8	0.358	8.06
7/30/2009	9:00	20.39	7.83	0.367	8.16
7/30/2009	10:00	20.46	7.85	0.378	8.21

<b>SUNFISH CREEK - RM 23.85</b>					
STORET: C02S84					
Date M/DD/YEAR	Time HHMM	Temp. °C	pH SU	Spec.Conduct. mS/cm	D.O. mg/l
9/8/2009	13:00	18.94	7.7	0.3	9.12
9/8/2009	14:00	19.69	7.75	0.301	9.24
9/8/2009	15:00	20.2	7.78	0.301	9.14
9/8/2009	16:00	20.42	7.78	0.299	8.91
9/8/2009	17:00	20.84	7.9	0.297	8.79
9/8/2009	18:00	20.95	7.81	0.299	8.61
9/8/2009	19:00	20.85	7.77	0.3	8.52
9/8/2009	20:00	20.76	7.74	0.301	8.39
9/8/2009	21:00	20.6	7.7	0.303	8.31
9/8/2009	22:00	20.31	7.69	0.306	8.41
9/8/2009	23:00	19.95	7.68	0.325	8.51
9/9/2009	0:00	19.53	7.6	0.336	8.53
9/9/2009	1:00	19.36	7.58	0.318	8.55
9/9/2009	2:00	19.12	7.59	0.3	8.61
9/9/2009	3:00	18.91	7.58	0.296	8.63
9/9/2009	4:00	18.71	7.58	0.293	8.66
9/9/2009	5:00	18.52	7.57	0.292	8.66
9/9/2009	6:00	18.34	7.57	0.294	8.69
9/9/2009	7:00	18.14	7.56	0.295	8.71
9/9/2009	8:00	17.95	7.56	0.297	8.76
9/9/2009	9:00	17.85	7.57	0.299	8.84
9/9/2009	10:00	17.99	7.59	0.303	8.93
9/9/2009	11:00	18.17	7.63	0.306	9.07
9/9/2009	12:00	18.34	7.67	0.309	9.19
9/9/2009	13:00	18.54	7.71	0.311	9.21
9/9/2009	14:00	19.27	7.77	0.313	9.37
9/9/2009	15:00	19.78	7.81	0.314	9.36
9/9/2009	16:00	20.25	7.86	0.315	9.31
9/9/2009	17:00	20.48	7.9	0.313	9.05
9/9/2009	18:00	20.56	7.87	0.315	8.83
9/9/2009	19:00	20.55	7.82	0.318	8.66
9/9/2009	20:00	20.54	7.76	0.318	8.47
9/9/2009	21:00	20.52	7.72	0.319	8.36
9/9/2009	22:00	20.38	7.68	0.32	8.3
9/9/2009	23:00	20.09	7.66	0.321	8.29
9/10/2009	0:00	19.76	7.65	0.322	8.32
9/10/2009	1:00	19.46	7.64	0.323	8.35
9/10/2009	2:00	19.18	7.63	0.324	8.4
9/10/2009	3:00	18.92	7.62	0.325	8.45
9/10/2009	4:00	18.68	7.62	0.326	8.5
9/10/2009	5:00	18.47	7.62	0.327	8.53
9/10/2009	6:00	18.25	7.61	0.329	8.57
9/10/2009	7:00	18	7.61	0.33	8.61
9/10/2009	8:00	17.8	7.62	0.331	8.7
9/10/2009	9:00	17.68	7.64	0.332	8.79
9/10/2009	10:00	17.85	7.68	0.333	8.99



Appendix Table 3. Continued.

<b>SUNFISH CREEK - RM 23.85</b>					
STORET: C02S84					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
9/15/2009	11:00	18.41	7.92	0.355	9.53
9/15/2009	12:00	19.07	7.96	0.354	9.76
9/15/2009	13:00	20.05	8.06	0.353	10.17
9/15/2009	14:00	21.07	8.13	0.352	10.43
9/15/2009	15:00	21.84	8.15	0.351	10.26
9/15/2009	16:00	22.39	8.2	0.351	10.3
9/15/2009	17:00	22.25	8.16	0.352	9.88
9/15/2009	18:00	22.12	8.12	0.353	9.44
9/15/2009	19:00	21.8	8.05	0.355	9.01
9/15/2009	20:00	21.38	7.97	0.357	8.5
9/15/2009	21:00	20.95	7.9	0.359	8.14
9/15/2009	22:00	20.58	7.85	0.359	7.93
9/15/2009	23:00	20.25	7.81	0.359	7.82
9/16/2009	0:00	19.89	7.77	0.359	7.73
9/16/2009	1:00	19.52	7.75	0.358	7.7
9/16/2009	2:00	19.19	7.73	0.357	7.68
9/16/2009	3:00	18.89	7.71	0.356	7.69
9/16/2009	4:00	18.58	7.71	0.356	7.74
9/16/2009	5:00	18.28	7.7	0.356	7.76
9/16/2009	6:00	17.99	7.7	0.356	7.8
9/16/2009	7:00	17.73	7.7	0.357	7.83
9/16/2009	8:00	17.51	7.71	0.357	7.94
9/16/2009	9:00	17.44	7.74	0.358	8.24
9/16/2009	10:00	17.76	7.81	0.358	8.78
9/16/2009	11:00	18.33	7.86	0.359	9.17
9/16/2009	12:00	18.93	7.9	0.359	9.44
9/16/2009	13:00	19.6	7.95	0.359	9.7
9/16/2009	14:00	20.65	8.01	0.359	9.92
9/16/2009	15:00	21.73	8.07	0.359	10.13
9/16/2009	16:00	22.46	8.11	0.359	10.08
9/16/2009	17:00	22.2	8.1	0.359	9.7
9/16/2009	18:00	21.89	8.06	0.36	9.27
9/16/2009	19:00	21.39	8.01	0.361	8.91
9/16/2009	20:00	20.81	7.94	0.362	8.44
9/16/2009	21:00	20.19	7.87	0.363	8.07
9/16/2009	22:00	19.69	7.82	0.364	7.85
9/16/2009	23:00	19.28	7.79	0.365	7.75
9/17/2009	0:00	18.91	7.77	0.366	7.69
9/17/2009	1:00	18.58	7.75	0.366	7.64
9/17/2009	2:00	18.25	7.74	0.367	7.64
9/17/2009	3:00	17.91	7.72	0.367	7.64
9/17/2009	4:00	17.56	7.72	0.367	7.66
9/17/2009	5:00	17.24	7.71	0.368	7.72
9/17/2009	6:00	16.93	7.71	0.368	7.78
9/17/2009	7:00	16.65	7.7	0.368	7.84
9/17/2009	8:00	16.42	7.71	0.368	7.94
9/17/2009	9:00	16.41	7.75	0.368	8.36
9/17/2009	10:00	16.67	7.8	0.368	8.9

<b>SUNFISH CREEK - RM 17.30</b>					
STORET: C02S01					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
7/28/2009	14:00	25.45	8.61	0.37	12.45
7/28/2009	15:00	25.82	8.66	0.37	12.56
7/28/2009	16:00	26.06	8.65	0.368	12.12
7/28/2009	17:00	25.75	8.62	0.367	11.61
7/28/2009	18:00	25.21	8.56	0.365	10.84
7/28/2009	19:00	24.43	8.37	0.372	9.11
7/28/2009	20:00	24.1	8.21	0.377	8.04
7/28/2009	21:00	23.8	8.05	0.383	7.17
7/28/2009	22:00	23.53	7.94	0.386	6.78
7/28/2009	23:00	23.29	7.89	0.39	6.64
7/29/2009	0:00	23.02	7.86	0.395	6.58
7/29/2009	1:00	22.74	7.83	0.398	6.56
7/29/2009	2:00	22.48	7.81	0.401	6.53
7/29/2009	3:00	22.23	7.79	0.403	6.54
7/29/2009	4:00	22.03	7.78	0.405	6.54
7/29/2009	5:00	21.84	7.76	0.399	6.57
7/29/2009	6:00	21.64	7.75	0.378	6.85
7/29/2009	7:00	21.59	7.75	0.38	6.86
7/29/2009	8:00	20.8	7.78	0.426	7.52
7/29/2009	9:00	20.08	7.76	0.389	8.07
7/29/2009	10:00	20.3	7.77	0.341	7.98
7/29/2009	11:00	20.49	7.79	0.331	7.99
7/29/2009	12:00	20.75	7.85	0.334	8.31
7/29/2009	13:00	20.78	7.86	0.344	8.17
7/29/2009	14:00	20.97	7.92	0.357	8.34
7/29/2009	15:00	21.05	7.98	0.375	8.51
7/29/2009	16:00	21.14	8.02	0.39	8.57
7/29/2009	17:00	21.38	8	0.378	8.34
7/29/2009	18:00	21.56	8.04	0.369	8.6
7/29/2009	19:00	21.56	8.03	0.367	8.37
7/29/2009	20:00	21.11	8.01	0.398	8.28
7/29/2009	21:00	21.17	7.98	0.391	8.09
7/29/2009	22:00	21.21	7.95	0.373	7.97
7/29/2009	23:00	21.19	7.93	0.359	7.94
7/30/2009	0:00	21.04	7.92	0.357	7.94
7/30/2009	1:00	21.01	7.92	0.36	7.94
7/30/2009	2:00	20.98	7.91	0.366	7.97
7/30/2009	3:00	20.92	7.91	0.371	7.99
7/30/2009	4:00	20.97	7.9	0.371	8.04
7/30/2009	5:00	20.85	7.89	0.358	8.07
7/30/2009	6:00	20.74	7.88	0.344	8.11
7/30/2009	7:00	20.66	7.86	0.333	8.12
7/30/2009	8:00	20.61	7.86	0.326	8.19
7/30/2009	9:00	20.63	7.89	0.325	8.29
7/30/2009	10:00	20.7	7.93	0.329	8.44
7/30/2009	11:00	20.9	8	0.332	8.73
7/30/2009	12:00	21.25	8.07	0.335	9.02

Appendix Table 3. Continued.

<b>SUNFISH CREEK - RM 17.30</b>					
STORET: C02S01					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
9/8/2009	14:00	20.28	8.08	0.325	9.39
9/8/2009	15:00	20.9	8.15	0.326	9.36
9/8/2009	16:00	21.1	8.15	0.326	9.07
9/8/2009	17:00	21.3	8.17	0.326	9
9/8/2009	18:00	21.2	8.15	0.328	8.72
9/8/2009	19:00	21.09	8.13	0.329	8.65
9/8/2009	20:00	20.89	8.07	0.328	8.47
9/8/2009	21:00	20.73	8.02	0.331	8.38
9/8/2009	22:00	20.55	7.98	0.334	8.34
9/8/2009	23:00	20.31	7.95	0.345	8.33
9/9/2009	0:00	20.16	7.92	0.346	8.33
9/9/2009	1:00	19.77	7.92	0.372	8.43
9/9/2009	2:00	19.73	7.91	0.358	8.44
9/9/2009	3:00	19.66	7.91	0.342	8.51
9/9/2009	4:00	19.49	7.92	0.34	8.59
9/9/2009	5:00	19.39	7.92	0.338	8.61
9/9/2009	6:00	19.25	7.92	0.337	8.65
9/9/2009	7:00	19.09	7.91	0.34	8.66
9/9/2009	8:00	18.91	7.92	0.346	8.75
9/9/2009	9:00	18.8	7.94	0.354	8.9
9/9/2009	10:00	18.76	7.96	0.359	9
9/9/2009	11:00	19.11	8.03	0.359	9.33
9/9/2009	12:00	19.27	8.07	0.355	9.34
9/9/2009	13:00	19.61	8.14	0.35	9.46
9/9/2009	14:00	20.33	8.24	0.347	9.6
9/9/2009	15:00	20.91	8.3	0.344	9.6
9/9/2009	16:00	21.36	8.35	0.341	9.53
9/9/2009	17:00	21.67	8.36	0.34	9.25
9/9/2009	18:00	21.73	8.34	0.339	8.88
9/9/2009	19:00	21.66	8.3	0.339	8.67
9/9/2009	20:00	21.42	8.22	0.341	8.44
9/9/2009	21:00	21.12	8.13	0.343	8.34
9/9/2009	22:00	20.8	8.04	0.345	8.29
9/9/2009	23:00	20.51	7.99	0.346	8.28
9/10/2009	0:00	20.24	7.95	0.348	8.28
9/10/2009	1:00	19.97	7.92	0.35	8.32
9/10/2009	2:00	19.71	7.91	0.352	8.35
9/10/2009	3:00	19.47	7.9	0.353	8.39
9/10/2009	4:00	19.25	7.89	0.355	8.43
9/10/2009	5:00	19.04	7.89	0.357	8.48
9/10/2009	6:00	18.8	7.89	0.358	8.52
9/10/2009	7:00	18.57	7.89	0.359	8.56
9/10/2009	8:00	18.37	7.9	0.36	8.68
9/10/2009	9:00	18.34	7.95	0.361	8.97
9/10/2009	10:00	18.57	8.03	0.362	9.37
9/10/2009	11:00	19.01	8.12	0.362	9.73

<b>SUNFISH CREEK - RM 17.30</b>					
STORET: C02S01					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
9/15/2009	12:00	20.54	8.65	0.37	11.75
9/15/2009	13:00	20.88	8.68	0.368	11.82
9/15/2009	14:00	21.09	8.71	0.367	12.03
9/15/2009	15:00	21.46	8.71	0.36	11.88
9/15/2009	16:00	21.33	8.67	0.358	11.33
9/15/2009	17:00	21.08	8.6	0.36	10.53
9/15/2009	18:00	20.89	8.48	0.367	9.65
9/15/2009	19:00	20.88	8.36	0.375	8.85
9/15/2009	20:00	20.73	8.23	0.381	8.07
9/15/2009	21:00	20.53	8.16	0.384	7.77
9/15/2009	22:00	20.25	8.11	0.389	7.66
9/15/2009	23:00	19.94	8.08	0.393	7.59
9/16/2009	0:00	19.62	8.05	0.395	7.55
9/16/2009	1:00	19.32	8.04	0.395	7.55
9/16/2009	2:00	19.09	8.02	0.396	7.55
9/16/2009	3:00	18.84	8.01	0.397	7.57
9/16/2009	4:00	18.59	8.01	0.397	7.6
9/16/2009	5:00	18.33	8	0.397	7.63
9/16/2009	6:00	18.07	7.99	0.398	7.67
9/16/2009	7:00	17.84	7.99	0.397	7.71
9/16/2009	8:00	17.65	8.02	0.396	8.02
9/16/2009	9:00	17.71	8.12	0.394	8.84
9/16/2009	10:00	18.64	8.4	0.39	10.51
9/16/2009	11:00	19.79	8.59	0.385	11.49
9/16/2009	12:00	20.83	8.68	0.38	11.99
9/16/2009	13:00	21.3	8.7	0.377	12.08
9/16/2009	14:00	21.27	8.71	0.376	12.04
9/16/2009	15:00	21.1	8.67	0.377	11.51
9/16/2009	16:00	20.93	8.66	0.377	11.25
9/16/2009	17:00	20.58	8.58	0.378	10.65
9/16/2009	18:00	20.12	8.42	0.384	9.42
9/16/2009	19:00	19.93	8.31	0.386	8.74
9/16/2009	20:00	19.72	8.18	0.385	8.03
9/16/2009	21:00	19.49	8.11	0.382	7.75
9/16/2009	22:00	19.23	8.07	0.38	7.63
9/16/2009	23:00	18.89	8.04	0.384	7.63
9/17/2009	0:00	18.56	8.02	0.388	7.61
9/17/2009	1:00	18.21	8.02	0.393	7.62
9/17/2009	2:00	17.88	8.01	0.395	7.67
9/17/2009	3:00	17.57	8	0.399	7.74
9/17/2009	4:00	17.28	8	0.402	7.76
9/17/2009	5:00	17.01	8	0.404	7.81
9/17/2009	6:00	16.76	7.99	0.404	7.84
9/17/2009	7:00	16.53	7.99	0.405	7.88
9/17/2009	8:00	16.5	8.03	0.404	8.24
9/17/2009	9:00	16.54	8.14	0.402	9.33
9/17/2009	10:00	17.23	8.4	0.398	10.84
9/17/2009	11:00	17.76	8.55	0.394	11.76

Appendix Table 3. Continued.

<b>SUNFISH CREEK - RM 10.40</b>					
STORET: 203456					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
7/28/2009	16:00	26.94	8.74	0.348	12.89
7/28/2009	17:00	27.56	8.78	0.332	12.85
7/28/2009	18:00	27.76	8.8	0.341	12.75
7/28/2009	19:00	27.14	8.78	0.337	11.82
7/28/2009	20:00	26.47	8.73	0.336	10.68
7/28/2009	21:00	25.85	8.66	0.334	9.5
7/28/2009	22:00	25.29	8.56	0.336	8.36
7/28/2009	23:00	24.9	8.46	0.338	7.57
7/29/2009	0:00	24.57	8.37	0.341	7.05
7/29/2009	1:00	24.28	8.28	0.342	6.72
7/29/2009	2:00	24.01	8.21	0.344	6.51
7/29/2009	3:00	23.75	8.15	0.347	6.38
7/29/2009	4:00	23.51	8.1	0.349	6.29
7/29/2009	5:00	23.26	8.07	0.35	6.47
7/29/2009	6:00	23.01	8.04	0.343	6.78
7/29/2009	7:00	22.85	8	0.34	6.69
7/29/2009	8:00	22.76	7.98	0.34	6.69
7/29/2009	9:00	22.78	7.99	0.344	6.92
7/29/2009	10:00	22.88	8.05	0.347	7.52
7/29/2009	11:00	22.95	8.13	0.347	8.16
7/29/2009	12:00	22.97	8.21	0.344	8.5
7/29/2009	13:00	23	8.26	0.339	8.81
7/29/2009	14:00	23.03	8.31	0.328	9.06
7/29/2009	15:00	22.94	8.28	0.311	8.84
7/29/2009	16:00	22.88	8.28	0.316	8.75
7/29/2009	17:00	22.88	8.29	0.325	8.63
7/29/2009	18:00	22.85	8.29	0.327	8.61
7/29/2009	19:00	22.89	8.31	0.329	8.64
7/29/2009	20:00	22.77	8.29	0.328	8.41
7/29/2009	21:00	22.61	8.24	0.325	8.14
7/29/2009	22:00	22.4	8.19	0.324	7.98
7/29/2009	23:00	22.17	8.15	0.323	7.89
7/30/2009	0:00	21.94	8.12	0.319	7.91
7/30/2009	1:00	21.76	8.1	0.321	7.95
7/30/2009	2:00	21.63	8.1	0.329	7.98
7/30/2009	3:00	21.53	8.1	0.339	7.97
7/30/2009	4:00	21.41	8.09	0.347	7.98
7/30/2009	5:00	21.27	8.07	0.35	8
7/30/2009	6:00	21.13	8.06	0.349	8
7/30/2009	7:00	21	8.06	0.348	8.04
7/30/2009	8:00	20.91	8.06	0.352	8.1
7/30/2009	9:00	20.91	8.09	0.358	8.29
7/30/2009	10:00	20.97	8.14	0.362	8.53
7/30/2009	11:00	21.15	8.21	0.366	8.87
7/30/2009	12:00	21.43	8.28	0.367	9.16

<b>SUNFISH CREEK - RM 6.97</b>					
STORET: 609200					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
7/28/2009	16:00	27.32	7.72	0.341	11.16
7/28/2009	17:00	27.12	7.75	0.341	10.73
7/28/2009	18:00	26.81	7.76	0.341	10.36
7/28/2009	19:00	26.42	7.73	0.341	9.74
7/28/2009	20:00	25.95	7.64	0.343	8.83
7/28/2009	21:00	25.6	7.57	0.343	8.12
7/28/2009	22:00	25.31	7.48	0.342	7.59
7/28/2009	23:00	25.04	7.43	0.341	7.32
7/29/2009	0:00	24.76	7.39	0.341	7.13
7/29/2009	1:00	24.48	7.35	0.341	6.97
7/29/2009	2:00	24.23	7.31	0.34	6.82
7/29/2009	3:00	24.01	7.28	0.341	6.73
7/29/2009	4:00	23.8	7.26	0.341	6.68
7/29/2009	5:00	23.47	7.25	0.335	6.8
7/29/2009	6:00	23.16	7.25	0.316	7.08
7/29/2009	7:00	23.17	7.21	0.33	6.63
7/29/2009	8:00	23.01	7.22	0.33	6.88
7/29/2009	9:00	22.92	7.24	0.327	7.22
7/29/2009	10:00	22.93	7.31	0.334	7.69
7/29/2009	11:00	22.86	7.39	0.336	8.09
7/29/2009	12:00	22.61	7.48	0.354	8.4
7/29/2009	13:00	21.91	7.56	0.364	8.66
7/29/2009	14:00	22.15	7.61	0.354	8.98
7/29/2009	15:00	22.34	7.65	0.346	9.12
7/29/2009	16:00	22.58	7.69	0.341	9.26
7/29/2009	17:00	22.52	7.67	0.332	8.81
7/29/2009	18:00	22.56	7.68	0.316	8.78
7/29/2009	19:00	22.68	7.65	0.302	8.55
7/29/2009	20:00	22.63	7.62	0.297	8.32
7/29/2009	21:00	22.34	7.57	0.297	8.1
7/29/2009	22:00	22.03	7.54	0.299	7.99
7/29/2009	23:00	21.8	7.51	0.298	7.91
7/30/2009	0:00	21.65	7.48	0.297	7.85
7/30/2009	1:00	21.47	7.46	0.296	7.85
7/30/2009	2:00	21.27	7.45	0.289	7.89
7/30/2009	3:00	21.15	7.44	0.284	7.94
7/30/2009	4:00	21.08	7.44	0.283	7.95
7/30/2009	5:00	21.03	7.44	0.283	7.94
7/30/2009	6:00	20.98	7.43	0.286	7.95
7/30/2009	7:00	20.94	7.43	0.291	7.98
7/30/2009	8:00	20.93	7.44	0.298	8.04
7/30/2009	9:00	21.04	7.47	0.305	8.31
7/30/2009	10:00	21.25	7.53	0.31	8.65
7/30/2009	11:00	21.5	7.58	0.31	8.9
7/30/2009	12:00	21.89	7.64	0.311	9.23
7/30/2009	13:00	22.47	7.71	0.316	9.66

Appendix Table 3. Continued.

