2008 Study Plan for the Upper Great Miami River Watershed

(Mercer, Auglaize, Hardin, Darke, Miami, Shelby, Logan, and Champaign Counties, OH)

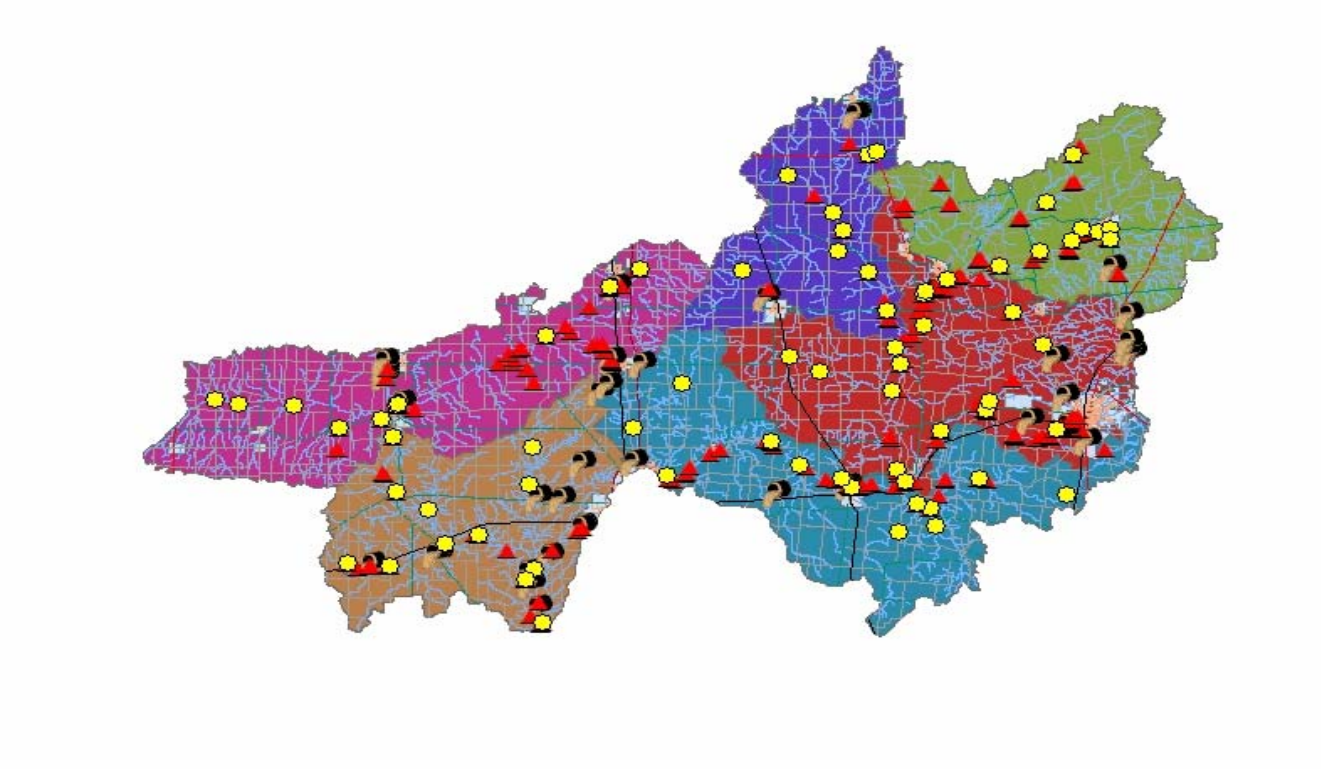

Figure 1. Study area for the Upper GMR Watershed, 2008**.**

State of Ohio Environmental Protection Agency
Division of Surface Water
Lazarus Government Center
122 South Front St., Columbus, OH 43215
Mail to:
P.O. Box 1049, Columbus, OH 43216-1049
&
Monitoring and Assessment Section
4675 Homer Ohio Lane
Groveport, OH 43125
&
Surface Water Section
Southwest District Office
401 East Fifth Street
Dayton Ohio 45402