<b>SUNFISH CREEK - RM 6.97</b>					
STORET: 609200					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
9/8/2009	15:00	21.55	7.88	0.279	9.17
9/8/2009	16:00	21.83	7.9	0.282	9.09
9/8/2009	17:00	21.82	7.89	0.28	8.94
9/8/2009	18:00	21.63	7.86	0.285	8.7
9/8/2009	19:00	21.4	7.84	0.289	8.55
9/8/2009	20:00	21.11	7.8	0.29	8.41
9/8/2009	21:00	20.83	7.77	0.295	8.37
9/8/2009	22:00	20.56	7.77	0.306	8.34
9/8/2009	23:00	20.31	7.77	0.314	8.36
9/9/2009	0:00	20.2	7.74	0.308	8.33
9/9/2009	1:00	20.06	7.72	0.306	8.32
9/9/2009	2:00	19.87	7.71	0.3	8.33
9/9/2009	3:00	19.69	7.69	0.296	8.36
9/9/2009	4:00	19.51	7.69	0.301	8.4
9/9/2009	5:00	19.39	7.68	0.301	8.43
9/9/2009	6:00	19.22	7.68	0.302	8.44
9/9/2009	7:00	19.09	7.67	0.307	8.46
9/9/2009	8:00	18.94	7.68	0.31	8.54
9/9/2009	9:00	18.91	7.71	0.312	8.71
9/9/2009	10:00	19.13	7.78	0.311	8.99
9/9/2009	11:00	19.51	7.84	0.317	9.26
9/9/2009	12:00	19.9	7.91	0.319	9.5
9/9/2009	13:00	20.68	7.99	0.321	9.76
9/9/2009	14:00	21.41	8.05	0.323	9.93
9/9/2009	15:00	21.95	8.11	0.324	9.99
9/9/2009	16:00	22.49	8.15	0.325	9.94
9/9/2009	17:00	22.74	8.16	0.331	9.74
9/9/2009	18:00	22.73	8.15	0.333	9.44
9/9/2009	19:00	22.64	8.12	0.334	9.1
9/9/2009	20:00	22.35	8.05	0.335	8.7
9/9/2009	21:00	22.04	7.98	0.334	8.42
9/9/2009	22:00	21.64	7.92	0.331	8.25
9/9/2009	23:00	21.23	7.86	0.332	8.18
9/10/2009	0:00	20.86	7.81	0.332	8.15
9/10/2009	1:00	20.56	7.78	0.333	8.15
9/10/2009	2:00	20.26	7.75	0.334	8.18
9/10/2009	3:00	20.04	7.73	0.335	8.22
9/10/2009	4:00	19.82	7.71	0.338	8.25
9/10/2009	5:00	19.6	7.7	0.34	8.28
9/10/2009	6:00	19.36	7.69	0.344	8.33
9/10/2009	7:00	19.07	7.68	0.347	8.37
9/10/2009	8:00	18.85	7.68	0.349	8.52
9/10/2009	9:00	18.68	7.71	0.352	8.76
9/10/2009	10:00	18.91	7.78	0.352	9.22
9/10/2009	11:00	19.8	7.9	0.355	9.94
9/10/2009	12:00	20.68	8	0.351	10.4

<b>SUNFISH CREEK - RM 6.97</b>					
STORET: 609200					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
9/15/2009	13:00	22.29	8.23	0.381	10.48
9/15/2009	14:00	23.54	8.29	0.381	10.78
9/15/2009	15:00	24.63	8.34	0.379	10.95
9/15/2009	16:00	24.94	8.35	0.377	10.76
9/15/2009	17:00	24.07	8.3	0.378	10.02
9/15/2009	18:00	23.5	8.25	0.381	9.55
9/15/2009	19:00	23.01	8.19	0.383	9.03
9/15/2009	20:00	22.56	8.09	0.384	8.39
9/15/2009	21:00	22.21	8	0.385	7.97
9/15/2009	22:00	21.95	7.96	0.385	7.8
9/15/2009	23:00	21.71	7.93	0.385	7.72
9/16/2009	0:00	21.46	7.9	0.385	7.61
9/16/2009	1:00	21.17	7.86	0.385	7.51
9/16/2009	2:00	20.89	7.85	0.385	7.45
9/16/2009	3:00	20.64	7.83	0.384	7.42
9/16/2009	4:00	20.39	7.81	0.384	7.37
9/16/2009	5:00	20.11	7.79	0.384	7.37
9/16/2009	6:00	19.85	7.78	0.383	7.37
9/16/2009	7:00	19.66	7.77	0.383	7.4
9/16/2009	8:00	19.49	7.78	0.383	7.5
9/16/2009	9:00	19.33	7.82	0.383	7.83
9/16/2009	10:00	19.31	7.86	0.384	8.11
9/16/2009	11:00	19.64	7.92	0.384	8.6
9/16/2009	12:00	20.99	8.04	0.385	9.64
9/16/2009	13:00	22.29	8.12	0.386	10.11
9/16/2009	14:00	23.58	8.19	0.387	10.48
9/16/2009	15:00	24.75	8.27	0.386	10.73
9/16/2009	16:00	24.87	8.28	0.386	10.5
9/16/2009	17:00	23.94	8.27	0.388	9.76
9/16/2009	18:00	22.94	8.16	0.39	9.28
9/16/2009	19:00	22.11	8.09	0.391	8.8
9/16/2009	20:00	21.52	8.01	0.393	8.3
9/16/2009	21:00	20.94	7.94	0.394	7.92
9/16/2009	22:00	20.57	7.91	0.394	7.79
9/16/2009	23:00	20.24	7.88	0.394	7.75
9/17/2009	0:00	19.93	7.87	0.394	7.7
9/17/2009	1:00	19.64	7.84	0.394	7.66
9/17/2009	2:00	19.31	7.81	0.395	7.63
9/17/2009	3:00	19	7.8	0.395	7.62
9/17/2009	4:00	18.7	7.79	0.395	7.6
9/17/2009	5:00	18.42	7.77	0.395	7.59
9/17/2009	6:00	18.15	7.76	0.395	7.61
9/17/2009	7:00	17.89	7.75	0.395	7.6
9/17/2009	8:00	17.81	7.75	0.395	7.75
9/17/2009	9:00	17.92	7.81	0.395	8.23
9/17/2009	10:00	18.29	7.89	0.393	8.9
9/17/2009	11:00	18.71	7.97	0.392	9.38

Appendix Table 3. Continued.

PINEY FORK - RM 0.02					
STORET: C02S04					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
7/28/2009	15:00	23.15	8.55	0.387	11.04
7/28/2009	16:00	23.08	8.51	0.387	10.14
7/28/2009	17:00	22.99	8.46	0.387	9.48
7/28/2009	18:00	22.88	8.41	0.386	9.08
7/28/2009	19:00	22.63	8.33	0.386	8.39
7/28/2009	20:00	22.39	8.24	0.386	7.92
7/28/2009	21:00	22.15	8.15	0.386	7.54
7/28/2009	22:00	21.93	8.1	0.387	7.43
7/28/2009	23:00	21.75	8.07	0.388	7.41
7/29/2009	0:00	21.59	8.04	0.39	7.42
7/29/2009	1:00	21.41	8.02	0.393	7.46
7/29/2009	2:00	21.22	8	0.395	7.5
7/29/2009	3:00	21.03	7.99	0.398	7.52
7/29/2009	4:00	20.86	7.98	0.4	7.56
7/29/2009	5:00	20.66	7.94	0.387	7.45
7/29/2009	6:00	20.41	7.86	0.303	7.88
7/29/2009	7:00	19.93	7.87	0.309	8.03
7/29/2009	8:00	19.78	7.85	0.287	8.14
7/29/2009	9:00	19.66	7.87	0.293	8.2
7/29/2009	10:00	19.83	7.95	0.315	8.32
7/29/2009	11:00	19.93	7.99	0.325	8.47
7/29/2009	12:00	19.99	8.04	0.329	8.67
7/29/2009	13:00	20.05	8.06	0.329	8.69
7/29/2009	14:00	20.11	8.1	0.327	8.76
7/29/2009	15:00	20.19	8.14	0.326	8.92
7/29/2009	16:00	20.27	8.16	0.329	8.91
7/29/2009	17:00	20.32	8.15	0.33	8.69
7/29/2009	18:00	20.36	8.17	0.342	8.83
7/29/2009	19:00	19.95	8.12	0.322	8.75
7/29/2009	20:00	20.02	8.09	0.349	8.61
7/29/2009	21:00	19.83	8.02	0.348	8.53
7/29/2009	22:00	19.72	7.99	0.359	8.48
7/29/2009	23:00	19.63	7.98	0.363	8.5
7/30/2009	0:00	19.51	7.97	0.353	8.51
7/30/2009	1:00	19.42	7.96	0.343	8.52
7/30/2009	2:00	19.34	7.97	0.345	8.55
7/30/2009	3:00	19.3	7.97	0.363	8.57
7/30/2009	4:00	19.25	7.98	0.374	8.57
7/30/2009	5:00	19.23	7.97	0.363	8.59
7/30/2009	6:00	19.2	7.95	0.355	8.57
7/30/2009	7:00	19.2	7.97	0.355	8.59
7/30/2009	8:00	19.21	7.99	0.359	8.66
7/30/2009	9:00	19.27	8.01	0.367	8.74
7/30/2009	10:00	19.41	8.08	0.375	8.89
7/30/2009	11:00	19.62	8.14	0.383	9.11
7/30/2009	12:00	19.97	8.25	0.391	9.41

PINEY FORK - RM 0.02					
STORET: C02S04					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
9/8/2009	14:00	20.29	8.13	0.401	9.84
9/8/2009	15:00	20.05	8.12	0.402	9.37
9/8/2009	16:00	19.95	8.11	0.401	9.12
9/8/2009	17:00	19.97	8.08	0.38	8.93
9/8/2009	18:00	19.91	8.02	0.354	8.56
9/8/2009	19:00	19.76	7.97	0.344	8.51
9/8/2009	20:00	19.46	7.91	0.33	8.44
9/8/2009	21:00	19.26	7.91	0.335	8.43
9/8/2009	22:00	19.03	7.92	0.335	8.47
9/8/2009	23:00	18.78	7.92	0.331	8.52
9/9/2009	0:00	18.56	7.92	0.335	8.54
9/9/2009	1:00	18.41	7.92	0.347	8.56
9/9/2009	2:00	18.25	7.93	0.359	8.58
9/9/2009	3:00	18.08	7.95	0.364	8.63
9/9/2009	4:00	17.91	7.97	0.364	8.65
9/9/2009	5:00	17.77	7.99	0.359	8.67
9/9/2009	6:00	17.63	7.99	0.35	8.69
9/9/2009	7:00	17.47	8.01	0.339	8.74
9/9/2009	8:00	17.32	8.01	0.332	8.81
9/9/2009	9:00	17.22	8.02	0.328	8.94
9/9/2009	10:00	17.3	8.04	0.327	9.18
9/9/2009	11:00	17.77	8.15	0.326	9.66
9/9/2009	12:00	18.17	8.2	0.326	9.82
9/9/2009	13:00	18.62	8.26	0.326	9.91
9/9/2009	14:00	19.67	8.28	0.326	9.96
9/9/2009	15:00	19.94	8.28	0.326	9.74
9/9/2009	16:00	20.15	8.28	0.327	9.56
9/9/2009	17:00	20.41	8.25	0.328	9.29
9/9/2009	18:00	20.43	8.19	0.33	8.85
9/9/2009	19:00	20.35	8.12	0.332	8.58
9/9/2009	20:00	20.12	8.03	0.336	8.29
9/9/2009	21:00	19.79	7.97	0.339	8.22
9/9/2009	22:00	19.42	7.94	0.343	8.23
9/9/2009	23:00	19.05	7.93	0.346	8.27
9/10/2009	0:00	18.67	7.93	0.348	8.32
9/10/2009	1:00	18.37	7.94	0.351	8.38
9/10/2009	2:00	18.12	7.95	0.353	8.42
9/10/2009	3:00	17.9	7.95	0.355	8.46
9/10/2009	4:00	17.72	7.96	0.356	8.51
9/10/2009	5:00	17.56	7.97	0.358	8.55
9/10/2009	6:00	17.33	7.98	0.36	8.59
9/10/2009	7:00	17.09	7.99	0.362	8.64
9/10/2009	8:00	16.89	8.01	0.363	8.78
9/10/2009	9:00	16.8	8.03	0.365	8.9
9/10/2009	10:00	16.92	8.06	0.366	9.06
9/10/2009	11:00	17.26	8.11	0.367	9.38

Appendix Table 3. Continued.

<b>BAKER FORK - RM 1.20</b>					
STORET: 203458					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
7/28/2009	12:00	19.77	7.84	0.295	8.62
7/28/2009	13:00	20.82	8	0.294	9.34
7/28/2009	14:00	21.96	8.13	0.293	9.7
7/28/2009	15:00	22.36	8.22	0.292	10.14
7/28/2009	16:00	23.03	8.29	0.291	10.49
7/28/2009	17:00	23.55	8.34	0.291	10.41
7/28/2009	18:00	23.07	8.3	0.291	10.46
7/28/2009	19:00	22.81	8.35	0.29	11.2
7/28/2009	20:00	22.7	8.36	0.29	11.19
7/28/2009	21:00	22.55	8.33	0.291	10.57
7/28/2009	22:00	22.18	8.28	0.292	10.11
7/28/2009	23:00	22	8.24	0.292	9.67
7/29/2009	0:00	21.82	8.2	0.293	9.27
7/29/2009	1:00	21.64	8.14	0.295	8.94
7/29/2009	2:00	21.46	8.1	0.296	8.69
7/29/2009	3:00	21.25	8.05	0.297	8.41
7/29/2009	4:00	21.08	7.99	0.299	7.97
7/29/2009	5:00	20.91	7.93	0.299	7.55
7/29/2009	6:00	20.5	7.87	0.288	7.23
7/29/2009	7:00	20.29	7.84	0.271	7.46
7/29/2009	8:00	20.21	7.74	0.271	7.31
7/29/2009	9:00	20.21	7.7	0.281	7.36
7/29/2009	10:00	20.22	7.7	0.285	7.47
7/29/2009	11:00	20.21	7.7	0.281	7.57
7/29/2009	12:00	20.19	7.69	0.281	7.92
7/29/2009	13:00	20.3	7.7	0.283	8.44
7/29/2009	14:00	20.38	7.73	0.283	8.47
7/29/2009	15:00	20.35	7.72	0.282	8.42
7/29/2009	16:00	20.29	7.73	0.28	8.53
7/29/2009	17:00	20.18	7.78	0.275	8.46
7/29/2009	18:00	20.16	7.79	0.287	8.58
7/29/2009	19:00	20.15	7.79	0.297	8.51
7/29/2009	20:00	20	7.78	0.309	8.43
7/29/2009	21:00	19.96	7.77	0.305	8.37
7/29/2009	22:00	19.97	7.75	0.292	8.32
7/29/2009	23:00	19.97	7.75	0.284	8.32
7/30/2009	0:00	19.99	7.75	0.282	8.28
7/30/2009	1:00	19.98	7.75	0.283	8.27
7/30/2009	2:00	19.96	7.75	0.284	8.26
7/30/2009	3:00	19.95	7.75	0.285	8.24
7/30/2009	4:00	19.95	7.75	0.285	8.26
7/30/2009	5:00	19.93	7.74	0.284	8.25
7/30/2009	6:00	19.92	7.73	0.283	8.22
7/30/2009	7:00	19.91	7.73	0.283	8.23
7/30/2009	8:00	19.92	7.75	0.282	8.26
7/30/2009	9:00	20	7.77	0.282	8.42
7/30/2009	10:00	20.11	7.8	0.281	8.52

<b>BAKER FORK - RM 1.20</b>					
STORET: 203458					
Date	Time	Temp.	pH	Spec.Conduct.	D.O.
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
9/8/2009	13:00	19.76	7.82	0.257	8.94
9/8/2009	14:00	20.26	7.87	0.257	9.01
9/8/2009	15:00	21.02	7.91	0.258	8.99
9/8/2009	16:00	20.53	7.9	0.251	8.64
9/8/2009	17:00	20.53	7.87	0.256	8.6
9/8/2009	18:00	20.54	7.85	0.254	8.48
9/8/2009	19:00	20.43	7.81	0.255	8.45
9/8/2009	20:00	20.28	7.77	0.256	8.3
9/8/2009	21:00	20.03	7.75	0.255	8.24
9/8/2009	22:00	19.89	7.74	0.256	7.99
9/8/2009	23:00	19.81	7.73	0.258	8.14
9/9/2009	0:00	19.76	7.72	0.259	7.98
9/9/2009	1:00	19.68	7.72	0.257	8.05
9/9/2009	2:00	19.6	7.72	0.254	8.07
9/9/2009	3:00	19.48	7.72	0.251	7.91
9/9/2009	4:00	19.32	7.71	0.25	7.8
9/9/2009	5:00	19.16	7.71	0.25	8.29
9/9/2009	6:00	18.97	7.71	0.251	8.12
9/9/2009	7:00	18.76	7.71	0.252	8.19
9/9/2009	8:00	18.57	7.71	0.253	8.26
9/9/2009	9:00	18.45	7.72	0.253	8.41
9/9/2009	10:00	18.5	7.74	0.252	8.31
9/9/2009	11:00	18.8	7.8	0.253	8.41
9/9/2009	12:00	19.12	7.87	0.253	8.55
9/9/2009	13:00	19.33	7.91	0.254	8.41
9/9/2009	14:00	19.76	7.96	0.254	8.42
9/9/2009	15:00	20.43	7.99	0.254	8.37
9/9/2009	16:00	20.61	8.02	0.254	8.45
9/9/2009	17:00	20.53	7.98	0.256	8.2
9/9/2009	18:00	20.4	7.93	0.256	7.8
9/9/2009	19:00	20.31	7.89	0.257	7.79
9/9/2009	20:00	20.22	7.84	0.257	7.5
9/9/2009	21:00	20.09	7.8	0.258	7.36
9/9/2009	22:00	19.91	7.77	0.259	7.4
9/9/2009	23:00	19.66	7.75	0.259	7.17
9/10/2009	0:00	19.38	7.74	0.26	7.32
9/10/2009	1:00	19.15	7.73	0.26	7.28
9/10/2009	2:00	18.95	7.72	0.261	7.28
9/10/2009	3:00	18.76	7.72	0.261	7.17
9/10/2009	4:00	18.59	7.71	0.262	7.22
9/10/2009	5:00	18.43	7.71	0.262	7.11
9/10/2009	6:00	18.25	7.71	0.262	7.19
9/10/2009	7:00	18.03	7.71	0.262	7.04
9/10/2009	8:00	17.83	7.72	0.263	7.15
9/10/2009	9:00	17.72	7.74	0.263	7.24
9/10/2009	10:00	17.77	7.77	0.262	7.47

Appendix Table 3. Continued.

<b>LEITH RUN - RM 2.80</b>					
STORET: C01S02					
<b>Date</b>	<b>Time</b>	<b>Temp.</b>	<b>pH</b>	<b>Spec.Conduct.</b>	<b>D.O.</b>
M/DD/YEAR	HHMM	°C	SU	mS/cm	mg/l
7/28/2009	17:00	23.26	7.97	0.285	9.12
7/28/2009	18:00	22.63	7.99	0.288	8.75
7/28/2009	19:00	22.38	7.96	0.289	8.41
7/28/2009	20:00	22.06	7.9	0.296	7.9
7/28/2009	21:00	21.73	7.82	0.303	7.2
7/28/2009	22:00	21.4	7.77	0.301	6.82
7/28/2009	23:00	21.07	7.73	0.306	6.53
7/29/2009	0:00	20.79	7.74	0.294	6.75
7/29/2009	1:00	20.63	7.76	0.297	6.85
7/29/2009	2:00	20.48	7.77	0.295	6.85
7/29/2009	3:00	20.36	7.77	0.307	6.83
7/29/2009	4:00	20.24	7.77	0.293	6.94
7/29/2009	5:00	20.14	7.74	0.289	6.77
7/29/2009	6:00	20.06	7.72	0.292	6.63
7/29/2009	7:00	19.97	7.71	0.295	6.57
7/29/2009	8:00	19.92	7.71	0.291	6.73
7/29/2009	9:00	19.95	7.71	0.289	6.85
7/29/2009	10:00	20.02	7.73	0.287	7.1
7/29/2009	11:00	20.17	7.75	0.284	7.39
7/29/2009	12:00	20.25	7.78	0.283	7.54
7/29/2009	13:00	20.29	7.79	0.282	7.56
7/29/2009	14:00	20.44	7.8	0.283	7.73
7/29/2009	15:00	20.53	7.82	0.283	7.79
7/29/2009	16:00	20.5	7.77	0.282	7.67
7/29/2009	17:00	20.36	7.78	0.284	7.62
7/29/2009	18:00	20.39	7.8	0.285	7.65
7/29/2009	19:00	20.37	7.82	0.286	7.77
7/29/2009	20:00	20.29	7.8	0.286	7.61
7/29/2009	21:00	20.2	7.78	0.285	7.44
7/29/2009	22:00	20.16	7.79	0.288	7.41
7/29/2009	23:00	20.06	7.81	0.285	7.46
7/30/2009	0:00	20.04	7.86	0.282	7.58
7/30/2009	1:00	19.91	7.86	0.282	7.64
7/30/2009	2:00	19.78	7.86	0.28	7.65
7/30/2009	3:00	19.68	7.86	0.282	7.61
7/30/2009	4:00	19.61	7.86	0.282	7.65
7/30/2009	5:00	19.54	7.84	0.281	7.66
7/30/2009	6:00	19.5	7.83	0.281	7.65
7/30/2009	7:00	19.46	7.82	0.282	7.59
7/30/2009	8:00	19.47	7.81	0.283	7.65
7/30/2009	9:00	19.56	7.82	0.283	7.77
7/30/2009	10:00	19.73	7.83	0.284	8.08
7/30/2009	11:00	20.1	7.89	0.284	8.51
7/30/2009	12:00	20.41	7.93	0.284	8.61
7/30/2009	13:00	21.12	7.99	0.284	9.14

Appendix Table 4. Bacteriological results collected from the Sunfish Creek study area in 2009. NA = not analyzed.

Location	River Mile	E. Coli								
		6/30	7/20	7/29	8/5	8/18	8/25	9/1	9/14	9/17
SUNFISH CREEK N OF WOODSFIELD @ CO. RD. 76	23.85	140 JL	10 JL	NA	410	NA	60 JL	NA	40 JL	NA
SUNFISH CREEK DST. STANDINGSTONE RUN, ADJ. CO. RD. 29	17.3	80 JL	750	13000 JL	100 JL	30 JL/ 30 JL	5/ 20 JL	40 JL/ 80 JL	30 JL/ 40 JL	80 JL
SUNFISH CREEK W OF POWHATAN POINT, UPST. NEGRO RUN	1.8	60 JL	90 JL	NA	100 JL	NA	60 JL	NA	280	NA
PINEY FORK AT MOUTH @ CO. RD. 29	0.02	20 JL	70 JL	1200 JL	100 JL	40 JL	10 JL	5	60 JL	60 JL
LEITH RUN 1.9 MI. N OF LEITH, ADJ. LEITH RUN RD.	2.8	150 JL	180 JL/ 170 JL	NA	50 JL/ 50 JL	NA	30 JL	NA	10 JL	NA
Opossum Creek at Ford upstream Gilmore Run	1.05	60 JL	70 JL	NA	80 JL	NA	150 JL	NA	40 JL	NA
NEWELL RUN DST. PEGGS FORK	1.7	580/ 520	2400	NA	100 JL	NA	720	NA	3500	6500
MILL CREEK NE OF NEW MATAMORAS @ TWP. RD. 66	0.7	20 JL	40 JL	NA	40 JL	NA	50 JL	NA	5	NA

JL - The reported result is estimated because it has been computed using a colony count that is not within the acceptable count range.



Appendix Table 5. Sediment sampling results for metals, semivolatile organic compounds, particle size, and nutrients from the Sunfish Creek watershed and direct Ohio River tributaries study area, 2009. Less than (<) = not detected at or above the method detection limit (MDL value reported with the less than symbol).

Stream	SUNFISH CREEK	SUNFISH CREEK	SUNFISH CREEK	SUNFISH CREEK	BAKER FORK	PINEY FORK	LEITH RUN
River Mile	23.85	17.3	9.3	7.1	1.2	0.3	2.8
STORET Number	C02S84	C02S01	203456	609200	203458	C02S04	C01S02
Date Sampled	7/27/2009	7/27/2009	7/27/2009	7/27/2009	7/27/2009	7/27/2009	7/27/2009
<b>Metals (mg/kg) USEPA 200.8/ 200.7/ 7471A</b>							
Arsenic	7.46	9.61	12.8	12.1	9.42	8.61	7.19
Cadmium	0.221	0.203	0.163	0.169	0.177	0.163	<0.101
Chromium	16.6	16.9	18.2	15.9	15.5	14.1	12.7
Copper	17.7	18.1	20.5	18.1	15.2	15.2	10.9
Lead	19.2	21.1	17.1	17.3	17.5	15.7	11.9
Nickel	19.6	20.5	20.7	20.4	18.1	17.3	12.7
Selenium	<1.24	<1.20	<1.40	<0.82	<1.30	<1.14	<1.01
Aluminum	13800	15,500	14600	11700	12800	12000	8630
Barium	170	173	199	157	175	164	106
Calcium	14900	12,400	15700	6780	9590	8260	1480
Iron	26400	33,000	41300	40000	27800	24700	20900
Magnesium	4780	5540	6020	3700	4080	3930	1930
Manganese	876	967	1090	853	1140	689	454
Potassium	1570	2020	1890	1450	1630	1560	1130
Sodium	<3110	<3000	<3510	<2040	<3250	<2850	<2510
Strontium	67	79	106	62	60	61	19
Zinc	79.6	84.1	78.4	70.2	64.3	60.2	43.0
Mercury	0.052	0.052	0.045	0.036	0.040	0.044	<0.029
<b>Semivolatile Organic Compounds (mg/kg) USEPA 8270</b>							
Acenaphthene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Acenaphthylene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Acetophenone	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2-Acetylaminofluorene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Aniline	<4.1	<4.4	<4.2	<3.3	<3.5	<3.6	<2.7
Anthracene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Benz[a]anthracene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Benzo[a]pyrene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Benzo[b]fluoranthene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Benzo[g,h,i]perylene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Benzo[k]fluoranthene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Benzyl alcohol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
bis(2-Chloroethoxy)methane	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
bis(2-Chloroethyl)ether	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
bis(2-Chloroisopropyl)ether	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
bis(2-Ethylhexyl)phthalate	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
4-Bromophenyl-phenylether	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Butylbenzylphthalate	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
4-Chloro-3-methylphenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2-Chloronaphthalene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2-Chlorophenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
4-Chlorophenyl-phenylether	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Chrysene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Di-n-butylphthalate	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Di-n-octylphthalate	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Dibenz[a,h]anthracene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Dibenzofuran	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
1,3-Dichlorobenzene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53

Appendix Table 5. Continued.

Stream	SUNFISH CREEK	SUNFISH CREEK	SUNFISH CREEK	SUNFISH CREEK	BAKER FORK	PINEY FORK	LEITH RUN
River Mile	23.85	17.3	9.3	7.1	1.2	0.3	2.8
STORET Number	C02S84	C02S01	203456	609200	203458	C02S04	C01S02
Date Sampled	7/27/2009	7/27/2009	7/27/2009	7/27/2009	7/27/2009	7/27/2009	7/27/2009
<b>Semivolatile Organic Compounds (mg/kg) USEPA 8270</b>							
1,4-Dichlorobenzene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
1,2-Dichlorobenzene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
3,3'-Dichlorobenzidine	<4.1	<4.4	<4.2	<3.3	<3.5	<3.6	<2.7
2,6-Dichlorophenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2,4-Dichlorophenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Diethylphthalate	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
p-Dimethylaminoazobenzene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
7,12-Dimethylbenz[a]anthracene	<4.1	<4.4	<4.2	<3.3	<3.5	<3.6	<2.7
2,4-Dimethylphenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Dimethylphthalate	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
4,6-Dinitro-2-methylphenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
1,3-Dinitrobenzene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2,4-Dinitrophenol	<4.1	<4.4	<4.2	<3.3	<3.5	<3.6	<2.7
2,6-Dinitrotoluene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2,4-Dinitrotoluene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Dinoseb	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Diphenylamine	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Ethyl methanesulfonate	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Fluoranthene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Fluorene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Hexachlorobenzene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Hexachlorobutadiene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Hexachlorocyclopentadiene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Hexachloroethane	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Hexachloropropene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Indeno[1,2,3-cd]pyrene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Isophorone	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Methyl methanesulfonate	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
3-Methylcholanthrene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2-Methylnaphthalene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
3&4-Methylphenol	1.08	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2-Methylphenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
N-Nitroso-di-n-butylamine	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
N-Nitroso-di-n-propylamine	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
N-Nitrosomorpholine	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
N-Nitrosopiperidine	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
N-Nitrosopyrrolidine	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Naphthalene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
1,4-Naphthoquinone	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2-Nitroaniline	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
4-Nitroaniline	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Nitrobenzene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
4-Nitrophenol	<4.1	<4.4	<4.2	<3.3	<3.5	<3.6	<2.7
2-Nitrophenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Pentachlorobenzene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Pentachlorophenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Phenacetin	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Phenanthrene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53

Appendix Table 5. Continued.

<b>Stream</b>	<b>SUNFISH CREEK</b>	<b>SUNFISH CREEK</b>	<b>SUNFISH CREEK</b>	<b>SUNFISH CREEK</b>	<b>BAKER FORK</b>	<b>PINEY FORK</b>	<b>LEITH RUN</b>
River Mile	<b>23.85</b>	<b>17.3</b>	<b>9.3</b>	<b>7.1</b>	<b>1.2</b>	<b>0.3</b>	<b>2.8</b>
STORET Number	C02S84	C02S01	203456	609200	203458	C02S04	<b>C01S02</b>
Date Sampled	7/27/2009	7/27/2009	7/27/2009	7/27/2009	7/27/2009	7/27/2009	7/27/2009
<b>Semivolatile Organic Compounds (mg/kg) USEPA 8270</b>							
Phenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2-Picoline	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Pronamide	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Pyrene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
Safrole	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
1,2,4,5-Tetrachlorobenzene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2,3,4,6-Tetrachlorophenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
1,2,4-Trichlorobenzene	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2,4,6-Trichlorophenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
2,4,5-Trichlorophenol	<0.81	<0.88	<0.85	<0.66	<0.71	<0.72	<0.53
<b>Other</b>							
Ammonia (mg/kg)	82	69	83	50	56	79	32
Total Phosphorus (mg/kg)	458	840	614	643	254	509	307
Solids %	45.3	44.4	44.5	61.3	53.1	54.8	73.7
TOC %	1.9	2.1	2.2	1.7	2.3	2.3	0.7
Coarse clay (2-4u) %	4.7	1.5	3.1	1.5	3.3	3.0	1.5
Coarse silt (30-60u) %	49	6.0	1.6	3.1	6.6	66	1.5
Fine clay (<1u) %	3.1	3.0	1.6	3.1	1.7	3.0	3.1
Fine silt (8-15u) %	22	7.5	7.8	7.6	8.3	13	1.5
Medium clay (1-2u) %	4.7	1.5	1.6	3.1	1.7	1.5	0
Medium silt (15-30u) %	11	15	16	17	20	8.9	7.7
Sand and larger (>60u) %	0	61	66	60	55	0	82
Very fine silt (4-8u) %	6.2	4.5	3.1	4.6	3.3	4.4	3.1

Appendix Table 6. Qualitative Habitat Evaluation Index (QHEI) scores and physical attributes for fish sampling sites in the Sunfish Creek watershed and direct Ohio River tributaries, 2009.

River Mile	QHEI	Habitat Rating	WWH Attributes											MWH Attributes																						
														High Influence					Moderate Influence																	
			No Channelization or Recovered Boulder/Cobble/Gravel Substrates	Silt Free Substrates	Good/Excellent Substrates	Moderate/High Sinuosity	Extensive/Moderate Cover	Fast Current/Eddies	Low-Normal Overall Embeddedness	Max. Depth >40 cm	Low-Normal Riffle Embeddedness	Total WWH Attributes	Channelized or No Recovery	Silt/Muck Substrates	No Sinuosity	Sparse/ No Cover	Max. Depth <40 cm (WD, HW sites)	Total High Influence Attributes	Recovering Channel	Heavy/Moderate Silt Cover	Sand Substrates (Boat)	Hardpan Substrate Origin	Fair/Poor Development	Low Sinuosity	Only 1-2 Cover Types	Intermittent & Poor Pools	No Fast Current	High/Mod. Overall Embeddedness	High/Mod. Riffle Embeddedness	No Riffle	Total Moderate Influence Attributes	(MWH H.I.+1)/(WWH+1) Ratio	(MWH M.I.+1)/(WWH+1) Ratio			
<i>Sunfish Creek (06-700)</i>																																				
27.1	78.5	Excellent	■	■	■	■	■	■	■	■	■	■	■	■	9						0													0	0.10	0.10
25.1	50.5	Fair	■											1			◆	◆	2	●				●	●	●	●	●	●	●	●	7	1.50	5.00		
23.9	62.0	Good	■	■	■	■	■	■	■	■	■	■	■	6					0	●				●	●		●	●	●	●	6	0.14	1.00			
22.8	69.0	Good	■	■		■	■	■	■	■	■	■	■	6					0					●	●		●	●	●	●	4	0.14	0.71			
17.1	64.0	Good	■	■		■	■	■	■	■	■	■	■	6					0					●	●		●	●	●	●	4	0.14	0.71			
15.1	65.0	Good	■	■		■	■	■	■	■	■	■	■	6			◆		1					●	●		●	●	●	●	3	0.29	0.71			
9.5	60.5	Good	■	■					■	■	■	■	■	5			◆		1					●	●		●	●	●	●	3	0.33	0.83			
7.1	61.0	Good	■						■	■	■	■	■	5					0					●	●		●	●	●	●	3	0.17	0.67			
1.8	54.5	Fair	■						■	■	■	■	■	3	◆				1	●				●	●		●	●	●	●	6	0.50	2.00			
<i>Baker Fork (06-708)</i>																																				
1.2	52.0	Fair	■						■	■	■	■	■	3		◆	◆	◆	3					●	●		●	●	●	●	3	1.00	1.75			
<i>Piney Fork (06-704)</i>																																				
4.2	64.0	Good	■	■		■	■	■	■	■	■	■	■	8			◆		1	●				●			●	●	●	●	3	0.22	0.56			
0.3	90.0	Excellent	■	■		■	■	■	■	■	■	■	■	8					0	●				●			●	●	●	●	2	0.11	0.33			
<i>Opossum Creek (06-033)</i>																																				
2.2	89.0	Excellent	■	■		■	■	■	■	■	■	■	■	9					0												0	0.10	0.10			
1.1	83.0	Excellent	■	■		■	■	■	■	■	■	■	■	7						●							●	●	●	3	0.13	0.50				
<i>Newell Run (06-004)</i>																																				
1.7	75.0	Excellent	■	■		■	■	■	■	■	■	■	■	8					0								●	●	●	●	1	0.11	0.22			
<i>Leith Run (06-013)</i>																																				
2.8	82.5	Excellent	■	■		■	■	■	■	■	■	■	■	7					0	●							●	●	●	3	0.13	0.50				
<i>Mill Creek (06-016)</i>																																				
0.7	71.5	Excellent	■	■		■	■	■	■	■	■	■	■	8					0	●							●	●	●	2	0.11	0.33				
<i>Narrows Run (06-022)</i>																																				
0.1	52.0	Fair	■	■					■	■	■	■	■	4		◆	◆	◆	3					●			●	●	●	2	0.80	1.20				

Appendix Table 7. Fish species and abundance for each sampling location in the Sunfish Creek watershed and direct Ohio River tributaries study area, 2009.

# Species List

River Code: <b>06-700</b> River Mile: <b>27.10</b> Time Fished: 2700 sec Dist Fished: 0.20 km	Stream: <b>Sunfish Creek</b> Location: Drainage: 9.9 sq mi Basin: Central Ohio River Tribs    No of Passes: 1	Sample Date: <b>2009</b> Date Range: 09/15/2009  Sampler Type: E
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Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Black Redhorse	R	I	S	I	2	3.00	0.26	0.39	4.44	129.50
Northern Hog Sucker	R	I	S	M	8	12.00	1.02	0.39	4.46	32.50
White Sucker	W	O	S	T	39	58.50	4.98	1.06	12.10	18.10
Creek Chub	N	G	N	T	84	126.00	10.73	2.10	23.99	16.67
Redside Dace	N	I	S	I	35	52.50	4.47	0.22	2.54	4.23
Striped Shiner	N	I	S		149	223.50	19.03	1.37	15.59	6.11
Silverjaw Minnow	N	I	M		28	42.00	3.58	0.12	1.35	2.81
Bluntnose Minnow	N	O	C	T	207	310.50	26.44	0.68	7.79	2.20
Central Stoneroller	N	H	N		50	75.00	6.39	0.40	4.60	5.38
Striped Sh X Rosyface Sh		I			1	1.50	0.13	0.02	0.17	10.00
Yellow Bullhead		I	C	T	3	4.50	0.38	0.48	5.52	107.33
Stonecat Madtom		I	C	I	4	6.00	0.51	0.15	1.71	25.00
Green Sunfish	S	I	C	T	33	49.50	4.21	0.91	10.37	18.33
Bluegill Sunfish	S	I	C	P	35	52.50	4.47	0.17	1.88	3.15
Johnny Darter	D	I	C		8	12.00	1.02	0.02	0.27	2.00
Greenside Darter	D	I	S	M	8	12.00	1.02	0.05	0.62	4.50
Rainbow Darter	D	I	S	M	39	58.50	4.98	0.10	1.19	1.78
Fantail Darter	D	I	C		50	75.00	6.39	0.12	1.41	1.64
<i>Mile Total</i>					783	1,174.50		8.75		
<i>Number of Species</i>					17					
<i>Number of Hybrids</i>					1					

## Species List

River Code: <b>06-700</b>	Stream: <b>Sunfish Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>25.10</b>	Location:	Date Range: 07/22/2009
Time Fished: 6253 sec	Drainage: 21.0 sq mi	Thru: 09/01/2009
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs	No of Passes: 2
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S	M	5	3.75	0.12	0.01	0.08	2.00
Northern Hog Sucker	R	I	S	M	36	27.00	0.87	0.29	3.06	10.59
White Sucker	W	O	S	T	90	67.50	2.18	0.15	1.61	2.22
River Chub	N	I	N	I	1	0.75	0.02	0.00	0.03	3.00
Western Blacknose Dace	N	G	S	T	118	88.50	2.86	0.11	1.14	1.20
Creek Chub	N	G	N	T	288	216.00	6.98	1.85	19.81	8.56
Redside Dace	N	I	S	I	20	15.00	0.48	0.02	0.22	1.40
Emerald Shiner	N	I	M		1	0.75	0.02	0.00	0.02	2.00
Rosyface Shiner	N	I	S	I	43	32.25	1.04	0.05	0.50	1.46
Striped Shiner	N	I	S		178	133.50	4.31	0.26	2.74	1.92
Spotfin Shiner	N	I	M		2	1.50	0.05	0.00	0.05	3.00
Sand Shiner	N	I	M	M	6	4.50	0.15	0.01	0.12	2.40
Mimic Shiner	N	I	M	I	5	3.75	0.12	0.01	0.11	2.60
Silverjaw Minnow	N	I	M		104	78.00	2.52	0.15	1.63	1.95
Bluntnose Minnow	N	O	C	T	496	372.00	12.02	0.80	8.59	2.16
Central Stoneroller	N	H	N		1,851	1,388.25	44.85	4.60	49.28	3.31
Green Sunfish	S	I	C	T	10	7.50	0.24	0.13	1.39	17.30
Bluegill Sunfish	S	I	C	P	2	1.50	0.05	0.02	0.17	10.50
Johnny Darter	D	I	C		57	42.75	1.38	0.03	0.36	0.79
Greenside Darter	D	I	S	M	154	115.50	3.73	0.30	3.24	2.62
Rainbow Darter	D	I	S	M	285	213.75	6.91	0.27	2.89	1.26
Fantail Darter	D	I	C		375	281.25	9.09	0.28	2.98	0.99
<i>Mile Total</i>					4,127	3,095.25		9.34		
<i>Number of Species</i>					22					
<i>Number of Hybrids</i>					0					

River Code: <b>06-700</b>	Stream: <b>Sunfish Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>23.90</b>	Location: Co. Rd. 76	Date Range: 07/22/2009
Time Fished: 5602 sec	Drainage: 22.5 sq mi	Thru: 09/01/2009
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S	M	9	6.75	0.76	0.25	4.43	36.86
Northern Hog Sucker	R	I	S	M	33	24.75	2.80	0.83	14.80	33.61
White Sucker	W	O	S	T	38	28.50	3.22	0.30	5.25	10.36
River Chub	N	I	N	I	1	0.75	0.08	0.00	0.08	6.00
Western Blacknose Dace	N	G	S	T	4	3.00	0.34	0.01	0.10	1.75
Creek Chub	N	G	N	T	119	89.25	10.08	1.06	18.84	11.86
South. Redbelly Dace	N	H	S		1	0.75	0.08	0.00	0.02	1.00
Rosyface Shiner	N	I	S	I	28	21.00	2.37	0.06	1.09	2.90
Striped Shiner	N	I	S		72	54.00	6.10	0.49	8.80	9.16
Spotfin Shiner	N	I	M		3	2.25	0.25	0.01	0.12	3.00
Sand Shiner	N	I	M	M	19	14.25	1.61	0.05	0.97	3.79
Silverjaw Minnow	N	I	M		32	24.00	2.71	0.03	0.61	1.43
Bluntnose Minnow	N	O	C	T	98	73.50	8.31	0.24	4.25	3.25
Central Stoneroller	N	H	N		223	167.25	18.90	0.60	10.64	3.58
Yellow Bullhead		I	C	T	1	0.75	0.08	0.00	0.04	3.00
Stonecat Madtom		I	C	I	2	1.50	0.17	0.06	0.99	37.00
Rock Bass	S	C	C		2	1.50	0.17	0.16	2.82	105.50
Smallmouth Bass	F	C	C	M	13	9.75	1.10	0.29	5.17	29.77
Green Sunfish	S	I	C	T	46	34.50	3.90	0.64	11.45	18.65
Bluegill Sunfish	S	I	C	P	18	13.50	1.53	0.07	1.30	5.39
Hybrid X Sunfish					1	0.75	0.08	0.01	0.19	14.00
Johnny Darter	D	I	C		32	24.00	2.71	0.02	0.33	0.76
Greenside Darter	D	I	S	M	73	54.75	6.19	0.14	2.45	2.52
Rainbow Darter	D	I	S	M	89	66.75	7.54	0.10	1.75	1.47
Fantail Darter	D	I	C		223	167.25	18.90	0.20	3.59	1.21
<i>Mile Total</i>					1,180	885.00		5.62		
<i>Number of Species</i>					24					
<i>Number of Hybrids</i>					1					



## Species List

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River Code: <b>06-700</b>	Stream: <b>Sunfish Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>22.80</b>	Location:	Date Range: 07/22/2009
Time Fished: 4727 sec	Drainage: 31.0 sq mi	Thru: 09/01/2009
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs	No of Passes: 2
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Black Redhorse	R	I	S	I	3	2.25	0.13	0.08	0.76	33.33
Golden Redhorse	R	I	S	M	47	35.25	2.04	0.30	3.07	8.62
Northern Hog Sucker	R	I	S	M	85	63.75	3.68	1.11	11.18	17.40
White Sucker	W	O	S	T	49	36.75	2.12	0.48	4.79	12.93
River Chub	N	I	N	I	2	1.50	0.09	0.01	0.09	6.00
Creek Chub	N	G	N	T	124	93.00	5.37	2.02	20.36	21.72
Silver Shiner	N	I	S	I	11	8.25	0.48	0.02	0.18	2.18
Rosyface Shiner	N	I	S	I	34	25.50	1.47	0.07	0.66	2.56
Striped Shiner	N	I	S		298	223.50	12.92	1.35	13.61	6.04
Spotfin Shiner	N	I	M		4	3.00	0.17	0.01	0.11	3.50
Sand Shiner	N	I	M	M	26	19.50	1.13	0.04	0.41	2.08
Mimic Shiner	N	I	M	I	17	12.75	0.74	0.03	0.26	2.00
Silverjaw Minnow	N	I	M		18	13.50	0.78	0.05	0.48	3.50
Bluntnose Minnow	N	O	C	T	383	287.25	16.60	0.74	7.47	2.58
Central Stoneroller	N	H	N		840	630.00	36.41	2.49	25.07	3.95
Striped Sh X Rosyface Sh		I			1	0.75	0.04	0.00	0.02	2.00
Hybrid X Minnow					1	0.75	0.04	0.00	0.03	3.00
Yellow Bullhead		I	C	T	2	1.50	0.09	0.08	0.81	53.50
Stonecat Madtom		I	C	I	15	11.25	0.65	0.15	1.49	13.17
Smallmouth Bass	F	C	C	M	10	7.50	0.43	0.35	3.48	46.00
Largemouth Bass	F	C	C		1	0.75	0.04	0.07	0.71	93.00
Green Sunfish	S	I	C	T	3	2.25	0.13	0.05	0.49	21.67
Bluegill Sunfish	S	I	C	P	3	2.25	0.13	0.04	0.36	15.67
Johnny Darter	D	I	C		7	5.25	0.30	0.01	0.06	1.00
Greenside Darter	D	I	S	M	48	36.00	2.08	0.10	0.97	2.67
Rainbow Darter	D	I	S	M	134	100.50	5.81	0.18	1.81	1.79
Fantail Darter	D	I	C		141	105.75	6.11	0.13	1.33	1.25
<i>Mile Total</i>					2,307	1,730.25		9.92		
<i>Number of Species</i>					25					
<i>Number of Hybrids</i>					2					