Introduction

As part of the five-year basin approach for NPDES permitting and the TMDL process, an intensive ambient assessment will be conducted during the 2008 field sampling season within the Upper Great Miami River (Upper GMR) Watershed. The study area will include all tributaries having a drainage area approximately 8.0 miles² or greater and the Upper GMR mainstem, beginning upstream from the Indian Lake WWTP (RM 158.90) and extending downstream to Sidney (RM 129.99) (Fig. 1). A total of 83 sampling stations will be completed in the Upper GMR basin study area. Two additional GMR sites will be sampled further downstream as part of a state-wide, large river nutrient study. Table 1 contains a list of all the NPDES outfall facilities within the study area. These facilities, particularly the three major dischargers (*i.e*., >1 mgd), will be targeted for evaluation of their potential aquatic influences. Ambient biology, macrohabitat quality, and water column chemistry will be collected from each site except eight, which will be sampled for water column chemistry, Datasonde®, or WWTP effluent chemistry only. Bacteriological (Pathogen) sampling will be conducted at 26 of the survey sites and datasondes will be deployed at 23 locations. Fish tissue samples will be collected at 18 mainstem sites from RM 156.4 (dst. Russells Point WWTP) to RM 80.1 (dst. Wolf Creek) (Table 3).

A geometric site selection methodology was employed to derive the initial station list. This method has proved efficient in generating an objective and comprehensive collection of potential sampling sites where an assessment of an entire catchment is desired. However, a negative and unavoidable consequence of the geometric selection method includes substantial data gaps in lower or larger stream segments. It was therefore necessary to directly target these higher order segments (or tributaries) to ensure an even distribution of sampling effort. Lastly, many of the areas that have been previously sampled and

evaluated by the Ohio EPA will be revisited for the purposes of trends assessment. A list of field sampling stations can be found in Table 2.

Sampling Objectives

1. Systematically sample and assess the principal drainage networks of the Upper GMR and its tributaries in support of the TMDL process,
2. Gather ambient environmental information (biological, chemical, and physical) from designated water bodies, to assess current Beneficial Uses (e.g., aquatic life, recreational, water supply), Table 2,
3. Collect fish tissue samples at selected stations as listed in Table 3,
4. Verify the appropriateness of existing, unverified, Beneficial Use Designations,
5. Establish baseline ambient biological conditions at selected reference stations to evaluate the effectiveness of future pollution abatement efforts, and
6. Document any changes in biological, chemical, and physical conditions of the study areas where historical information exists, thus expanding the Ohio EPA data base for statewide trends analysis (e.g., 305[b]).

Total Maximum Daily Load (TMDL)

Information collected as part of this survey will support TMDL development for the study areas. The objectives of the TMDL process are to estimate pollutant loads from the various sources within the basin, define or characterize allowable loads to support the various beneficial uses, and to allocate pollutant loads among different pollutant sources through appropriate controls (e.g., NPDES permitting, storm water management, 319 proposals, NPS controls or other abatement strategies).

The components of the TMDL process supported by this survey are primarily the identification of impaired waters, verification (and redesignating if necessary) of beneficial use designations, and sources of use impairment.

These data are necessary precursors to the development of effective control or abatement strategies.

Aquatic Life Use Designations

Many of the streams contained within the study area are designated WWH (Warm Water Habitat). The exceptions are Ninemile Creek (from the headwaters to Co. Rd. 14 (RM 4.2), MWH (Modified Warmwater Habitat)), Mckee Creek (EWH (Exceptional Warmwater Habitat)), and Spring Creek (EWH). Based upon historical sampling on the Miami Erie Canal it is recommended that it be designated MWH. This will be the first time Rennick Creek will be sampled and assessed. The Ohio EPA is obligated to review, evaluate, or recommend (where appropriate) Beneficial Uses prior to basing any permitting actions on existing, unverified designations, or entirely unclassified water bodies. Much of the sampling effort for this survey is allocated to fulfill this obligation.

Study Planning Team: Assigned DSW Staff

Jack Freda (EAS Macro/TSD Editor)	614-836-8783
Ben Rich (EAS Fish – Wading)	614-836-8772
Chuck Boucher (EAS Fish – Non Wading)	614-836-8776
Diana Zimmerman (WQ)	937-285-6440
Dale White (Modeling)	614-644-2159
Sandy Liebfritz (NPDES/District)	937-285-6104
Joe Miller (NPDES/District)	937-285-6109
Gary Stuhlfauth (NPDES/CO)	614-644-2026
Jon Bernstein (Ag/PTI)	614-728-2397
Hugh Trimble (NPS/District)	937-285-6444
Chris Cotton (Storm water/District)	937-285-6442
Martyn Burt (Enforcement)	937-285-6034
Beth Risley (TMDL Coordinator)	614-728-2384
Erica Wiggins (PIC)	614-644-2160
Dan Dudley (Resource/Standards)	614-644-2876
Laurie Moore (Resource/401)	937-285-6457

Please contact Ben Rich (cc: Jack Freda) for any updates to this study plan

Table 1. Facilities regulated by the National Pollutant Discharge elimination system which discharge to the Upper GMR watershed.

Permit #	Type	Facility	Receiving Stream	RM	Lat	Long
1IN00253001	Minor	BP Bellefontaine Bulk Plant	Bokengehalas Creek	14.05	40.37395	-83.7788
1PB00004001	Minor	Anna STP	Clay Creek	4.5	40.3981	-84.1836
1PT00039001	Minor	Dorothy Love Retirement Center	Ernst Ditch	2.3	40.31806	-84.2072
1PP00021001	Minor	ODOT Rest Area 0729	Flat Branch	2.05	40.40368	-83.7895
1PK00002001	**Major**	**Indian Lake WPCD**	**Great Miami River**	**158.05**	**40.45613**	**-83.8945**
1PB00036001	Minor	Quincy-DeGraff STP	Great Miami River	143.1	40.30382	-83.9707
1PZ00007001	Minor	Super Stop Petroleum Anna OH	Hulls Creek	6.15	40.39529	-84.1562
1PB00018001	Minor	Jackson Center WWTP	Jackson Center Creek	2.3	40.44746	-84.0471
1PT00090001	Minor	Fairlawn Elementary School *	Little Indian Creek	1.8	40.29727	-84.0347
1IJ00054001	Minor	Barrett Paving Materials Inc Jones Site	Loramie Creek	1.7	40.20657	-84.2435
1IJ00053001	Minor	Barrett Paving Materials Inc Pence Site	Loramie Creek	3.3	40.22402	-84.2506
1PB00007001	Minor	Botkins STP	Loramie Creek	35.4	40.45389	-84.1792
1PH00028001	Minor	Lake Loramie SSD	Loramie Creek	21.1	40.36198	-84.3691
2IN00173001	Minor	BP Amoco Oil Corp Bulk Plant Minster *	Miami Erie Canal	2.2	40.38816	-84.3835
2IH00004001	Minor	Dannon Company Inc	Miami Erie Canal	2	40.38559	-84.3834
2GN00007001	Minor	Minster Machine Co	Miami Erie Canal	2.58	40.39362	-84.3835
2PB00036001	**Major**	**Minster WWTP**	**Miami Erie Canal**	**1.8**	**40.38207**	**-84.3837**
1PG00099001	Minor	Arrowhead WWTP	Mill Creek	2.62	40.24696	-84.2344
1PT00104001	Minor	Houston HS	Ninemile Creek	1	40.24628	-84.3349
1PD00000001	**Major**	**Bellefontaine WWTP**	**Opossum Run (BJ Cr. Trib @ 5.80)**	**0.5**	**40.35316**	**-83.7773**
1II00125001	Minor	Cherokee Run Landfill *	Trib. to Cherokee Run (4.15)	0.7	40.41757	-83.7231
2PB00022	Minor	Waynesfield WWTP	Trib. to Muchinippi Creek (12.66)	2.29	40.58843	-83.97085
1PS00012001	Minor	Russia WWTP	Trib. to Ninemile Creek (5.02)	0.02	40.23692	-84.3918
1PG00021002	Minor	Shelby Co Sewer Dist Millcreek Subdiv STP	Trib. to Ninemile Creek (3.82)	1.48	40.26833	-84.2067
1PG00021001	Minor	Shelby Co Sewer Dist Millcreek Subdiv STP	Trib. to Ninemile Creek (3.82)	1.58	40.26922	-84.2054
1PV00115001	Minor	Northbrook MHP	Trib. to Plum Creek (3.42)	0.3	40.3195	-84.1611
1IJ00019001	Minor	Shelly Materials Inc Belle Center Quarry	Trib. to S. Fk. GMR (5.27)	3.1	40.47371	-83.7394
1PR00100	Minor	Camp Wesley	Trib. to S. Fk. GMR (5.27)	Nr. 4.2	40.43648	-83.72387
1PT00068001	Minor	Hardin Elementary School	Trib. to Turtle Creek (5.85)	0.1	40.29113	-84.2452
1IJ00046001	Minor	Miami River Stone Co - Lehman Rd	Turtle Creek	0.1	40.23311	-84.2527
1IN00143001	Minor	Honda of America Mfg Inc *	Unnamed stream	0.5	40.37861	-84.185