## Species List

River Code: <b>06-700</b>	Stream: <b>Sunfish Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>17.30</b>	Location: dst. Standingstone Run	Date Range: 07/22/2009
Time Fished: 6784 sec	Drainage: 50.0 sq mi	Thru: 09/02/2009
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S M	32	24.00	0.78	1.41	8.30	58.76
Northern Hog Sucker	R	I	S M	135	101.25	3.29	0.97	5.73	9.62
White Sucker	W	O	S T	52	39.00	1.27	0.10	0.59	2.59
River Chub	N	I	N I	147	110.25	3.59	1.49	8.76	13.50
Western Blacknose Dace	N	G	S T	5	3.75	0.12	0.01	0.04	1.60
Creek Chub	N	G	N T	18	13.50	0.44	0.10	0.58	7.28
Emerald Shiner	N	I	M	3	2.25	0.07	0.00	0.01	0.33
Silver Shiner	N	I	S I	10	7.50	0.24	0.04	0.22	5.00
Rosyface Shiner	N	I	S I	143	107.25	3.49	0.15	0.90	1.43
Striped Shiner	N	I	S	249	186.75	6.07	1.27	7.47	6.79
Spotfin Shiner	N	I	M	3	2.25	0.07	0.00	0.03	2.00
Sand Shiner	N	I	M M	36	27.00	0.88	0.04	0.24	1.47
Mimic Shiner	N	I	M I	37	27.75	0.90	0.03	0.19	1.16
Silverjaw Minnow	N	I	M	17	12.75	0.41	0.02	0.13	1.71
Bluntnose Minnow	N	O	C T	183	137.25	4.46	0.30	1.77	2.20
Central Stoneroller	N	H	N	2,135	1,601.25	52.07	8.68	51.10	5.42
Stonecat Madtom		I	C I	12	9.00	0.29	0.05	0.28	5.33
Rock Bass	S	C	C	5	3.75	0.12	0.29	1.72	77.80
Smallmouth Bass	F	C	C M	30	22.50	0.73	0.95	5.58	42.14
Green Sunfish	S	I	C T	1	0.75	0.02	0.03	0.19	42.00
Bluegill Sunfish	S	I	C P	2	1.50	0.05	0.04	0.21	23.50
Johnny Darter	D	I	C	35	26.25	0.85	0.03	0.18	1.15
Greenside Darter	D	I	S M	227	170.25	5.54	0.35	2.03	2.03
Banded Darter	D	I	S I	66	49.50	1.61	0.06	0.37	1.26
Variegate Darter	D	I	S I	1	0.75	0.02	0.00	0.01	1.00
Rainbow Darter	D	I	S M	373	279.75	9.10	0.43	2.50	1.52
Fantail Darter	D	I	C	142	106.50	3.46	0.15	0.85	1.36
Mottled Sculpin		I	C	1	0.75	0.02	0.00	0.03	6.00
<i>Mile Total</i>				4,100	3,075.00		16.99		
<i>Number of Species</i>				28					
<i>Number of Hybrids</i>				0					

## Species List

River Code: <b>06-700</b>	Stream: <b>Sunfish Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>15.10</b>	Location:	Date Range: 07/15/2009
Time Fished: 5421 sec	Drainage: 54.7 sq mi	Thru: 09/15/2009
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Silver Redhorse	R	I	S M	2	1.50	0.07	0.01	0.03	4.00
Black Redhorse	R	I	S I	12	9.00	0.39	0.68	3.91	75.83
Golden Redhorse	R	I	S M	8	6.00	0.26	0.60	3.41	99.13
Northern Hog Sucker	R	I	S M	27	20.25	0.88	2.10	11.99	103.47
White Sucker	W	O	S T	12	9.00	0.39	0.20	1.12	21.75
River Chub	N	I	N I	87	65.25	2.84	1.41	8.09	21.66
Western Blacknose Dace	N	G	S T	5	3.75	0.16	0.01	0.04	2.00
Creek Chub	N	G	N T	35	26.25	1.14	0.47	2.70	17.98
Silver Shiner	N	I	S I	38	28.50	1.24	0.11	0.61	3.72
Rosyface Shiner	N	I	S I	142	106.50	4.64	0.20	1.14	1.86
Striped Shiner	N	I	S	249	186.75	8.13	1.72	9.84	9.20
Spotfin Shiner	N	I	M	27	20.25	0.88	0.08	0.45	3.85
Sand Shiner	N	I	M M	27	20.25	0.88	0.07	0.39	3.37
Mimic Shiner	N	I	M I	23	17.25	0.75	0.04	0.22	2.26
Silverjaw Minnow	N	I	M	8	6.00	0.26	0.03	0.19	5.63
Bluntnose Minnow	N	O	C T	96	72.00	3.14	0.34	1.94	4.71
Central Stoneroller	N	H	N	1,132	849.00	36.98	4.37	25.00	5.14
Striped Sh X Rosyface Sh		I		6	4.50	0.20	0.03	0.17	6.75
Stonecat Madtom		I	C I	15	11.25	0.49	0.13	0.77	11.87
Rock Bass	S	C	C	15	11.25	0.49	1.11	6.38	99.00
Smallmouth Bass	F	C	C M	23	17.25	0.75	1.92	10.99	111.26
Green Sunfish	S	I	C T	5	3.75	0.16	0.16	0.90	42.07
Bluegill Sunfish	S	I	C P	4	3.00	0.13	0.07	0.41	23.50
Green Sf X Hybrid				1	0.75	0.03	0.01	0.04	9.00
Logperch	D	I	S M	7	5.25	0.23	0.07	0.41	13.57
Johnny Darter	D	I	C	3	2.25	0.10	0.00	0.02	1.67
Greenside Darter	D	I	S M	128	96.00	4.18	0.22	1.28	2.33
Banded Darter	D	I	S I	94	70.50	3.07	0.10	0.59	1.47
Rainbow Darter	D	I	S M	546	409.50	17.84	0.83	4.77	2.03
Fantail Darter	D	I	C	270	202.50	8.82	0.32	1.81	1.56
Mottled Sculpin		I	C	14	10.50	0.46	0.07	0.41	6.86
<i>Mile Total</i>				3,061	2,295.75		17.47		
<i>Number of Species</i>				29					
<i>Number of Hybrids</i>				2					

## Species List

River Code: <b>06-700</b>	Stream: <b>Sunfish Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>9.30</b>	Location: at ford, upst. Cameron	Date Range: 07/15/2009
Time Fished: 4873 sec	Drainage: 79.0 sq mi	Thru: 09/02/2009
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Black Redhorse	R	I	S I	14	10.50	0.62	1.34	6.73	127.57
Golden Redhorse	R	I	S M	42	31.50	1.87	2.41	12.09	76.37
Northern Hog Sucker	R	I	S M	121	90.75	5.38	8.02	40.31	88.40
White Sucker	W	O	S T	6	4.50	0.27	0.03	0.15	6.60
River Chub	N	I	N I	50	37.50	2.22	0.56	2.82	14.96
Creek Chub	N	G	N T	4	3.00	0.18	0.03	0.17	11.25
Silver Shiner	N	I	S I	13	9.75	0.58	0.03	0.13	2.62
Rosyface Shiner	N	I	S I	52	39.00	2.31	0.07	0.36	1.83
Striped Shiner	N	I	S	122	91.50	5.42	0.48	2.40	5.22
Spotfin Shiner	N	I	M	1	0.75	0.04	0.00	0.01	3.00
Sand Shiner	N	I	M M	87	65.25	3.87	0.13	0.64	1.94
Mimic Shiner	N	I	M I	43	32.25	1.91	0.05	0.26	1.58
Silverjaw Minnow	N	I	M	15	11.25	0.67	0.04	0.18	3.15
Bluntnose Minnow	N	O	C T	83	62.25	3.69	0.32	1.61	5.14
Central Stoneroller	N	H	N	912	684.00	40.53	2.05	10.30	3.00
Yellow Bullhead		I	C T	1	0.75	0.04	0.13	0.65	172.00
Stonecat Madtom		I	C I	5	3.75	0.22	0.10	0.49	25.80
Rock Bass	S	C	C	17	12.75	0.76	1.23	6.17	96.28
Smallmouth Bass	F	C	C M	44	33.00	1.96	2.20	11.06	66.69
Logperch	D	I	S M	14	10.50	0.62	0.05	0.26	5.00
Johnny Darter	D	I	C	7	5.25	0.31	0.01	0.03	1.00
Greenside Darter	D	I	S M	116	87.00	5.16	0.14	0.72	1.64
Banded Darter	D	I	S I	13	9.75	0.58	0.02	0.10	2.08
Rainbow Darter	D	I	S M	361	270.75	16.04	0.40	1.98	1.46
Fantail Darter	D	I	C	107	80.25	4.76	0.08	0.40	1.00
<i>Mile Total</i>				2,250	1,687.50		19.90		
<i>Number of Species</i>				25					
<i>Number of Hybrids</i>				0					

## Species List

River Code: <b>06-700</b>	Stream: <b>Sunfish Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>7.10</b>	Location: upst. St. Rt. 78, dst. Cameron	Date Range: 07/15/2009
Time Fished: 3934 sec	Drainage: 99.0 sq mi	Thru: 08/20/2009
Dist Fished: 0.41 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Longnose Gar		P	M	3	2.25	0.16	0.01	0.05	6.00
Black Redhorse	R	I	S I	12	8.68	0.61	0.96	3.69	109.83
Golden Redhorse	R	I	S M	22	16.43	1.16	1.99	7.69	120.69
Northern Hog Sucker	R	I	S M	217	156.29	11.00	11.65	45.00	74.09
White Sucker	W	O	S T	1	0.71	0.05	0.00	0.01	3.00
River Chub	N	I	N I	52	38.04	2.68	0.95	3.66	24.73
Creek Chub	N	G	N T	1	0.71	0.05	0.00	0.01	4.00
Silver Shiner	N	I	S I	2	1.43	0.10	0.01	0.03	5.00
Rosyface Shiner	N	I	S I	45	32.57	2.29	0.09	0.35	2.77
Striped Shiner	N	I	S	68	49.21	3.46	0.30	1.18	6.16
Spotfin Shiner	N	I	M	2	1.43	0.10	0.01	0.02	4.00
Sand Shiner	N	I	M M	21	15.14	1.07	0.03	0.10	1.62
Mimic Shiner	N	I	M I	81	58.96	4.15	0.11	0.43	1.86
Ghost Shiner	N	I	M	1	0.75	0.05	0.00	0.01	3.00
Silverjaw Minnow	N	I	M	7	5.04	0.35	0.02	0.06	3.29
Bluntnose Minnow	N	O	C T	70	50.29	3.54	0.17	0.65	3.34
Central Stoneroller	N	H	N	888	638.14	44.90	3.25	12.56	5.11
Yellow Bullhead		I	C T	2	1.43	0.10	0.05	0.20	35.50
Stonecat Madtom		I	C I	5	3.61	0.25	0.06	0.24	17.00
Brindled Madtom		I	C I	3	2.14	0.15	0.02	0.06	7.33
Rock Bass	S	C	C	4	2.96	0.21	0.03	0.12	10.25
Smallmouth Bass	F	C	C M	43	31.46	2.21	5.52	21.32	175.91
Bluegill Sunfish	S	I	C P	3	2.14	0.15	0.02	0.09	10.33
Longear Sunfish	S	I	C M	7	5.11	0.36	0.13	0.49	25.00
Logperch	D	I	S M	14	10.14	0.71	0.11	0.41	10.36
Johnny Darter	D	I	C	10	7.18	0.51	0.01	0.03	1.23
Greenside Darter	D	I	S M	121	87.89	6.18	0.17	0.65	1.93
Banded Darter	D	I	S I	24	17.54	1.23	0.02	0.08	1.24
Rainbow Darter	D	I	S M	179	132.04	9.29	0.14	0.56	1.09
Fantail Darter	D	I	C	57	41.43	2.92	0.07	0.27	1.65
<i>Mile Total</i>				1,965	1,421.14		25.88		
<i>Number of Species</i>				30					
<i>Number of Hybrids</i>				0					

## Species List

River Code: <b>06-700</b>	Stream: <b>Sunfish Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>1.80</b>	Location:	Date Range: 08/25/2009
Time Fished: 5164 sec	Drainage: 105.0 sq mi	Thru: 09/21/2009
Dist Fished: 1.15 km	Basin: Central Ohio River Tribs	No of Passes: 2
		Sampler Type: A

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Skipjack Herring		P	M	11	9.38	0.94	0.27	0.35	29.36
Gizzard Shad		O	M	69	57.00	5.69	3.40	4.30	60.41
Smallmouth Buffalo	C	I	M	4	3.77	0.38	7.39	9.37	2,050.00
Quillback	C	O	M	4	3.54	0.35	2.00	2.54	550.00
River Carpsucker	C	O	M	3	2.77	0.28	3.00	3.80	1,100.00
Silver Redhorse	R	I	S M	3	3.00	0.30	1.06	1.34	352.00
Black Redhorse	R	I	S I	3	3.00	0.30	0.19	0.24	62.67
Golden Redhorse	R	I	S M	68	58.54	5.84	5.16	6.54	86.09
Northern Hog Sucker	R	I	S M	1	1.00	0.10	0.02	0.03	22.00
Spotted Sucker	R	I	S	2	2.00	0.20	0.04	0.05	20.00
Smallmouth Redhorse	R	I	S M	2	1.54	0.15	0.09	0.11	56.00
Common Carp	G	O	M T	9	7.85	0.78	22.08	27.97	2,794.44
Silver Chub	N	I	M	1	0.77	0.08	0.02	0.03	30.00
Emerald Shiner	N	I	M	690	626.77	62.53	0.86	1.09	1.42
Striped Shiner	N	I	S	3	3.00	0.30	0.02	0.02	6.00
Spotfin Shiner	N	I	M	10	8.38	0.84	0.02	0.02	1.80
Sand Shiner	N	I	M M	2	1.77	0.18	0.00	0.00	2.00
Bluntnose Minnow	N	O	C T	4	3.31	0.33	0.00	0.01	1.25
Channel Catfish	F		C	7	6.54	0.65	5.98	7.58	892.86
Flathead Catfish	F	P	C	2	1.77	0.18	1.66	2.10	975.00
Brook Silverside		I	M M	5	4.08	0.41	0.01	0.01	1.20
White Bass	F	P	M	5	3.85	0.38	1.02	1.30	266.00
Str. Bass X Wh. Bass	E			1	1.00	0.10	0.60	0.76	600.00
White Crappie	S	I	C	8	6.85	0.68	3.41	4.32	493.75
Black Crappie	S	I	C	1	0.77	0.08	0.42	0.54	550.00
Rock Bass	S	C	C	1	0.77	0.08	0.01	0.02	16.00
Smallmouth Bass	F	C	C M	2	2.00	0.20	0.60	0.76	300.00
Spotted Bass	F	C	C	29	26.69	2.66	1.14	1.44	40.45
Largemouth Bass	F	C	C	5	4.08	0.41	1.22	1.55	294.40
Green Sunfish	S	I	C T	2	1.54	0.15	0.06	0.07	36.00
Bluegill Sunfish	S	I	C P	46	41.38	4.13	0.55	0.69	14.48
Longear Sunfish	S	I	C M	49	42.54	4.24	0.90	1.15	20.01
Green Sf X Bluegill Sf				3	3.00	0.30	0.43	0.54	141.67
Green Sf X Hybrid				2	1.54	0.15	0.06	0.07	37.00
Sauger	F	P	S	18	16.62	1.66	1.28	1.62	79.00
Walleye	F	P	S	1	1.00	0.10	0.08	0.10	80.00
River Darter [T]	D	I	S	1	1.00	0.10	0.00	0.00	2.00
Logperch	D	I	S M	10	9.08	0.91	0.06	0.07	6.10
Freshwater Drum			M P	33	28.85	2.88	13.83	17.52	449.39
<i>Mile Total</i>				1,120	1,002.31		78.93		
<i>Number of Species</i>				36					
<i>Number of Hybrids</i>				3					

# Species List

River Code: <b>06-704</b>	Stream: <b>Piney Fork</b>	Sample Date: <b>2009</b>
River Mile: <b>4.20</b>	Location:	Date Range: 09/15/2009
Time Fished: 1993 sec	Drainage: 5.0 sq mi	
Dist Fished: 0.20 km	Basin: Central Ohio River Tribs    No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
White Sucker	W	O	S	T	61	91.50	7.08	1.80	26.57	19.66
Western Blacknose Dace	N	G	S	T	100	150.00	11.60	0.31	4.59	2.07
Creek Chub	N	G	N	T	217	325.50	25.17	1.38	20.43	4.25
Redside Dace	N	I	S	I	52	78.00	6.03	0.41	6.12	5.31
Striped Shiner	N	I	S		3	4.50	0.35	0.13	1.89	28.33
Silverjaw Minnow	N	I	M		7	10.50	0.81	0.09	1.27	8.14
Fathead Minnow	N	O	C	T	2	3.00	0.23	0.01	0.09	2.00
Bluntnose Minnow	N	O	C	T	137	205.50	15.89	0.48	7.09	2.33
Central Stoneroller	N	H	N		100	150.00	11.60	0.48	7.05	3.18
Stonecat Madtom		I	C	I	5	7.50	0.58	0.04	0.52	4.60
Largemouth Bass	F	C	C		5	7.50	0.58	0.34	5.01	45.20
Green Sunfish	S	I	C	T	32	48.00	3.71	0.58	8.63	12.16
Bluegill Sunfish	S	I	C	P	10	15.00	1.16	0.20	3.00	13.50
Johnny Darter	D	I	C		7	10.50	0.81	0.02	0.22	1.43
Greenside Darter	D	I	S	M	4	6.00	0.46	0.02	0.27	3.00
Rainbow Darter	D	I	S	M	24	36.00	2.78	0.10	1.51	2.83
Fantail Darter	D	I	C		56	84.00	6.50	0.13	1.98	1.60
Mottled Sculpin		I	C		40	60.00	4.64	0.26	3.83	4.32
<i>Mile Total</i>					862	1,293.00		6.77		
<i>Number of Species</i>					18					
<i>Number of Hybrids</i>					0					

# Species List

River Code: <b>06-704</b>	Stream: <b>Piney Fork</b>	Sample Date: <b>2009</b>
River Mile: <b>0.30</b>	Location: upst. Co. Rd. 29, near mouth	Date Range: 07/21/2009
Time Fished: 5408 sec	Drainage: 15.5 sq mi	Thru: 09/01/2009
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs    No of Passes: 2	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Black Redhorse	R	I	S	I	2	1.50	0.08			
Northern Hog Sucker	R	I	S	M	65	48.75	2.65			
White Sucker	W	O	S	T	224	168.00	9.12			
Goldfish	G	O	M	T	2	1.50	0.08			
River Chub	N	I	N	I	15	11.25	0.61			
Western Blacknose Dace	N	G	S	T	137	102.75	5.58			
Creek Chub	N	G	N	T	176	132.00	7.16			
Redside Dace	N	I	S	I	3	2.25	0.12			
Silver Shiner	N	I	S	I	1	0.75	0.04			
Rosyface Shiner	N	I	S	I	33	24.75	1.34			
Striped Shiner	N	I	S		264	198.00	10.74			
Spotfin Shiner	N	I	M		5	3.75	0.20			
Sand Shiner	N	I	M	M	13	9.75	0.53			
Silverjaw Minnow	N	I	M		55	41.25	2.24			
Bluntnose Minnow	N	O	C	T	250	187.50	10.18			
Central Stoneroller	N	H	N		620	465.00	25.23			
Stonecat Madtom		I	C	I	1	0.75	0.04			
Rock Bass	S	C	C		3	2.25	0.12			
Smallmouth Bass	F	C	C	M	20	15.00	0.81			
Green Sunfish	S	I	C	T	6	4.50	0.24			
Bluegill Sunfish	S	I	C	P	19	14.25	0.77			
Johnny Darter	D	I	C		12	9.00	0.49			
Greenside Darter	D	I	S	M	34	25.50	1.38			
Rainbow Darter	D	I	S	M	231	173.25	9.40			
Fantail Darter	D	I	C		60	45.00	2.44			
Mottled Sculpin		I	C		206	154.50	8.38			
<i>Mile Total</i>					2,457	1,842.75				
<i>Number of Species</i>					26					
<i>Number of Hybrids</i>					0					



## Species List

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River Code: <b>06-708</b>	Stream: <b>Baker Fork</b>	Sample Date: <b>2009</b>
River Mile: <b>1.20</b>	Location: adj. Twp. Rd. 81	Date Range: 09/01/2009
Time Fished: 1800 sec	Drainage: 8.3 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	26	52.00	2.41			
White Sucker	W	O	S	T	121	242.00	11.21			
Western Blacknose Dace	N	G	S	T	70	140.00	6.49			
Creek Chub	N	G	N	T	241	482.00	22.34			
Redside Dace	N	I	S	I	7	14.00	0.65			
Rosyface Shiner	N	I	S	I	1	2.00	0.09			
Striped Shiner	N	I	S		31	62.00	2.87			
Silverjaw Minnow	N	I	M		1	2.00	0.09			
Bluntnose Minnow	N	O	C	T	103	206.00	9.55			
Central Stoneroller	N	H	N		347	694.00	32.16			
Smallmouth Bass	F	C	C	M	1	2.00	0.09			
Green Sunfish	S	I	C	T	2	4.00	0.19			
Johnny Darter	D	I	C		39	78.00	3.61			
Greenside Darter	D	I	S	M	9	18.00	0.83			
Rainbow Darter	D	I	S	M	24	48.00	2.22			
Fantail Darter	D	I	C		56	112.00	5.19			
<i>Mile Total</i>					1,079	2,158.00				
<i>Number of Species</i>					16					
<i>Number of Hybrids</i>					0					

# Species List

River Code: <b>06-004</b>	Stream: <b>Newell Run</b>	Sample Date: <b>2009</b>
River Mile: <b>1.70</b>	Location: adj. Newell Run Rd.	Date Range: 08/04/2009
Time Fished: 2381 sec	Drainage: 6.9 sq mi	
Dist Fished: 0.20 km	Basin: Central Ohio River Tribs    No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S	M	3	4.50	0.11			
Northern Hog Sucker	R	I	S	M	2	3.00	0.07			
White Sucker	W	O	S	T	19	28.50	0.69			
Western Blacknose Dace	N	G	S	T	20	30.00	0.72			
Creek Chub	N	G	N	T	117	175.50	4.24			
South. Redbelly Dace	N	H	S		14	21.00	0.51			
Striped Shiner	N	I	S		84	126.00	3.04			
Sand Shiner	N	I	M	M	5	7.50	0.18			
Silverjaw Minnow	N	I	M		11	16.50	0.40			
Bluntnose Minnow	N	O	C	T	2,009	3,013.50	72.79			
Central Stoneroller	N	H	N		261	391.50	9.46			
Yellow Bullhead		I	C	T	3	4.50	0.11			
Trout-perch		I	M		1	1.50	0.04			
Rock Bass	S	C	C		7	10.50	0.25			
Smallmouth Bass	F	C	C	M	4	6.00	0.14			
Largemouth Bass	F	C	C		3	4.50	0.11			
Green Sunfish	S	I	C	T	62	93.00	2.25			
Longear Sunfish	S	I	C	M	1	1.50	0.04			
Logperch	D	I	S	M	2	3.00	0.07			
Johnny Darter	D	I	C		9	13.50	0.33			
Rainbow Darter	D	I	S	M	91	136.50	3.30			
Fantail Darter	D	I	C		32	48.00	1.16			
<i>Mile Total</i>					2,760	4,140.00				
<i>Number of Species</i>					22					
<i>Number of Hybrids</i>					0					

## Species List

River Code: <b>06-013</b>	Stream: <b>Leith Run</b>	Sample Date: <b>2009</b>
River Mile: <b>2.80</b>	Location: adj. Leith Run Rd.	Date Range: 07/21/2009
Time Fished: 5632 sec	Drainage: 6.8 sq mi	Thru: 09/10/2009
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs	No of Passes: 2
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S	M	3	2.25	0.18			
Northern Hog Sucker	R	I	S	M	10	7.50	0.61			
White Sucker	W	O	S	T	168	126.00	10.26			
Western Blacknose Dace	N	G	S	T	64	48.00	3.91			
Creek Chub	N	G	N	T	340	255.00	20.76			
South. Redbelly Dace	N	H	S		81	60.75	4.95			
Redside Dace	N	I	S	I	1	0.75	0.06			
Striped Shiner	N	I	S		261	195.75	15.93			
Spotfin Shiner	N	I	M		3	2.25	0.18			
Silverjaw Minnow	N	I	M		60	45.00	3.66			
Bluntnose Minnow	N	O	C	T	210	157.50	12.82			
Central Stoneroller	N	H	N		331	248.25	20.21			
Rock Bass	S	C	C		16	12.00	0.98			
Green Sunfish	S	I	C	T	1	0.75	0.06			
Bluegill Sunfish	S	I	C	P	3	2.25	0.18			
Johnny Darter	D	I	C		25	18.75	1.53			
Rainbow Darter	D	I	S	M	15	11.25	0.92			
Fantail Darter	D	I	C		46	34.50	2.81			
<i>Mile Total</i>					1,638	1,228.50				
<i>Number of Species</i>					18					
<i>Number of Hybrids</i>					0					

## Species List

River Code: <b>06-016</b>	Stream: <b>Mill Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>0.70</b>	Location:	Date Range: 08/04/2009
Time Fished: 2823 sec	Drainage: 9.1 sq mi	
Dist Fished: 0.20 km	Basin: Central Ohio River Tribs	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S	M	6	9.00	0.31			
White Sucker	W	O	S	T	38	57.00	1.98			
Western Blacknose Dace	N	G	S	T	8	12.00	0.42			
Creek Chub	N	G	N	T	74	111.00	3.86			
Silver Shiner	N	I	S	I	17	25.50	0.89			
Striped Shiner	N	I	S		37	55.50	1.93			
Spotfin Shiner	N	I	M		15	22.50	0.78			
Silverjaw Minnow	N	I	M		1	1.50	0.05			
Bluntnose Minnow	N	O	C	T	1,065	1,597.50	55.53			
Central Stoneroller	N	H	N		392	588.00	20.44			
Yellow Bullhead		I	C	T	5	7.50	0.26			
Rock Bass	S	C	C		18	27.00	0.94			
Smallmouth Bass	F	C	C	M	27	40.50	1.41			
Green Sunfish	S	I	C	T	20	30.00	1.04			
Bluegill Sunfish	S	I	C	P	8	12.00	0.42			
Johnny Darter	D	I	C		36	54.00	1.88			
Greenside Darter	D	I	S	M	28	42.00	1.46			
Rainbow Darter	D	I	S	M	100	150.00	5.21			
Fantail Darter	D	I	C		23	34.50	1.20			
<i>Mile Total</i>					1,918	2,877.00				
<i>Number of Species</i>					19					
<i>Number of Hybrids</i>					0					

# Species List

River Code: <b>06-022</b>	Stream: <b>Narrows Run</b>	Sample Date: <b>2009</b>
River Mile: <b>0.10</b>	Location:	Date Range: 07/09/2009
Time Fished: 2779 sec	Drainage: 3.6 sq mi	
Dist Fished: 0.12 km	Basin: Central Ohio River Tribs    No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	1	2.50	0.36			
Western Blacknose Dace	N	G	S	T	17	42.50	6.16			
Creek Chub	N	G	N	T	158	395.00	57.25			
Central Stoneroller	N	H	N		64	160.00	23.19			
Smallmouth Bass	F	C	C	M	5	12.50	1.81			
Banded Darter	D	I	S	I	2	5.00	0.72			
Rainbow Darter	D	I	S	M	22	55.00	7.97			
Fantail Darter	D	I	C		7	17.50	2.54			
<i>Mile Total</i>					276	690.00				
<i>Number of Species</i>					8					
<i>Number of Hybrids</i>					0					

## Species List

River Code: <b>06-033</b>	Stream: <b>Opossum Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>2.20</b>	Location:	Date Range: 06/18/2009
Time Fished: 6297 sec	Drainage: 22.1 sq mi	Thru: 08/12/2009
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Black Redhorse	R	I	S I	1	0.75	0.05	0.02	0.08	30.00
Golden Redhorse	R	I	S M	1	0.75	0.05	0.04	0.15	58.00
Northern Hog Sucker	R	I	S M	62	46.50	2.97	1.57	5.55	33.76
White Sucker	W	O	S T	22	16.50	1.06	0.62	2.20	37.64
River Chub	N	I	N I	41	30.75	1.97	0.27	0.96	8.80
Western Blacknose Dace	N	G	S T	20	15.00	0.96	0.04	0.13	2.45
Creek Chub	N	G	N T	45	33.75	2.16	0.45	1.60	13.38
Silver Shiner	N	I	S I	4	3.00	0.19	0.00	0.01	1.25
Striped Shiner	N	I	S	280	210.00	13.43	1.24	4.40	5.92
Spotfin Shiner	N	I	M	1	0.75	0.05	0.00	0.01	4.00
Sand Shiner	N	I	M M	6	4.50	0.29	0.02	0.05	3.33
Mimic Shiner	N	I	M I	2	1.50	0.10	0.00	0.01	2.50
Silverjaw Minnow	N	I	M	3	2.25	0.14	0.01	0.03	4.00
Bluntnose Minnow	N	O	C T	83	62.25	3.98	0.21	0.74	3.34
Central Stoneroller	N	H	N	1,007	755.25	48.30	21.63	76.53	28.64
Yellow Bullhead		I	C T	3	2.25	0.14	0.14	0.48	60.67
Rock Bass	S	C	C	9	6.75	0.43	0.27	0.94	39.56
Smallmouth Bass	F	C	C M	36	27.00	1.73	0.75	2.66	27.86
Largemouth Bass	F	C	C	11	8.25	0.53	0.02	0.08	2.64
Green Sunfish	S	I	C T	16	12.00	0.77	0.24	0.85	20.00
Bluegill Sunfish	S	I	C P	17	12.75	0.82	0.10	0.34	7.65
Longear Sunfish	S	I	C M	2	1.50	0.10	0.03	0.11	21.50
Redear Sunfish	E	I	C	1	0.75	0.05	0.01	0.02	8.00
Logperch	D	I	S M	11	8.25	0.53	0.08	0.28	9.45
Johnny Darter	D	I	C	7	5.25	0.34	0.01	0.03	1.43
Greenside Darter	D	I	S M	31	23.25	1.49	0.04	0.16	1.92
Rainbow Darter	D	I	S M	258	193.50	12.37	0.31	1.09	1.60
Fantail Darter	D	I	C	105	78.75	5.04	0.14	0.49	1.75
<i>Mile Total</i>				2,085	1,563.75		28.27		
<i>Number of Species</i>				28					
<i>Number of Hybrids</i>				0					

## Species List

River Code: <b>06-033</b>	Stream: <b>Opossum Creek</b>	Sample Date: <b>2009</b>
River Mile: <b>1.10</b>	Location:	Date Range: 06/23/2009
Time Fished: 5695 sec	Drainage: 24.0 sq mi	Thru: 08/04/2009
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S	M	62	46.50	4.31	0.04	1.22	0.90
Northern Hog Sucker	R	I	S	M	37	27.75	2.57	0.35	10.09	12.51
White Sucker	W	O	S	T	5	3.75	0.35	0.08	2.25	20.60
Western Blacknose Dace	N	G	S	T	1	0.75	0.07	0.00	0.07	3.00
Creek Chub	N	G	N	T	8	6.00	0.56	0.04	1.22	7.00
Rosyface Shiner	N	I	S	I	3	2.25	0.21	0.01	0.20	3.00
Striped Shiner	N	I	S		133	99.75	9.25	0.40	11.69	4.04
Spotfin Shiner	N	I	M		1	0.75	0.07	0.01	0.17	8.00
Sand Shiner	N	I	M	M	65	48.75	4.52	0.10	2.96	2.09
Silverjaw Minnow	N	I	M		20	15.00	1.39	0.03	0.74	1.70
Bluntnose Minnow	N	O	C	T	320	240.00	22.25	0.43	12.53	1.80
Central Stoneroller	N	H	N		264	198.00	18.36	0.42	12.11	2.10
Yellow Bullhead		I	C	T	9	6.75	0.63	0.18	5.17	26.33
Brook Silverside		I	M	M	30	22.50	2.09	0.02	0.52	0.80
Rock Bass	S	C	C		12	9.00	0.83	0.21	6.17	23.58
Smallmouth Bass	F	C	C	M	11	8.25	0.76	0.14	3.96	16.55
Largemouth Bass	F	C	C		40	30.00	2.78	0.17	4.83	5.55
Green Sunfish	S	I	C	T	6	4.50	0.42	0.13	3.77	28.83
Bluegill Sunfish	S	I	C	P	68	51.00	4.73	0.36	10.41	7.03
Logperch	D	I	S	M	27	20.25	1.88	0.10	2.77	4.70
Johnny Darter	D	I	C		18	13.50	1.25	0.01	0.39	1.00
Greenside Darter	D	I	S	M	8	6.00	0.56	0.01	0.41	2.29
Rainbow Darter	D	I	S	M	270	202.50	18.78	0.20	5.79	0.98
Fantail Darter	D	I	C		20	15.00	1.39	0.02	0.62	1.41
<i>Mile Total</i>					1,438	1,078.50		3.44		
<i>Number of Species</i>					24					
<i>Number of Hybrids</i>					0					

Appendix Table 8. Index of Biotic Integrity (IBI) metrics and scores for sampling locations in the Sunfish Creek watershed and direct Ohio River tributaries, 2009.

River Mile	Type	Date	Drainage area (sq mi)	Number of					Percent of Individuals					Rel.No. minus tolerants /(0.3km)	IBI	Modified Iwb	
				Total species	Sunfish species	Sucker species	Intolerant species	Darter species	Simple Lithophils	Tolerant fishes	Omni- vores	Top carnivores	Insect- ivores				DELT anomalies
Opossum Creek - (06033)																	
Year: 2009																	
2.20	E	06/18/2009	22	21(5)	3(3)	3(5)	3(3)	4(5)	28(3)	12(5)	5(5)	0.9(1)	39(3)	0.0(5)	852(5)	48	8.0
2.20	E	08/12/2009	22	25(5)	4(5)	3(5)	2(3)	5(5)	35(3)	8(5)	5(5)	3.5(3)	42(3)	0.0(5)	1992(5)	52	8.5
1.10	E	06/23/2009	24	21(5)	3(3)	2(3)	1(1)	5(5)	48(5)	18(5)	16(5)	1.8(3)	66(5)	0.0(5)	611(3)	48	8.2
1.10	E	08/04/2009	24	23(5)	3(3)	3(5)	1(1)	5(5)	33(3)	28(5)	26(3)	5.7(5)	48(3)	0.0(5)	1023(5)	48	9.0
Sunfish Creek - (06700)																	
Year: 2009																	
25.10	E	07/22/2009	21	13(3)	0(1)	1(1)	2(3)	4(5)	31(3)	20(5)	2(5)	0.0(1)	56(5)	0.0(5)	906(5)	42	7.4
25.10	E	09/01/2009	21	22(5)	2(3)	3(5)	4(5)	4(5)	21(3)	25(5)	17(5)	0.0(1)	26(3)	0.0(5)	3782(5)	50	8.9
23.90	E	07/22/2009	22	21(5)	3(3)	3(5)	3(3)	4(5)	31(3)	22(5)	9(5)	0.9(1)	61(5)	0.0(5)	632(3)	48	8.8
23.90	E	09/01/2009	22	21(5)	2(3)	3(5)	1(1)	4(5)	28(3)	29(5)	14(5)	1.6(3)	55(5)	0.0(5)	680(3)	48	8.7
22.80	E	07/22/2009	31	19(5)	1(1)	3(3)	3(3)	3(3)	28(3)	26(5)	17(5)	0.3(1)	39(3)	0.0(5)	780(5)	42	8.4
22.80	E	09/01/2009	31	23(5)	2(3)	4(5)	5(5)	4(3)	32(3)	24(5)	19(3)	0.6(1)	39(3)	0.0(5)	1839(5)	46	9.2
17.30	E	07/22/2009	50	24(5)	1(1)	2(3)	6(5)	5(5)	38(5)	3(5)	2(5)	0.5(1)	51(3)	0.0(5)	2021(5)	48	8.9
17.30	E	09/02/2009	50	25(5)	3(3)	3(3)	7(5)	6(5)	28(3)	8(5)	8(5)	1.0(3)	36(3)	0.0(5)	3741(5)	50	9.2
15.10	E	07/15/2009	54	25(5)	3(3)	3(3)	5(5)	6(5)	44(5)	5(5)	4(5)	0.3(1)	60(5)	0.1(5)	1983(5)	52	9.6
15.10	E	09/15/2009	54	29(5)	3(3)	5(5)	7(5)	6(5)	40(5)	5(5)	3(5)	2.0(3)	54(3)	0.0(5)	2379(5)	54	10.0
9.30	E	07/15/2009	79	21(3)	1(1)	2(3)	6(5)	6(5)	41(5)	0(5)	0(5)	2.1(3)	56(5)	0.0(5)	1529(5)	50	9.0
9.30	E	09/02/2009	79	24(5)	1(1)	4(5)	7(5)	6(5)	37(5)	7(5)	7(5)	3.3(3)	50(3)	0.0(5)	1706(5)	52	9.5
7.10	E	07/15/2009	99	23(5)	2(3)	3(3)	6(5)	6(5)	53(5)	2(5)	2(5)	5.5(5)	71(5)	0.2(3)	726(3)	52	8.9
7.10	E	08/20/2009	99	28(5)	3(3)	4(5)	8(5)	6(5)	30(3)	4(5)	4(5)	1.6(3)	41(3)	0.0(5)	2011(5)	52	8.9

na - Qualitative data, Modified Iwb not applicable.

◆ - IBI is low end adjusted.

\* - &lt; 200 Total individuals in sample

\*\* - &lt; 50 Total individuals in sample

● - One or more species excluded from IBI calculation.



Appendix Table 8. Index of Biotic Integrity (IBI) metrics and scores for sampling locations in the Sunfish Creek watershed and direct Ohio River tributaries, 2009.

River Mile	Type	Date	Drainage area (sq mi)	Number of				Percent of Individuals						DELTA anomalies	Rel.No. minus tolerants /(1.0 km)	Modified IBI	lwb
				Total species	Sunfish species	Sucker species	Intolerant species	Rnd-bodied suckers	Simple Lithophils	Tolerant fishes	Omni- vores	Top carnivores	Insect- ivores				
Sunfish Creek - (06-700)																	
Year: 2009																	
1.80	A	09/21/2009	105	29(5)	3(3)	8(5)	1(1)	6(1)	10(1)	1(5)	4(5)	7(3)	85(5)	0.0(5)	1210(5)	44	9.5
1.80	A	08/25/2009	105	27(5)	6(5)	5(3)	0(1)	8(1)	10(1)	2(5)	12(5)	7(3)	77(5)	0.0(5)	769(5)	44	9.4

◆ - IBI is low end adjusted.

\* - < 200 Total individuals in sample

\*\* - < 50 Total individuals in sample

Appendix Table 8. Index of Biotic Integrity (IBI) metrics and scores for sampling locations in the Sunfish Creek watershed and direct Ohio Riber tribs., 2009.

River Mile	Type	Date	Drainage area (sq mi)	Number of						Percent of Individuals					Rel.No. minus tolerants /(0.3km)	IBI	
				Total species	Minnow species	Headwater species	Sensitive species	Darter & Sculpin species	Simple Lithophils	Tolerant fishes	Omni- vores	Pioneering fishes	Insect- ivores	DELT anomalies			
<b><i>Newell Run - (06-004)</i></b>																	
Year: 2009																	
1.70	E	08/04/2009	6.9	22(5)	8(5)	3(3)	7(5)	4(5)	8(5)	81(1)	74(1)	80(1)	11(1)	0.0(5)	795(5)	42	
<b><i>Leith Run - (06-013)</i></b>																	
Year: 2009																	
2.80	E	07/21/2009	6.8	16(5)	7(5)	3(3)	3(3)	3(3)	7(5)	40(3)	22(3)	32(3)	25(3)	0.1(5)	908(5)	46	
2.80	E	09/10/2009	6.8	17(5)	9(5)	4(5)	4(3)	3(3)	8(5)	60(1)	25(3)	50(3)	28(3)	0.0(5)	375(3)	44	
<b><i>Mill Creek - (06-016)</i></b>																	
Year: 2009																	
0.70	E	08/04/2009	9.1	19(5)	8(5)	2(3)	5(3)	4(5)	7(5)	63(1)	58(1)	62(1)	15(1)	0.0(5)	1062(5)	40	
<b><i>Sunfish Creek - (06-700)</i></b>																	
Year: 2009																	
27.10	E	09/15/2009	9.9	17(5)	6(3)	2(3)	6(5)	4(5)	7(5)	47(3)	31(1)	46(3)	52(5)	0.0(5)	626(3)	46	
<b><i>Piney Fork - (06-704)</i></b>																	
Year: 2009																	
4.20	E	09/15/2009	5.0	18(5)	8(5)	4(5)	4(3)	5(5)	6(5)	64(1)	23(3)	47(3)	28(3)	0.0(5)	470(3)	46	
0.30	E	07/21/2009	15.5	20(5)	9(5)	4(5)	7(5)	5(5)	8(5)	38(3)	24(3)	23(5)	44(3)	0.0(5)	1038(5)	54	
0.30	E	09/01/2009	15.5	25(5)	12(5)	4(5)	* (5)	5(5)	10(5)	28(5)	16(5)	18(5)	40(3)	0.0(5)	1455(5)	58	
<b><i>Baker Fork - (06-708)</i></b>																	
Year: 2009																	
1.20	E	09/01/2009	8.3	16(5)	8(5)	3(3)	6(5)	4(5)	8(5)	50(3)	21(3)	36(3)	18(1)	0.0(5)	1084(5)	48	

♦ - IBI is low end adjusted.

\* - &lt; 200 Total individuals in sample

\*\* - &lt; 50 Total individuals in sample

● - One or more species excluded from IBI calculation.

Appendix Table 8. Index of Biotic Integrity (IBI) metrics and scores for sampling locations in the Sunfish Creek watershed and direct Ohio River tribs, 2009.

River Mile	Type	Date	Drainage area (sq mi)	Number of						Percent of Individuals					Rel.No. minus tolerants /(0.3km)	IBI
				Total species	Minnow species	Headwater species	Sensitive species	Darter & Sculpin species	Simple Lithophils	Tolerant fishes	Omni- vores	Pioneering fishes	Insect- ivores	DELT anomalies		
<i>Narrows Run - (06-022)</i>																
Year: 2009																
0.10	E	07/09/2009	3.6	8(3)	3(3)	2(3)	4(5)	3(5)	4(3)	63(1)	0(5)	57(1)	12(1)	0.0(5)	253(3)	38

◆ - IBI is low end adjusted.

\* - < 200 Total individuals in sample

\*\* - < 50 Total individuals in sample

● - One or more species excluded from IBI calculation.

Appendix Table 9. Macroinvertebrate sampling results for each location in the Sunfish Creek watershed and direct Ohio River tributaries study area, 2009.

Ohio EPA/DSW Ecological Assessment Section  
 Macroinvertebrate Collection

Site: Newell Run  
 adj. Newell Run Rd.

Collection Date: 08/18/2009 River Code: 06-004 RM: 1.70

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+	96900	<i>Ferrissia sp</i>	+
01900	<i>Nemertea</i>	+			
03600	<i>Oligochaeta</i>	+	No. Quantitative Taxa: 0		Total Taxa: 44
05900	<i>Lirceus sp</i>	+	No. Qualitative Taxa: 44		ICI:
08250	<i>Orconectes (Procericambarus) rusticus</i>	+	Number of Organisms: 0		Qual EPT: 14
11120	<i>Baetis flavistriga</i>	+			
11125	<i>Pseudocloeon frondale</i>	+			
11130	<i>Baetis intercalaris</i>	+			
11651	<i>Proclloeon sp (w/o hindwing pads)</i>	+			
13521	<i>Stenonema femoratum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
14600	<i>Choroterpes sp</i>	+			
17200	<i>Caenis sp</i>	+			
18600	<i>Ephemera sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
24900	<i>Gomphus sp</i>	+			
33100	<i>Leuctra sp</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
36500	<i>Sweltsa sp</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
63300	<i>Hydroporini</i>	+			
68025	<i>Ectopria sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
69210	<i>Optioservus ampliatus</i>	+			
69400	<i>Stenelmis sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
71800	<i>Pseudolimnophila sp</i>	+			
71900	<i>Tipula sp</i>	+			
74100	<i>Simulium sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	+			
77800	<i>Helopelopia sp</i>	+			
79400	<i>Zavrelimyia sp</i>	+			
81825	<i>Rheocricotopus (Psilocricotopus) robacki</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83820	<i>Microtendipes "caelum" (sensu Simpson &amp; Bode, 1980)</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
84440	<i>Polypedilum (Uresipedilum) aviceps</i>	+			
84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
95100	<i>Physella sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Leith Run  
adj. Leith Run Rd.

Collection Date: 08/12/2009 River Code: 06-013 RM: 2.80

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
11014	<i>Acentrella turbida</i>	+			
11119	<i>Plauditus dubius or P. virilis</i>	+			
11120	<i>Baetis flavistriga</i>	+			
11130	<i>Baetis intercalaris</i>	+			
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+			
12200	<i>Isonychia sp</i>	+			
13400	<i>Stenacron sp</i>	+			
13521	<i>Stenonema femoratum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
17200	<i>Caenis sp</i>	+			
18600	<i>Ephemera sp</i>	+			
23909	<i>Boyeria vinosa</i>	+			
24900	<i>Gomphus sp</i>	+			
48620	<i>Nigronia serricornis</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50804	<i>Lype diversa</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69210	<i>Optioservus ampliatus</i>	+			
69400	<i>Stenelmis sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
71900	<i>Tipula sp</i>	+			
72340	<i>Dixella sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
81460	<i>Orthocladius (O.) sp</i>	+			
81690	<i>Paratrichocladius sp</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83820	<i>Microtendipes "caelum" (sensu Simpson &amp; Bode, 1980)</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
85230	<i>Cladotanytarsus mancus group</i>	+			
96900	<i>Ferrissia sp</i>	+			

No. Quantitative Taxa: 0            Total Taxa: 37  
 No. Qualitative Taxa: 37            ICI:  
 Number of Organisms: 0            Qual EPT: 16

Ohio EPA/DSW Ecological Assessment Section  
 Macroinvertebrate Collection

Site: Opossum Creek  
 adj. Beautiful Ridge Rd.

Collection Date: 08/24/2009 River Code: 06-033 RM: 2.20

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	30 +	80351	<i>Corynoneura n.sp 1</i>	4
07810	<i>Cambarus (Cambarus) carinirostris</i>	+	80370	<i>Corynoneura lobata</i>	12
11018	<i>Acerpenna macdunnoughi</i>	1	80410	<i>Cricotopus (C.) sp</i>	7
11120	<i>Baetis flavistriga</i>	1	81465	<i>Orthocladius (O.) carlatus</i>	7
11130	<i>Baetis intercalaris</i>	32 +	81650	<i>Parametricnemus sp</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	83820	<i>Microtendipes "caelum" (sensu Simpson &amp; Bode, 1980)</i>	49
11651	<i>Proclloeon sp (w/o hindwing pads)</i>	1 +	83840	<i>Microtendipes pedellus group</i>	35
12200	<i>Isonychia sp</i>	1 +	83900	<i>Nilothauma sp</i>	7
13400	<i>Stenacron sp</i>	20 +	84210	<i>Paratendipes albimanus or P. duplicatus</i>	35
13521	<i>Stenonema femoratum</i>	+	84300	<i>Phaenopsectra obediens group</i>	147
13590	<i>Maccaffertium vicarium</i>	63 +	84430	<i>Polypedilum (P.) albicorne</i>	7
16700	<i>Tricorythodes sp</i>	+	84440	<i>Polypedilum (Uresipedilum) aviceps</i>	7
17200	<i>Caenis sp</i>	99 +	84450	<i>Polypedilum (Uresipedilum) flavum</i>	7 +
34120	<i>Acroneuria carolinensis</i>	+	84460	<i>Polypedilum (P.) fallax group</i>	63
34130	<i>Acroneuria frisoni</i>	1 +	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	35
36500	<i>Sweltsa sp</i>	+	84700	<i>Stenochironomus sp</i>	+
48410	<i>Corydalus cornutus</i>	+	85200	<i>Cladotanytarsus sp</i>	+
48610	<i>Nigronia fasciatus</i>	+	85625	<i>Rheotanytarsus sp</i>	63
50301	<i>Chimarra aterrima</i>	+	85720	<i>Stempellinella fimbriata</i>	7
50315	<i>Chimarra obscura</i>	+	85800	<i>Tanytarsus sp</i>	28
51400	<i>Nyctiophylax sp</i>	+	85840	<i>Tanytarsus sepp</i>	14
51600	<i>Polycentropus sp</i>	2 +	87540	<i>Hemerodromia sp</i>	62
52200	<i>Cheumatopsyche sp</i>	26 +	95100	<i>Physella sp</i>	+
52430	<i>Ceratopsyche morosa group</i>	18 +	96900	<i>Ferrissia sp</i>	20 +
52540	<i>Hydropsyche dicantha</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	2 +	No. Quantitative Taxa: 42		Total Taxa: 68
59970	<i>Petrophila sp</i>	1 +	No. Qualitative Taxa: 47		ICI: 44
60300	<i>Dineutus sp</i>	+	Number of Organisms: 1071		Qual EPT: 21
63300	<i>Hydroporini</i>	+			
67500	<i>Laccobius sp</i>	+			
68075	<i>Psephenus herricki</i>	5 +			
68130	<i>Helichus sp</i>	1 +			
68708	<i>Dubiraphia vittata group</i>	+			
69000	<i>Microcylloepus pusillus</i>	1			
69210	<i>Optioservus ampliatus</i>	+			
69400	<i>Stenelmis sp</i>	6 +			
72700	<i>Anopheles sp</i>	+			
74100	<i>Simulium sp</i>	+			
74501	<i>Ceratopogonidae</i>	4 +			
77500	<i>Conchapelopia sp</i>	119 +			
77800	<i>Helopelopia sp</i>	21 +			
78140	<i>Labrundinia pilosella</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			

Ohio EPA/DSW Ecological Assessment Section  
 Macroinvertebrate Collection

Site: Opossum Creek  
 at ford, upst. Gilmore Run

Collection Date: 08/24/2009 River Code: 06-033 RM: 1.05

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	17 +	77500	<i>Conchapelopia sp</i>	129 +
07860	<i>Cambarus (Puncticambarus) robustus</i>	+	77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	9
08230	<i>Orconectes (Crockerinus) obscurus</i>	+	77800	<i>Helopelopia sp</i>	18
11130	<i>Baetis intercalaris</i>	44 +	78450	<i>Nilotanytus fimbriatus</i>	13
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	80370	<i>Corynoneura lobata</i>	40
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	80410	<i>Cricotopus (C.) sp</i>	62
12200	<i>Isonychia sp</i>	+	80430	<i>Cricotopus (C.) tremulus group</i>	+
13000	<i>Leucrocuta sp</i>	+	81650	<i>Parametriocnemus sp</i>	5
13400	<i>Stenacron sp</i>	4 +	83040	<i>Dicrotendipes neomodestus</i>	9 +
13590	<i>Maccaffertium vicarium</i>	42 +	83820	<i>Microtendipes "caelum" (sensu Simpson &amp; Bode, 1980)</i>	13
16700	<i>Tricorythodes sp</i>	3	83840	<i>Microtendipes pedellus group</i>	+
17200	<i>Caenis sp</i>	79 +	84210	<i>Paratendipes albimanus or P. duplicatus</i>	9 +
18750	<i>Hexagenia limbata</i>	+	84300	<i>Phaenopsectra obediens group</i>	13
22001	<i>Coenagrionidae</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	9 +
22300	<i>Argia sp</i>	+	84460	<i>Polypedilum (P.) fallax group</i>	22
23909	<i>Boyeria vinosa</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	9 +
26700	<i>Macromia sp</i>	+	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	5
34120	<i>Acroneuria carolinensis</i>	1 +	84750	<i>Stictochironomus sp</i>	+
34130	<i>Acroneuria frisoni</i>	1 +	85625	<i>Rheotanytarsus sp</i>	18
47600	<i>Sialis sp</i>	+	85720	<i>Stempellinella fimbriata</i>	5
48410	<i>Corydalus cornutus</i>	2 +	85800	<i>Tanytarsus sp</i>	18
50301	<i>Chimarra aterrima</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	13
50315	<i>Chimarra obscura</i>	+	85840	<i>Tanytarsus sepp</i>	36
52200	<i>Cheumatopsyche sp</i>	7 +	87540	<i>Hemerodromia sp</i>	21
52430	<i>Ceratopsyche morosa group</i>	5 +	94400	<i>Fossaria sp</i>	3
53800	<i>Hydroptila sp</i>	4 +	95100	<i>Physella sp</i>	+
57400	<i>Neophylax sp</i>	+	96900	<i>Ferrissia sp</i>	11
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59700	<i>Triaenodes sp</i>	+			
60300	<i>Dineutus sp</i>	+	No. Quantitative Taxa: 40		Total Taxa: 71
63300	<i>Hydroporini</i>	+	No. Qualitative Taxa: 51		ICI: 44
67500	<i>Laccobius sp</i>	+	Number of Organisms: 720		Qual EPT: 20
68075	<i>Psephenus herricki</i>	4 +			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69210	<i>Optioservus ampliatus</i>	3 +			
69400	<i>Stenelmis sp</i>	5 +			
70600	<i>Antocha sp</i>	6			
71800	<i>Pseudolimnophila sp</i>	+			
72340	<i>Dixella sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74501	<i>Ceratopogonidae</i>	3 +			



**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Sunfish Creek  
adj. Twp. Rd. 923

Collection Date: 07/21/2009 River Code: 06-700 RM: 27.10

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03360	<i>Plumatella sp</i>	+			
08250	<i>Orconectes (Procericambarus) rusticus</i>	+			
08601	<i>Hydrachnidia</i>	+			
12200	<i>Isonychia sp</i>	+			
13400	<i>Stenacron sp</i>	+			
13521	<i>Stenonema femoratum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
17200	<i>Caenis sp</i>	+			
18600	<i>Ephemera sp</i>	+			
22300	<i>Argia sp</i>	+			
23909	<i>Boyeria vinosa</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
33100	<i>Leuctra sp</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
47600	<i>Sialis sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59970	<i>Petrophila sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
71100	<i>Hexatoma sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77800	<i>Helopelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
86001	<i>Tabanidae</i>	+			
94400	<i>Fossaria sp</i>	+			
96900	<i>Ferrissia sp</i>	+			
98600	<i>Sphaerium sp</i>	+			

No. Quantitative Taxa: 0                      Total Taxa: 40

No. Qualitative Taxa: 40                      ICI:

Number of Organisms: 0                      Qual EPT: 14

**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Sunfish Creek  
adj. Twp. Rd. 999

Collection Date: 08/05/2009 River Code: 06-700 RM: 25.10

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03360	<i>Plumatella sp</i>	+	No. Quantitative Taxa: 0		Total Taxa: 41
03600	<i>Oligochaeta</i>	+	No. Qualitative Taxa: 41		ICI:
05800	<i>Caecidotea sp</i>	+	Number of Organisms: 0		Qual EPT: 15
08200	<i>Orconectes sp</i>	+			
11120	<i>Baetis flavistriga</i>	+			
11130	<i>Baetis intercalaris</i>	+			
13000	<i>Leucrocuta sp</i>	+			
13400	<i>Stenacron sp</i>	+			
13521	<i>Stenonema femoratum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
17200	<i>Caenis sp</i>	+			
33100	<i>Leuctra sp</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
36500	<i>Sweltsa sp</i>	+			
47600	<i>Sialis sp</i>	+			
50315	<i>Chimarra obscura</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59970	<i>Petrophila sp</i>	+			
63300	<i>Hydroporini</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69250	<i>Optioservus ovalis</i>	+			
69400	<i>Stenelmis sp</i>	+			
74100	<i>Simulium sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
78401	<i>Natarsia species A (sensu Roback, 1978)</i>	+			
81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
84440	<i>Polypedilum (Uresipedilum) aviceps</i>	+			
84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
85720	<i>Stempellinella fimbriata</i>	+			
86401	<i>Atherix lantha</i>	+			
95100	<i>Physella sp</i>	+			
96900	<i>Ferrissia sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Sunfish Creek

Collection Date: 08/05/2009 River Code: 06-700 RM: 23.85

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03600	<i>Oligochaeta</i>	+	No. Quantitative Taxa: 0		Total Taxa: 40
06201	<i>Hyaella azteca</i>	+	No. Qualitative Taxa: 40		ICI:
08250	<i>Orconectes (Procericambarus) rusticus</i>	+	Number of Organisms: 0		Qual EPT: 17
11119	<i>Plauditus dubius or P. virilis</i>	+			
11120	<i>Baetis flavistriga</i>	+			
11130	<i>Baetis intercalaris</i>	+			
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+			
12200	<i>Isonychia sp</i>	+			
13000	<i>Leucrocuta sp</i>	+			
13400	<i>Stenacron sp</i>	+			
13521	<i>Stenonema femoratum</i>	+			
13561	<i>Maccaffertium pulchellum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
17200	<i>Caenis sp</i>	+			
23909	<i>Boyeria vinosa</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
50315	<i>Chimarra obscura</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59970	<i>Petrophila sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
72340	<i>Dixella sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
83820	<i>Microtendipes "caelum" (sensu Simpson &amp; Bode, 1980)</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
84490	<i>Polypedilum (Cerobregma) ontario</i>	+			
84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+			
84750	<i>Stictochironomus sp</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
85720	<i>Stempellinella fimbriata</i>	+			
96900	<i>Ferrissia sp</i>	+			
98600	<i>Sphaerium sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Sunfish Creek

Collection Date: 08/05/2009 River Code: 06-700 RM: 22.80

end of Jackson Rd., just dst. Baker Fork

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+	84490	<i>Polypedilum (Cerobregma) ontario</i>	+
03600	<i>Oligochaeta</i>	+	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+
06201	<i>Hyaella azteca</i>	+	85625	<i>Rheotanytarsus sp</i>	+
08250	<i>Orconectes (Procericambarus) rusticus</i>	+	85800	<i>Tanytarsus sp</i>	+
08601	<i>Hydrachnidia</i>	+	86401	<i>Atherix lantha</i>	+
11120	<i>Baetis flavistriga</i>	+	87540	<i>Hemerodromia sp</i>	+
11130	<i>Baetis intercalaris</i>	+	96900	<i>Ferrissia sp</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	98600	<i>Sphaerium sp</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+			
12200	<i>Isonychia sp</i>	+	No. Quantitative Taxa: 0		Total Taxa: 52
13000	<i>Leucrocota sp</i>	+	No. Qualitative Taxa: 52		ICI:
13400	<i>Stenacron sp</i>	+	Number of Organisms: 0		Qual EPT: 20
13561	<i>Maccaffertium pulchellum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
17200	<i>Caenis sp</i>	+			
22300	<i>Argia sp</i>	+			
25010	<i>Hagenius brevistylus</i>	+			
33100	<i>Leuctra sp</i>	+			
34120	<i>Acroneuria carolinensis</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
45300	<i>Sigara sp</i>	+			
47600	<i>Sialis sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59970	<i>Petrophila sp</i>	+			
63300	<i>Hydroporini</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69275	<i>Optioservus trivittatus</i>	+			
69400	<i>Stenelmis sp</i>	+			
71900	<i>Tipula sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77800	<i>Helopelopia sp</i>	+			
78401	<i>Natarsia species A (sensu Roback, 1978)</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			

Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection

Site: Sunfish Creek

Collection Date: 08/31/2009 River Code: 06-700 RM: 17.30

dst. Standingstone Run

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	16 +	68901	<i>Macronychus glabratus</i>	+
03600	<i>Oligochaeta</i>	20 +	69200	<i>Optioservus sp</i>	+
04686	<i>Placobdella papillifera</i>	+	69400	<i>Stenelmis sp</i>	27 +
04960	<i>Mooreobdella sp</i>	+	70600	<i>Antocha sp</i>	+
05800	<i>Caecidotea sp</i>	+	71800	<i>Pseudolimnophila sp</i>	2
08250	<i>Orconectes (Procericambarus) rusticus</i>	+	74100	<i>Simulium sp</i>	+
11012	<i>Acentrella nadineae</i>	+	74501	<i>Ceratopogonidae</i>	13 +
11014	<i>Acentrella turbida</i>	+	77120	<i>Ablabesmyia mallochi</i>	+
11120	<i>Baetis flavistriga</i>	15	77500	<i>Conchapelopia sp</i>	60 +
11130	<i>Baetis intercalaris</i>	41 +	77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	20
11150	<i>Pseudocloeon propinquum</i>	+	77800	<i>Helopelopia sp</i>	10
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	78402	<i>Natarsia baltimoreus</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	78450	<i>Nilotanypus fimbriatus</i>	30 +
12200	<i>Isonychia sp</i>	+	80204	<i>Brillia flavifrons group</i>	+
13000	<i>Leucrocuta sp</i>	7 +	80370	<i>Corynoneura lobata</i>	12
13400	<i>Stenacron sp</i>	+	81650	<i>Parametriocnemus sp</i>	+
13521	<i>Stenonema femoratum</i>	1 +	82101	<i>Thienemanniella taurocapita</i>	8
13561	<i>Maccaffertium pulchellum</i>	18 +	82141	<i>Thienemanniella xena</i>	4
13590	<i>Maccaffertium vicarium</i>	3 +	82730	<i>Chironomus (C.) decorus group</i>	+
15501	<i>Ephemerellidae</i>	8	82820	<i>Cryptochironomus sp</i>	20
17200	<i>Caenis sp</i>	31 +	83040	<i>Dicrotendipes neomodestus</i>	+
21200	<i>Calopteryx sp</i>	+	83820	<i>Microtendipes "caelum" (sensu Simpson &amp; Bode, 1980)</i>	149 +
22300	<i>Argia sp</i>	1 +	83840	<i>Microtendipes pedellus group</i>	40 +
23909	<i>Boyeria vinosa</i>	+	84210	<i>Paratendipes albimanus or P. duplicatus</i>	50 +
25510	<i>Stylogomphus albistylus</i>	+	84300	<i>Phaenopsectra obediens group</i>	20 +
34130	<i>Acroneuria frisoni</i>	5 +	84450	<i>Polypedilum (Uresipedilum) flavum</i>	139 +
50315	<i>Chimarra obscura</i>	1 +	84460	<i>Polypedilum (P.) fallax group</i>	10 +
50804	<i>Lype diversa</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
51600	<i>Polycentropus sp</i>	+	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	199 +
52200	<i>Cheumatopsyche sp</i>	170 +	84750	<i>Stictochironomus sp</i>	+
52430	<i>Ceratopsyche morosa group</i>	126 +	85260	<i>Cladotanytarsus vanderwulpi group</i>	10
52530	<i>Hydropsyche depravata group</i>	1 +	85625	<i>Rheotanytarsus sp</i>	69 +
53501	<i>Hydroptilidae</i>	1 +	85720	<i>Stempellinella fimbriata</i>	20
57900	<i>Pycnopsyche sp</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	99
58505	<i>Helicopsyche borealis</i>	+	86100	<i>Chrysops sp</i>	2
59110	<i>Ceraclea ancyclus</i>	+	86401	<i>Atherix lantha</i>	+
59970	<i>Petrophila sp</i>	+	95100	<i>Physella sp</i>	+
60900	<i>Peltodytes sp</i>	+	96900	<i>Ferrissia sp</i>	1 +
63300	<i>Hydroporini</i>	+	98600	<i>Sphaerium sp</i>	+
65501	<i>Hydrophilidae</i>	1			
68025	<i>Ectopria sp</i>	+			
68075	<i>Psephenus herricki</i>	3 +			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	1 +			

Collection Date: 08/31/2009 River Code: 06-700 RM: 17.30

Site: Sunfish Creek  
dst. Standingstone Run

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Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
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No. Quantitative Taxa: 44      Total Taxa: 83

No. Qualitative Taxa: 69      ICI: **48**

Number of Organisms: 1484      Qual EPT: 24

Ohio EPA/DSW Ecological Assessment Section  
 Macroinvertebrate Collection

Site: Sunfish Creek  
 Altitude-Miller Hill Rd.

Collection Date: 08/25/2009 River Code: 06-700 RM: 15.10

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+	74100	<i>Simulium sp</i>	+
03600	<i>Oligochaeta</i>	+	79400	<i>Zavreliomyia sp</i>	+
08250	<i>Orconectes (Procericambarus) rusticus</i>	+	79720	<i>Diamesa sp</i>	+
11130	<i>Baetis intercalaris</i>	+	83310	<i>Glyptotendipes (Heynotendipes) amplus</i>	+
11150	<i>Pseudocloeon propinquum</i>	+	83820	<i>Microtendipes "caelum" (sensu Simpson &amp; Bode, 1980)</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	84210	<i>Paratendipes albimanus or P. duplicatus</i>	+
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	85625	<i>Rheotanytarsus sp</i>	+
12200	<i>Isonychia sp</i>	+	85720	<i>Stempellinella fimbriata</i>	+
13000	<i>Leucrocuta sp</i>	+	85800	<i>Tanytarsus sp</i>	+
13400	<i>Stenacron sp</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	+
13521	<i>Stenonema femoratum</i>	+	87540	<i>Hemerodromia sp</i>	+
13561	<i>Maccaffertium pulchellum</i>	+	96900	<i>Ferrissia sp</i>	+
13590	<i>Maccaffertium vicarium</i>	+	98600	<i>Sphaerium sp</i>	+
17200	<i>Caenis sp</i>	+			
18600	<i>Ephemera sp</i>	+	No. Quantitative Taxa: 0		Total Taxa: 58
21200	<i>Calopteryx sp</i>	+	No. Qualitative Taxa: 58		ICI:
22300	<i>Argia sp</i>	+	Number of Organisms: 0		Qual EPT: 25
33100	<i>Leuctra sp</i>	+			
34120	<i>Acroneuria carolinensis</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
47600	<i>Sialis sp</i>	+			
48410	<i>Corydalus cornutus</i>	+			
48600	<i>Nigronia sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
53501	<i>Hydroptilidae</i>	+			
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59970	<i>Petrophila sp</i>	+			
60300	<i>Dineutus sp</i>	+			
63300	<i>Hydroporini</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69275	<i>Optioservus trivittatus</i>	+			
69400	<i>Stenelmis sp</i>	+			
70600	<i>Antocha sp</i>	+			
72700	<i>Anopheles sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Sunfish Creek  
at ford, upst. Cameron

Collection Date: 08/25/2009 River Code: 06-700 RM: 9.30

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	4 +	69200	<i>Optioservus sp</i>	16
03360	<i>Plumatella sp</i>	+	69400	<i>Stenelmis sp</i>	12 +
03600	<i>Oligochaeta</i>	33 +	71800	<i>Pseudolimnophila sp</i>	1
06201	<i>Hyalella azteca</i>	+	72340	<i>Dixella sp</i>	+
08250	<i>Orconectes (Procericambarus) rusticus</i>	1 +	72700	<i>Anopheles sp</i>	+
08601	<i>Hydrachnidia</i>	16	74100	<i>Simulium sp</i>	+
11014	<i>Acentrella turbida</i>	1 +	74501	<i>Ceratopogonidae</i>	24
11120	<i>Baetis flavistriga</i>	8	77500	<i>Conchapelopia sp</i>	97 +
11130	<i>Baetis intercalaris</i>	375 +	77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	16
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	77800	<i>Helopelopia sp</i>	16
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	80351	<i>Corynoneura n.sp 1</i>	8
12200	<i>Isonychia sp</i>	18 +	80410	<i>Cricotopus (C.) sp</i>	32
13000	<i>Leucrocuta sp</i>	3 +	80420	<i>Cricotopus (C.) bicinctus</i>	16 +
13400	<i>Stenacron sp</i>	+	81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	+
13521	<i>Stenonema femoratum</i>	+	81250	<i>Nanocladius (N.) minimus</i>	16
13561	<i>Maccaffertium pulchellum</i>	121 +	81690	<i>Paratrachocladius sp</i>	16
13590	<i>Maccaffertium vicarium</i>	3	82101	<i>Thienemanniella taurocapita</i>	8
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	+	82820	<i>Cryptochironomus sp</i>	+
15501	<i>Ephemerellidae</i>	8	83820	<i>Microtendipes "caelum" (sensu Simpson &amp; Bode, 1980)</i>	97 +
17200	<i>Caenis sp</i>	65 +	83840	<i>Microtendipes pedellus group</i>	48
22300	<i>Argia sp</i>	+	83900	<i>Nilothauma sp</i>	+
23909	<i>Boyeria vinosa</i>	+	84155	<i>Paralauterborniella nigrohalteralis</i>	16
25510	<i>Stylogomphus albistylus</i>	+	84210	<i>Paratendipes albimanus or P. duplicatus</i>	16 +
34120	<i>Acroneuria carolinensis</i>	1 +	84450	<i>Polypedilum (Uresipedilum) flavum</i>	48 +
34130	<i>Acroneuria frisoni</i>	+	84460	<i>Polypedilum (P.) fallax group</i>	48
48410	<i>Corydalus cornutus</i>	1 +	84470	<i>Polypedilum (P.) illinoense</i>	+
48620	<i>Nigronia serricornis</i>	1	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	32
50315	<i>Chimarra obscura</i>	155 +	85625	<i>Rheotanytarsus sp</i>	853 +
51400	<i>Nyctiophylax sp</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	48
51600	<i>Polycentropus sp</i>	+	87540	<i>Hemerodromia sp</i>	55
52200	<i>Cheumatopsyche sp</i>	94 +	95100	<i>Physella sp</i>	+
52430	<i>Ceratopsyche morosa group</i>	222 +	96900	<i>Ferrissia sp</i>	+
52540	<i>Hydropsyche dicantha</i>	39 +	98200	<i>Pisidium sp</i>	1
53800	<i>Hydroptila sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	18 +			
59970	<i>Petrophila sp</i>	+			
63300	<i>Hydroporini</i>	+			
65501	<i>Hydrophilidae</i>	1			
67800	<i>Tropisternus sp</i>	+			
68075	<i>Psephenus herricki</i>	3 +			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	1 +			
69000	<i>Microcyloepus pusillus</i>	2			

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No. Quantitative Taxa: 49      Total Taxa: 77  
 No. Qualitative Taxa: 53      ICI: 58  
 Number of Organisms: 2734      Qual EPT: 22



**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Sunfish Creek

Collection Date: 08/24/2009 River Code: 06-700 RM: 7.10

upst. St. Rt. 78, dst. Cameron

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	2	69200	<i>Optioservus sp</i>	1 +
03360	<i>Plumatella sp</i>	+	69400	<i>Stenelmis sp</i>	30 +
03600	<i>Oligochaeta</i>	2	70600	<i>Antocha sp</i>	1
08601	<i>Hydrachnidia</i>	8	71100	<i>Hexatoma sp</i>	+
11014	<i>Acentrella turbida</i>	+	72700	<i>Anopheles sp</i>	+
11130	<i>Baetis intercalaris</i>	325 +	74100	<i>Simulium sp</i>	+
11150	<i>Pseudocloeon propinquum</i>	+	74501	<i>Ceratopogonidae</i>	16 +
11645	<i>Procloeon sp</i>	+	77500	<i>Conchapelopia sp</i>	60 +
12200	<i>Isonychia sp</i>	106 +	77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	+
13000	<i>Leucrocuta sp</i>	+	77800	<i>Helopelopia sp</i>	+
13400	<i>Stenacron sp</i>	+	78450	<i>Nilotanypus fimbriatus</i>	30
13510	<i>Maccaffertium exiguum</i>	18	80370	<i>Corynoneura lobata</i>	16
13561	<i>Maccaffertium pulchellum</i>	90	81280	<i>Nanocladius (Plecopteracoluthus) downesi</i>	+
13590	<i>Maccaffertium vicarium</i>	36 +	82220	<i>Tvetenia discoloripes group</i>	+
15501	<i>Ephemerellidae</i>	16	82730	<i>Chironomus (C.) decorus group</i>	+
16700	<i>Tricorythodes sp</i>	2	82820	<i>Cryptochironomus sp</i>	+
17200	<i>Caenis sp</i>	111 +	83840	<i>Microtendipes pedellus group</i>	30 +
18600	<i>Ephemera sp</i>	1	84210	<i>Paratendipes albimanus or P. duplicatus</i>	151 +
18750	<i>Hexagenia limbata</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	151 +
22001	<i>Coenagrionidae</i>	+	84700	<i>Stenochironomus sp</i>	+
22300	<i>Argia sp</i>	+	85263	<i>Cladotanytarsus vanderwulpi group Type 3</i>	60
23905	<i>Boyeria grafiana</i>	+	85625	<i>Rheotanytarsus sp</i>	2416 +
24900	<i>Gomphus sp</i>	17 +	85752	<i>Sublettea coffmani</i>	30
26700	<i>Macromia sp</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	151 +
27400	<i>Neurocordulia sp</i>	+	86401	<i>Atherix lantha</i>	2
34130	<i>Acroneuria frisoni</i>	+	87540	<i>Hemerodromia sp</i>	44
43300	<i>Ranatra sp</i>	+	96900	<i>Ferrissia sp</i>	1
48410	<i>Corydalus cornutus</i>	35 +	97601	<i>Corbicula fluminea</i>	3
50315	<i>Chimarra obscura</i>	66 +			
51400	<i>Nyctiophylax sp</i>	+			
51600	<i>Polycentropus sp</i>	+	No. Quantitative Taxa: 38		Total Taxa: 72
52200	<i>Cheumatopsyche sp</i>	149 +	No. Qualitative Taxa: 53		ICI: 54
52430	<i>Ceratopsyche morosa group</i>	227 +	Number of Organisms: 4428		Qual EPT: 19
52440	<i>Ceratopsyche slossonae</i>	1			
52540	<i>Hydropsyche dicantha</i>	1			
53800	<i>Hydroptila sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	22 +			
59970	<i>Petrophila sp</i>	+			
60300	<i>Dineutus sp</i>	+			
63300	<i>Hydroporini</i>	+			
67800	<i>Tropisternus sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			

Ohio EPA/DSW Ecological Assessment Section  
 Macroinvertebrate Collection

Site: Sunfish Creek  
 upst. Negro Run

Collection Date: 08/24/2009 River Code: 06-700 RM: 2.80

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03360	<i>Plumatella sp</i>	5 +	68901	<i>Macronychus glabratus</i>	1 +
03600	<i>Oligochaeta</i>	+	69275	<i>Optioservus trivittatus</i>	+
06201	<i>Hyaella azteca</i>	+	69400	<i>Stenelmis sp</i>	1 +
08250	<i>Orconectes (Procericambarus) rusticus</i>	+	72700	<i>Anopheles sp</i>	+
11014	<i>Acentrella turbida</i>	+	74100	<i>Simulium sp</i>	+
11130	<i>Baetis intercalaris</i>	1 +	74501	<i>Ceratopogonidae</i>	4 +
11150	<i>Pseudocloeon propinquum</i>	+	77120	<i>Ablabesmyia mallochi</i>	20
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	77130	<i>Ablabesmyia rhamphe group</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	3 +	77500	<i>Conchapelopia sp</i>	60 +
12200	<i>Isonychia sp</i>	2 +	77800	<i>Helopelopia sp</i>	20
13000	<i>Leucrocuta sp</i>	+	78140	<i>Labrundinia pilosella</i>	20
13100	<i>Nixe sp</i>	+	78350	<i>Meropelopia sp</i>	+
13400	<i>Stenacron sp</i>	57 +	80370	<i>Corynoneura lobata</i>	68
13521	<i>Stenonema femoratum</i>	+	80410	<i>Cricotopus (C.) sp</i>	139
13561	<i>Maccaffertium pulchellum</i>	355 +	80420	<i>Cricotopus (C.) bicinctus</i>	40
13570	<i>Maccaffertium terminatum</i>	2	82820	<i>Cryptochironomus sp</i>	+
13590	<i>Maccaffertium vicarium</i>	57 +	83002	<i>Dicrotendipes modestus</i>	20
16700	<i>Tricorythodes sp</i>	4	83040	<i>Dicrotendipes neomodestus</i>	139
17200	<i>Caenis sp</i>	45 +	83900	<i>Nilothauma sp</i>	20 +
18750	<i>Hexagenia limbata</i>	+	84060	<i>Parachironomus pectinatellae</i>	40
22001	<i>Coenagrionidae</i>	+	84155	<i>Paralauterborniella nigrohalteralis</i>	+
22300	<i>Argia sp</i>	+	84210	<i>Paratendipes albimanus or P. duplicatus</i>	+
34130	<i>Acroneuria frisoni</i>	2	84315	<i>Phaenopsectra flavipes</i>	20 +
43300	<i>Ranatra sp</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	40 +
47600	<i>Sialis sp</i>	+	84460	<i>Polypedilum (P.) fallax group</i>	20 +
48410	<i>Corydalus cornutus</i>	+	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	20
48620	<i>Nigronia serricornis</i>	1	85615	<i>Rheotanytarsus pellucidus</i>	20
50315	<i>Chimarra obscura</i>	4 +	85625	<i>Rheotanytarsus sp</i>	119 +
51400	<i>Nyctiophylax sp</i>	+	85720	<i>Stempellinella fimbriata</i>	20
51600	<i>Polycentropus sp</i>	+	85752	<i>Sublettea coffmani</i>	20
52200	<i>Cheumatopsyche sp</i>	14 +	85800	<i>Tanytarsus sp</i>	79 +
52430	<i>Ceratopsyche morosa group</i>	+	85802	<i>Tanytarsus curticornis</i>	20
52540	<i>Hydropsyche dicantha</i>	+	85815	<i>Tanytarsus glabrescens group sp 1</i>	20 +
53800	<i>Hydroptila sp</i>	30 +	85821	<i>Tanytarsus glabrescens group sp 7</i>	617
57900	<i>Pycnopsyche sp</i>	+	87540	<i>Hemerodromia sp</i>	1
59120	<i>Ceraclea flava complex</i>	+	95100	<i>Physella sp</i>	1 +
59500	<i>Oecetis sp</i>	+	96900	<i>Ferrissia sp</i>	2 +
59970	<i>Petrophila sp</i>	+	97601	<i>Corbicula fluminea</i>	+
60300	<i>Dineutus sp</i>	+			
60900	<i>Peltodytes sp</i>	+	No. Quantitative Taxa: 45 Total Taxa: 82		
63300	<i>Hydroporini</i>	+	No. Qualitative Taxa: 62 ICI: 50		
68075	<i>Psephenus herricki</i>	+	Number of Organisms: 2194 Qual EPT: 24		
68130	<i>Helichus sp</i>	1 +			
68601	<i>Ancyronyx variegata</i>	+			

**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Piney Fork  
Kings Rd.

Collection Date: 07/21/2009 River Code: 06-704 RM: 4.20

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03360	<i>Plumatella sp</i>	+			
03600	<i>Oligochaeta</i>	+	No. Quantitative Taxa: 0		Total Taxa: 42
06201	<i>Hyaella azteca</i>	+	No. Qualitative Taxa: 42		ICI:
08601	<i>Hydrachnidia</i>	+	Number of Organisms: 0		Qual EPT: 19
12200	<i>Isonychia sp</i>	+			
13000	<i>Leucrocuta sp</i>	+			
13400	<i>Stenacron sp</i>	+			
13521	<i>Stenonema femoratum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
15000	<i>Paraleptophlebia sp</i>	+			
17200	<i>Caenis sp</i>	+			
18600	<i>Ephemera sp</i>	+			
23905	<i>Boyeria grafiana</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
27500	<i>Somatochlora sp</i>	+			
33100	<i>Leuctra sp</i>	+			
34120	<i>Acroneuria carolinensis</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
45300	<i>Sigara sp</i>	+			
47600	<i>Sialis sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
63300	<i>Hydroporini</i>	+			
68075	<i>Psephenus herricki</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
71910	<i>Tipula abdominalis</i>	+			
77800	<i>Helopelopia sp</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84750	<i>Stictochironomus sp</i>	+			
87540	<i>Hemerodromia sp</i>	+			
95100	<i>Physella sp</i>	+			
96900	<i>Ferrissia sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Piney Fork

Collection Date: 08/31/2009 River Code: 06-704 RM: 0.30

upst. Co. Rd. 29, near mouth

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+	60400	<i>Gyrinus sp</i>	+
01900	<i>Nemertea</i>	+	63300	<i>Hydroporini</i>	+
03600	<i>Oligochaeta</i>	+	68075	<i>Psephenus herricki</i>	8 +
06201	<i>Hyalella azteca</i>	+	68130	<i>Helichus sp</i>	+
07810	<i>Cambarus (Cambarus) carinirostris</i>	+	68708	<i>Dubiraphia vittata group</i>	+
08250	<i>Orconectes (Procericambarus) rusticus</i>	+	69400	<i>Stenelmis sp</i>	+
11012	<i>Acentrella nadineae</i>	+	70600	<i>Antocha sp</i>	1 +
11014	<i>Acentrella turbida</i>	+	71100	<i>Hexatoma sp</i>	+
11018	<i>Acerpenna macdunnoughi</i>	2	72340	<i>Dixella sp</i>	+
11120	<i>Baetis flavistriga</i>	49	72700	<i>Anopheles sp</i>	+
11130	<i>Baetis intercalaris</i>	29 +	74100	<i>Simulium sp</i>	+
11150	<i>Pseudocloeon propinquum</i>	+	77120	<i>Ablabesmyia mallochi</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	77500	<i>Conchapelopia sp</i>	112 +
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	78450	<i>Nilotanytus fimbriatus</i>	37
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	79400	<i>Zavreliomyia sp</i>	+
12200	<i>Isonychia sp</i>	1 +	80370	<i>Corynoneura lobata</i>	472
13000	<i>Leucrocuta sp</i>	29 +	80410	<i>Cricotopus (C.) sp</i>	19
13400	<i>Stenacron sp</i>	+	81650	<i>Parametriocnemus sp</i>	19
13521	<i>Stenonema femoratum</i>	2 +	81825	<i>Rheocricotopus (Psilocricotopus) robacki</i>	19
13590	<i>Maccaffertium vicarium</i>	94 +	83040	<i>Dicrotendipes neomodestus</i>	19 +
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	+	83820	<i>Microtendipes "caelum" (sensu Simpson &amp; Bode, 1980)</i>	+
16200	<i>Eurylophella sp</i>	4			
17200	<i>Caenis sp</i>	8 +	83840	<i>Microtendipes pedellus group</i>	19 +
21200	<i>Calopteryx sp</i>	+	84210	<i>Paratendipes albimanus or P. duplicatus</i>	+
23905	<i>Boyeria grafiana</i>	+	84440	<i>Polypedilum (Uresipedilum) aviceps</i>	+
24900	<i>Gomphus sp</i>	+	84460	<i>Polypedilum (P.) fallax group</i>	19
33100	<i>Leuctra sp</i>	+	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	19
34120	<i>Acroneuria carolinensis</i>	+	84750	<i>Stictochironomus sp</i>	+
34130	<i>Acroneuria frisoni</i>	8 +	85625	<i>Rheotanytarsus sp</i>	1081 +
45100	<i>Palmacorixa sp</i>	+	85720	<i>Stempellinella fimbriata</i>	37
48620	<i>Nigronia serricornis</i>	+	85752	<i>Sublettea coffmani</i>	37
50301	<i>Chimarra aterrima</i>	+	85800	<i>Tanytarsus sp</i>	112
51400	<i>Nyctiophylax sp</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	19
51600	<i>Polycentropus sp</i>	+	85840	<i>Tanytarsus sepp</i>	19
52200	<i>Cheumatopsyche sp</i>	11 +	86401	<i>Atherix lantha</i>	+
52430	<i>Ceratopsyche morosa group</i>	6 +	87515	<i>Clinocera (C.) sp</i>	+
52440	<i>Ceratopsyche slossonae</i>	+	87540	<i>Hemerodromia sp</i>	32
53501	<i>Hydroptilidae</i>	+	96900	<i>Ferrissia sp</i>	+
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+	No. Quantitative Taxa: 31		Total Taxa: 81
58505	<i>Helicopsyche borealis</i>	+	No. Qualitative Taxa: 65		ICI: 44
59310	<i>Mystacides sepulchralis</i>	+	Number of Organisms: 2343		Qual EPT: 29
59730	<i>Triaenodes melaca</i>	+			
59970	<i>Petrophila sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Baker Fork  
adj. Twp. Rd. 81

Collection Date: 08/05/2009 River Code: 06-708 RM: 1.20

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03600	<i>Oligochaeta</i>	+	No. Quantitative Taxa: 0		Total Taxa: 44
06201	<i>Hyaella azteca</i>	+	No. Qualitative Taxa: 44		ICI:
08250	<i>Orconectes (Procericambarus) rusticus</i>	+	Number of Organisms: 0		Qual EPT: 17
11120	<i>Baetis flavistriga</i>	+			
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+			
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+			
12200	<i>Isonychia sp</i>	+			
13000	<i>Leucrocuta sp</i>	+			
13400	<i>Stenacron sp</i>	+			
13521	<i>Stenonema femoratum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
17200	<i>Caenis sp</i>	+			
18708	<i>Hexagenia bilineata</i>	+			
33100	<i>Leuctra sp</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
44501	<i>Corixidae</i>	+			
47600	<i>Sialis sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
63300	<i>Hydroporini</i>	+			
67500	<i>Laccobius sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
77500	<i>Conchapelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
82885	<i>Cryptotendipes pseudotener</i>	+			
84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+			
84750	<i>Stictochironomus sp</i>	+			
85261	<i>Cladotanytarsus vanderwulpi group Type 1</i>	+			
85500	<i>Paratanytarsus sp</i>	+			
85800	<i>Tanytarsus sp</i>	+			
86100	<i>Chrysops sp</i>	+			
95100	<i>Physella sp</i>	+			
96900	<i>Ferrissia sp</i>	+			
98200	<i>Pisidium sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Mill Creek

Collection Date: 08/12/2009 River Code: 06-016 RM: 0.70

Twp. Rd. 66

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+	No. Quantitative Taxa: 0		Total Taxa: 43
11120	<i>Baetis flavistriga</i>	+	No. Qualitative Taxa: 43		ICI:
11130	<i>Baetis intercalaris</i>	+	Number of Organisms: 0		Qual EPT: 18
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+			
12200	<i>Isonychia sp</i>	+			
13400	<i>Stenacron sp</i>	+			
13521	<i>Stenonema femoratum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
14600	<i>Choroterpes sp</i>	+			
17200	<i>Caenis sp</i>	+			
18600	<i>Ephemera sp</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
33100	<i>Leuctra sp</i>	+			
34120	<i>Acroneuria carolinensis</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
47600	<i>Sialis sp</i>	+			
48410	<i>Corydalus cornutus</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
59700	<i>Triaenodes sp</i>	+			
66150	<i>Crenitis sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69225	<i>Optioservus fastiditus</i>	+			
69400	<i>Stenelmis sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
83900	<i>Nilothauma sp</i>	+			
84440	<i>Polypedilum (Uresipedilum) aviceps</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
85840	<i>Tanytarsus sepp</i>	+			
86200	<i>Tabanus sp</i>	+			
95100	<i>Physella sp</i>	+			
96900	<i>Ferrissia sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section  
Macroinvertebrate Collection**

Site: Narrows Run  
upst. St. Rt. 7

Collection Date: 08/12/2009 River Code: 06-022 RM: 0.10

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03360	<i>Plumatella sp</i>	+			
03600	<i>Oligochaeta</i>	+			
05800	<i>Caecidotea sp</i>	+			
11120	<i>Baetis flavistriga</i>	+			
11125	<i>Pseudocloeon frondale</i>	+			
11130	<i>Baetis intercalaris</i>	+			
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+			
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+			
12200	<i>Isonychia sp</i>	+			
13521	<i>Stenonema femoratum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
17200	<i>Caenis sp</i>	+			
18600	<i>Ephemera sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
23905	<i>Boyeria grafiana</i>	+			
33100	<i>Leuctra sp</i>	+			
34120	<i>Acroneuria carolinensis</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
66200	<i>Cymbiodyta sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
69200	<i>Optioservus sp</i>	+			
69400	<i>Stenelmis sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
80370	<i>Corynoneura lobata</i>	+			
81690	<i>Paratrichocladius sp</i>	+			
84300	<i>Phaenopsectra obediens group</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
85821	<i>Tanytarsus glabrescens group sp 7</i>	+			

No. Quantitative Taxa: 0                      Total Taxa: 37

No. Qualitative Taxa: 37                      ICI:

Number of Organisms: 0                      Qual EPT: 15

Appendix Table 9. Invertebrate Community Index (ICI) metrics and scores for sampling locations in the Sunfish Creek watershed and direct Ohio River tributaries, 2009. page A70

River Mile	Drainage Area (sq mi)	Number of				Percent:					Qual. EPT	Eco-region	ICI	
		Total Taxa	Mayfly Taxa	Caddisfly Taxa	Dipteran Taxa	Mayflies	Caddisflies	Tany-tarsini	Other Dipt/NI	Tolerant Organisms				
<b>Opossum Creek (06-033)</b>														
Year: 2009														
2.20	22.2	42(6)	8(6)	4(6)	22(6)	20.4(4)	4.5(4)	10.5(2)	63.3(0)	10.6(4)	21(6)	4	44	
1.05	24.0	40(6)	5(4)	3(6)	23(6)	23.9(4)	2.2(2)	12.5(4)	59.2(2)	8.2(4)	20(6)	4	44	
<b>Sunfish Creek (06-700)</b>														
Year: 2009														
17.30	50.0	44(6)	8(6)	5(6)	22(6)	8.4(2)	20.1(6)	13.3(2)	55.6(2)	2.1(6)	24(6)	4	48	
9.30	79.0	49(6)	9(6)	5(6)	21(6)	22.0(4)	19.3(6)	33.0(6)	24.3(6)	3.5(6)	22(6)	4	58	
7.10	99.0	38(6)	9(6)	6(6)	14(4)	15.9(4)	10.5(4)	60.0(6)	11.7(6)	0.1(6)	19(6)	4	54	
2.80	103.0	45(6)	9(6)	3(4)	25(6)	24.0(4)	2.2(2)	41.7(6)	31.9(4)	2.9(6)	24(6)	4	50	
<b>Piney Fork (06-704)</b>														
Year: 2009														
0.30	15.3	31(4)	9(6)	2(4)	18(4)	9.3(2)	0.7(2)	55.7(6)	33.6(4)	0.8(6)	29(6)	4	44	



## APPENDIX 11 METHODS

All chemical, physical, and biological field, EPA laboratory, data processing, and data analysis methods and procedures adhere to those specified in the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (Ohio Environmental Protection Agency 2009), Manual of Laboratory Operating Procedures, Volumes I-IV (Ohio EPA 2002), Biological Criteria for the Protection of Aquatic Life, Volumes II-III (Ohio Environmental Protection Agency 1987b, 1989a, 1989b) including the 2008 updates, Qualitative Habitat Evaluation Index (QHEI); Rationale, Methods, and Application (Rankin 1989) for habitat assessment, and Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI) (Ohio Environmental Protection Agency 2006).

### Determining Use Attainment

Use attainment status is a term describing the degree to which environmental indicators are either above or below criteria specified by the Ohio Water Quality Standards (WQS; Ohio Administrative Code 3745-1). Assessing aquatic use attainment status involves a primary reliance on the Ohio EPA biological criteria (OAC 3745-1-07; Table 7-15). These are confined to ambient assessments and apply to rivers and streams outside of mixing zones. Numerical biological criteria are based on multimetric biological indices including the Index of Biotic Integrity (IBI) and modified Index of Well-Being (MIwb), indices measuring the response of the fish community, and the Invertebrate Community Index (ICI), which indicates the response of the macroinvertebrate community. Three attainment status results are possible at each sampling location - full, partial, or non-attainment. Full attainment means that all of the applicable indices meet the biocriteria. Partial attainment means that one or more of the applicable indices fails to meet the biocriteria. Non-attainment means that none of the applicable indices meet the biocriteria or one of the organism groups reflects poor or very poor performance. An aquatic life use attainment table is constructed based on the sampling results and is arranged from upstream to downstream and includes the sampling locations indicated by river mile, the applicable biological indices, the use attainment status (*i.e.*, full, partial, or non), the Qualitative Habitat Evaluation Index (QHEI), and a sampling location description. All biological results were compared to WWH or EWH biocriteria for the Western Allegheny Plateau ecoregion.

### Stream Habitat Evaluation

Physical habitat is evaluated using the Qualitative Habitat Evaluation Index (QHEI) developed by the Ohio EPA for streams and rivers in Ohio (Rankin 1989, 1995; Ohio EPA 2006). Various attributes of the available habitat are scored based on their overall importance to the establishment of viable, diverse aquatic faunas. Evaluations of type and quality of substrate, amount of instream cover, channel morphology, extent of riparian canopy, pool and riffle development and quality, and stream gradient are among the metrics used to evaluate the characteristics of a stream segment, not just the characteristics of a single sampling site. As such, individual sites may have much poorer physical habitat due to a localized disturbance yet still support aquatic communities closely resembling those sampled at adjacent sites with better habitat, provided water quality conditions are similar. QHEI scores from hundreds of segments around the state have indicated that values higher than 60 were generally conducive to the establishment of warmwater faunas while those which scored in excess of 75-80 often typify habitat conditions which have the ability to support exceptional faunas.

### Sediment and Surface Water Assessment

Fine grain sediments were collected in the upper four inches of bottom material at each sediment sampling location using decontaminated stainless steel scoops. Sediment samples were mixed in stainless steel pans, transferred into glass jars with teflon lined lids, placed on ice (to maintain 4°C) in a cooler, and shipped to the Ohio EPA lab. Sediment data are reported on a dry weight basis. Decontamination of sediment sampling equipment followed the procedures outlined in the Ohio EPA sediment sampling guidance manual (Ohio EPA 2001). Sediment evaluations were conducted using guidelines established in MacDonald *et al.* (2000), and *Ohio Sediment Reference Values (SRVs)* (Ohio EPA 2003). Surface water samples were collected 2-10 times from each location from the upper 12 inches of water during 2009. Collected water was preserved using appropriate methods, as outlined in the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (Ohio EPA 2009). Bacteriological samples were collected four to nine times at each location. Bacteriological samples were collected directly from the stream into sterilized polyethylene containers, cooled to 4°C, and transported to the Ohio EPA laboratory for analysis within 6 hours of sample collection. All samples were analyzed for *E. coli* bacteria using

U.S.EPA approved methods. Surface water samples were evaluated using comparisons to Ohio Water Quality Standards criteria, reference conditions, or published literature.

### **Macroinvertebrate Community Assessment**

Macroinvertebrates were collected from artificial substrates and/ or from the natural habitats at the Sunfish Creek watershed sites. The artificial substrate collection provided quantitative data and consisted of a composite sample of five modified Hester-Dendy multiple-plate samplers colonized for six weeks. At the time of the artificial substrate collection, a qualitative multihabitat composite sample was also collected. This sampling effort consisted of an inventory of all observed macroinvertebrate taxa from the natural habitats at each site with no attempt to quantify populations other than notations on the predominance of specific taxa or taxa groups within major macrohabitat types (e.g., riffle, run, pool, margin). At some locations, only a qualitative multihabitat sample was collected. Detailed discussion of macroinvertebrate field and laboratory procedures is contained in Biological Criteria for the Protection of Aquatic Life: Volume III, Standardized Biological Field Sampling and Laboratory Methods for Assessing Fish and Macroinvertebrate Communities (Ohio EPA 1989a, 2008b).

### **Fish Community Assessment**

Fish were sampled once or twice at each site using pulsed DC electrofishing boat, wading or headwater methods. Electrofishing sampling distances ranged between 120 and 210 meters for wading/headwater sites and 500-650 meters for the boat site. Fish were processed in the field, and included identifying each individual to species, counting, weighing (wading/boat sites only), and recording any external abnormalities. Discussion of the fish community assessment methodology used in this report is contained in Biological Criteria for the Protection of Aquatic Life: Volume III, Standardized Biological Field Sampling and Laboratory Methods for Assessing Fish and Macroinvertebrate Communities (Ohio EPA 1989a, 2008b).

### **Recreation Use Assessment**

Recreation use attainment was determined using newly adopted criteria that became effective on March 15, 2010. The newly adopted criteria (OAC 3745-1-07) resulted in several changes, which are noted below:

- 1) *E. coli* will be the only indicator organism used to evaluate recreation. The use of fecal coliform will be discontinued.
- 2) The recreation season will be May 1 – October 31 instead of ending on October 15.
- 3) Geometric mean content will be computed on a seasonal basis instead of monthly.
- 4) Geometric mean content will be the sole basis of use attainment status when two or more samples are taken.
- 5) Primary Contact Recreation (PCR) will be divided into three separate categories each with specific numerical criteria: Class A – high use paddling streams, Class B – most typical streams and Class C - historically channelized streams that drain less than 3.1 square miles.

### **Field Instrument Calibration**

Field instruments are calibrated using manufacturer recommended procedures along with procedures noted in the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (2009) and Biological Criteria for the Protection of Aquatic Life, Volume III (1989b). pH, conductivity, and dissolved oxygen meters were calibrated daily before the start of field work. Laser rangefinders, used to measure sampling distance, were calibrated once at the Groveport Field Facility prior to summer field sampling activities. Fish weighing scales were checked against certified weights once per week during the field season. Calibration of pH, conductivity, dissolved oxygen, fish weighing scales, and laser rangefinders were recorded in logbooks maintained by Ohio EPA, Ecological Assessment Section and Southeast District Office.

### **Causal Associations**

Using the results, conclusions, and recommendations of this report requires an understanding of the methodology used to determine the use attainment status and assigning probable causes and sources of impairment. The identification of impairment in rivers and streams is straightforward - the numerical biological criteria are used to judge aquatic life use attainment and impairment (partial and nonattainment). The rationale for using the biological criteria, within a weight of evidence framework, has been extensively discussed elsewhere (Karr *et al.* 1986; Karr 1991; Ohio EPA 1987a,b; Yoder 1989; Miner and Borton 1991; Yoder 1991; Yoder 1995). Describing the causes and sources associated with observed impairments relies

on an interpretation of multiple lines of evidence including water chemistry data, sediment data, habitat data, effluent data, land use data, and biological results (Yoder and Rankin 1995). Thus the assignment of principal causes and sources of impairment in this report represent the association of impairments (based on response indicators) with stressor and exposure indicators. The reliability of the identification of probable causes and sources is increased where many such prior associations have been identified, or have been experimentally or statistically linked together. The ultimate measure of success in water resource management is the restoration of lost or damaged ecosystem attributes including aquatic community structure and function. While there have been criticisms of misapplying the metaphor of ecosystem "health" compared to human patient "health" (Suter 1993), in this document we are referring to the process for evaluating biological integrity and causes or sources associated with observed impairments, not whether human health and ecosystem health are analogous concepts.

### NOTICE TO USERS

Ohio EPA incorporated biological criteria into the Ohio Water Quality Standards (WQS; Ohio Administrative Code 3745-1) regulations in February 1990 (effective May 1990). These criteria consist of numeric values for the Index of Biotic Integrity (IBI) and Modified Index of Well-Being (MIwb), both of which are based on fish assemblage data, and the Invertebrate Community Index (ICI), which is based on macroinvertebrate assemblage data. Criteria for each index are specified for each of Ohio's five ecoregions (as described by Omernik 1987), and are further organized by organism group, index, site type, and aquatic life use designation. These criteria, along with the existing chemical and whole effluent toxicity evaluation methods and criteria, figure prominently in the monitoring and assessment of Ohio's surface water resources.

The following documents support the use of biological criteria by outlining the rationale for using biological information, the methods by which the biocriteria were derived and calculated, the field methods by which sampling must be conducted, and the process for evaluating results:

- Ohio Environmental Protection Agency. 1987a. Biological criteria for the protection of aquatic life: Volume I. The role of biological data in water quality assessment. Div. Water Qual. Monit. & Assess., Surface Water Section, Columbus, Ohio.
- Ohio Environmental Protection Agency. 1987b. Biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Div. Water Qual. Monit. & Assess., Surface Water Section, Columbus, Ohio.
- Ohio Environmental Protection Agency. 1989b. Addendum to Biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Div. Water Qual. Plan. & Assess., Ecol. Assess. Sect., Columbus, Ohio.
- Ohio Environmental Protection Agency. 1989c. Biological criteria for the protection of aquatic life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities. Div. Water Quality Plan. & Assess., Ecol. Assess. Sect., Columbus, Ohio.
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In addition to the preceding guidance documents, the following publications by the Ohio EPA should also be consulted as they present supplemental information and analyses used by the Ohio EPA to implement the biological criteria.

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Yoder, C.O. 1995. Policy issues and management applications for biological criteria, pp. 327-344. in W. Davis and T. Simon (eds.). Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making. Lewis Publishers, Boca Raton, FL.

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These documents and this report may be obtained by writing to:

Ohio EPA, Division of Surface Water  
Ecological Assessment Section  
4675 Homer Ohio Lane  
Groveport, Ohio 43125  
(614) 836-8786

or

[http://www.epa.ohio.gov/dsw/document\\_index/psdindx.aspx](http://www.epa.ohio.gov/dsw/document_index/psdindx.aspx)

## BACKGROUND

### *What is a Biological and Water Quality Survey?*

A biological and water quality survey, or “biosurvey”, is an interdisciplinary monitoring effort coordinated on a waterbody specific or watershed scale. This effort may involve a relatively simple setting focusing on one or two small streams, one or two principal stressors, and a handful of sampling sites or a much more complex effort including entire drainage basins, multiple and overlapping stressors, and tens of sites. Each year Ohio EPA conducts biosurveys in 4-5 watersheds study areas with an aggregate total of 250-300 sampling sites.

The Ohio EPA employs biological, chemical, and physical monitoring and assessment techniques in biosurveys in order to meet three major objectives: 1) determine the extent to which use designations assigned in the Ohio Water Quality Standards (WQS) are either attained or not attained; 2) determine if use designations assigned to a given water body are appropriate and attainable; and 3) determine if any changes in key ambient biological, chemical, or physical indicators have taken place over time, particularly before and after the implementation of point source pollution controls or best management practices. The data gathered by a biosurvey is processed, evaluated, and synthesized in a biological and water quality report. Each biological and water quality study contains a summary of major findings and recommendations for revisions to WQS, future monitoring needs, or other actions which may be needed to resolve existing impairment of designated uses. While the principal focus of a biosurvey is on the status of aquatic life uses, the status of other uses such as recreation and water supply, as well as human health concerns, are also addressed.

The findings and conclusions of a biological and water quality study may factor into regulatory actions taken by Ohio EPA (e.g., NPDES permits, Director’s Orders, the Ohio Water Quality Standards [OAC 3745-1], Water Quality Permit Support Documents [WQPSDs]), and are eventually incorporated into State Water Quality Management Plans, the Ohio Nonpoint Source Assessment, and the biennial Integrated Water Quality Monitoring and Assessment Report (305[b] and 303[d]).

### *Hierarchy of Indicators*

A carefully conceived ambient monitoring approach, using cost-effective indicators consisting of ecological, chemical, and toxicological measures, can ensure that all relevant pollution sources are judged objectively on the basis of environmental results. Ohio EPA relies on a tiered approach in attempting to link the results of administrative activities with true environmental measures. This integrated approach includes a hierarchical continuum from administrative to true environmental indicators (Figure 1). The six “levels” of indicators include: 1) actions taken by regulatory agencies (permitting, enforcement, grants); 2) responses by the regulated community (treatment works, pollution prevention); 3) changes in discharged quantities (pollutant loadings); 4) changes in ambient conditions (water quality, habitat); 5) changes in uptake and/or

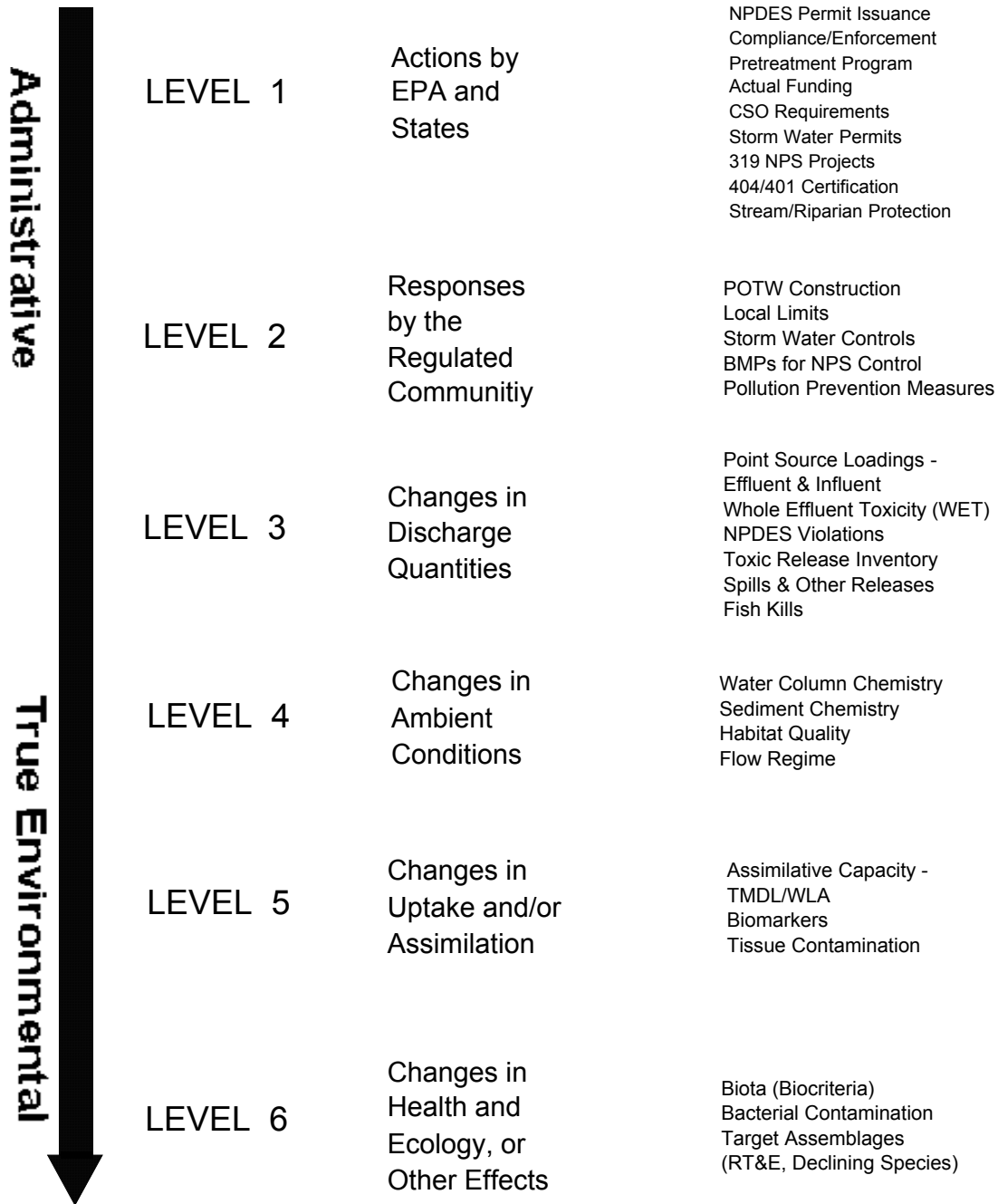


Figure 1. Hierarchy of administrative and environmental indicators which can be used for water quality management activities such as monitoring and assessment, reporting, and the evaluation of overall program effectiveness. This is patterned after a model developed by the U.S. EPA.

assimilation (tissue contamination, biomarkers, wasteload allocation); and, 6) changes in health, ecology, or other effects (ecological condition, pathogens). In this process the results of administrative activities (levels 1 and 2) can be linked to efforts to improve water quality (levels 3, 4, and 5) which should translate into the environmental “results” (level 6). Thus, the aggregate effect of billions of dollars spent on water pollution control since the early 1970s can now be determined with quantifiable measures of environmental condition. Superimposed on this hierarchy is the concept of stressor, exposure, and response indicators. *Stressor* indicators generally include activities which have the potential to degrade the aquatic environment such as pollutant discharges (permitted and unpermitted), land use effects, and habitat modifications. *Exposure* indicators are those which measure the effects of stressors and can include whole effluent toxicity tests, tissue residues, and biomarkers, each of which provides evidence of biological exposure to a stressor or bioaccumulative agent. *Response* indicators are generally composite measures of the cumulative effects of stress and exposure and include the more direct measures of community and population response that are represented here by the biological indices which comprise Ohio’s biological criteria. Other response indicators could include target assemblages, *i.e.*, rare, threatened, endangered, special status, and declining species or bacterial levels which serve as surrogates for the recreation uses. These indicators represent the essential technical elements for watershed-based management approaches. The key, however, is to use the different indicators *within* the roles which are most appropriate for each.

Describing the causes and sources associated with observed impairments revealed by the biological criteria and linking this with pollution sources involves an interpretation of multiple lines of evidence including water chemistry data, sediment data, habitat data, effluent data, biomonitoring results, land use data, and biological response signatures within the biological data itself. Thus the assignment of principal causes and sources of impairment represents the association of impairments (defined by response indicators) with stressor and exposure indicators. The principal reporting venue for this process on a watershed or subbasin scale is a biological and water quality report. These reports then provide the foundation for aggregated assessments such as the Integrated Water Quality Monitoring and Assessment Report (305[b] and 303[d]), the Ohio Nonpoint Source Assessment, and other technical bulletins.

#### *Ohio Water Quality Standards: Designated Aquatic Life Use*

The Ohio Water Quality Standards (WQS; Ohio Administrative Code 3745-1) consist of designated uses and chemical, physical, and biological criteria designed to represent measurable properties of the environment that are consistent with the goals specified by each use designation. Use designations consist of two broad groups, aquatic life and non-aquatic life uses. In applications of the Ohio WQS to the management of water resource issues in Ohio’s rivers and streams, the aquatic life use criteria frequently result in the most stringent protection and restoration requirements, hence their emphasis in biological and water quality reports. Also, an emphasis on protecting for aquatic life generally results in water quality suitable for all uses. The five different aquatic life uses currently defined in the Ohio WQS are described as follows:

- 1) *Warmwater Habitat (WWH)* - this use designation defines the “typical” warmwater assemblage of aquatic organisms for Ohio rivers and streams; *this use represents the principal restoration target for the majority of water resource management efforts in Ohio.*
- 2) *Exceptional Warmwater Habitat (EWH)* - this use designation is reserved for waters which support “unusual and exceptional” assemblages of aquatic organisms which are characterized by a high diversity of species, particularly those which are highly intolerant and/or rare, threatened, endangered, or special status (*i.e.*, declining species); *this designation represents a protection goal for water resource management efforts dealing with Ohio’s best water resources.*
- 3) *Cold-water Habitat (CWH)* - this use is intended for waters which support assemblages of cold water organisms and/or those which are stocked with salmonids with the intent of providing a put-and-take fishery on a year round basis which is further sanctioned by the Ohio DNR, Division of Wildlife; this use should not be confused with the Seasonal Salmonid Habitat (SSH) use which applies to the Lake Erie tributaries which support periodic “runs” of salmonids during the spring, summer, and/or fall.

4) *Modified Warmwater Habitat (MWH)* - this use applies to streams and rivers which have been subjected to extensive, maintained, and essentially permanent hydromodifications such that the biocriteria for the WWH use are not attainable *and where the activities have been sanctioned by state or federal law*; the representative aquatic assemblages are generally composed of species which are tolerant to low dissolved oxygen, silt, nutrient enrichment, and poor quality habitat.

5) *Limited Resource Water (LRW)* - this use applies to small streams (usually <3 mi<sup>2</sup> drainage area) and other water courses which have been irretrievably altered to the extent that no appreciable assemblage of aquatic life can be supported; such waterways generally include small streams in extensively urbanized areas, those which lie in watersheds with extensive drainage modifications, those which completely lack water on a recurring annual basis (*i.e.*, true ephemeral streams), or other irretrievably altered waterways.

Chemical, physical, and/or biological criteria are generally assigned to each use designation in accordance with the broad goals defined by each. As such the system of use designations employed in the Ohio WQS constitutes a "tiered" approach in that varying and graduated levels of protection are provided by each. This hierarchy is especially apparent for parameters such as dissolved oxygen, ammonia-nitrogen, temperature, and the biological criteria. For other parameters such as heavy metals, the technology to construct an equally graduated set of criteria has been lacking, thus the same water quality criteria may apply to two or three different use designations.

#### *Ohio Water Quality Standards: Non-Aquatic Life Uses*

In addition to assessing the appropriateness and status of aquatic life uses, each biological and water quality survey also addresses non-aquatic life uses such as recreation, water supply, and human health concerns as appropriate. The recreation uses most applicable to rivers and streams are the Primary Contact Recreation (PCR) and Secondary Contact Recreation (SCR) uses. The criterion for designating the PCR use can be having a water depth of at least one meter over an area of at least 100 square feet or, lacking this, where frequent human contact is a reasonable expectation. If a water body does not meet either criterion, the SCR use applies. The attainment status of PCR and SCR is determined using bacterial indicators (*e.g.*, fecal coliform, *E. coli*) and the criteria for each are specified in the Ohio WQS.

Attainment of recreation uses are evaluated based on monitored bacteria levels. The Ohio Water Quality Standards state that all waters should be free from any public health nuisance associated with raw or poorly treated sewage (Administrative Code 3745-1-04, Part F). Additional criteria (Administrative Code 3745-1-07) apply to waters that are designated as suitable for full body contact such as swimming (PCR- primary contact recreation) or for partial body contact such as wading (SCR- secondary contact recreation). These standards were developed to protect human health, because even though fecal coliform bacteria are relatively harmless in most cases, their presence indicates that the water has been contaminated with fecal matter.

Water supply uses include Public Water Supply (PWS), Agricultural Water Supply (AWS), and Industrial Water Supply (IWS). Public Water Supplies are simply defined as segments within 500 yards of a potable water supply or food processing industry intake. The AWS and IWS use designations generally apply to all waters unless it can be clearly shown that they are not applicable. An example of this would be an urban area where livestock watering or pasturing does not take place, thus the AWS use would not apply. Chemical criteria are specified in the Ohio WQS for each use and attainment status is based primarily on chemical-specific indicators. Human health concerns are additionally addressed with fish tissue data, but any consumption advisories are issued by the Ohio Department of Health.