Table 2. Upper GMR sample locations for the 2008 sampling season.

2008 Upper GMR Sampling Sites							
RM	**Location**	**Mi^2**	**Latitude**	**Longitude**	**Sampling**	**Storet #**	**Type**
Great Miami River (14-001-000)							
HUC 05080001 030							
158.90**	Dst. Cher. Manns, ust.WPCD	122	40.463100	-83.887500	F, M, C, D, P, CO, S	H01W13	**H**
158.05	Indian Lake WPCD	NA	40.45613	-83.8955	E, P, CO	H01W14	**Effluent**
157.22	St. Rt. 235	131	40.451200	-83.907100	F,M, C, D, P, CO, S	H01P04	**G, H, Sent.**
156.36	St. Rt. 274	133	40.439500	-83.910300	D	610100	**H**
153.45	Co. Rd. 13 (Notenstine Rd.)	247	40.4007	-83.9242	F,M, C	H01S03	**G, H**
146.19	St. Rt. 235	296	40.3128	-83.9272	F,M, C, P, CO, S	H01S20	**H**
** Chem. at Great Miami River RM 158.2							
HUC 05080001 040							
143.20	Dst. Quincy Dam @ St. Rt. 235	411	40.302800	-83.969200	F,M, C, P, CO, S	H01W05	**G, H**
143.10	Quincy-DeGraff WWTP	NA	40.30382	-83.9707	E, P, CO	H01W04	**Effluent**
142.50	Dst. Quincy WWTP, adj. CR 73	412	40.308700	-83.977400	F,M, C, D, P	H01S18	**H**
138.39	Ust. Port Jefferson @ Baker Rd.	429	40.3353	-84.0400	F,M, C, D	610020	**H**
HUC 05080001 070-080							
Additional Large River Nutrient Site Sampling							
129.99	SR 47 (E North St) in Sidney	541	40.286900	-84.150000	F,M,C,D,P,CO,S, Chlor.	H02P12	**H, Sent., N**
110.07	Eldean Road (Covered Bridge)	890	40.0778	-84.2167	F,M,C,D,Chlorophyll	600090	**Nutrient**
98.5	E of Tipp City, ust. St. Rt. 571	1030	39.9533	-84.1419	F,M,C,D,Chlorophyll	H05S19	**Nutrient**
HUC 05080001 010							
South Fork Great Miami River (14-800-000)							
8.00	St. Rt. 638	12.0	40.495800	-83.742800	f, M, C, S	H01P01	**RR**
7.23	Co. Rd. 39	19.5	40.501500	-83.752900	f, m, C	H01W17	**G**
5.80	Co. Rd. 97	30.0	40.494400	-83.777800	F,M, C	H01S12	**G, H**
3.95	Co. Rd. 96	47.0	40.4839	-83.8071	C, F, M, D, S, P, S, CO	H01S11	**RR, Sent.**
1.74	Co. Rd. 38	51.0	40.474400	-83.840400	F, M, C	H01S10	**H**
Trib. to S. Fk. Great Miami R. (7.24) (14-800-002)							
0.55	St. Rt. 638	7.4	40.503500	-83.743500	f, m, C	H01S29	**G**
Liggit Ditch (14-800-003)							
0.53	Twp. Rd. 49	6.5	40.503800	-83.767700	f, M, C, S	H01S15	**MR**
North Fork Great Miami River (14-802-000)							
10.70	Farm lane, 1 mi. dst. Madory Rd.	9.0	40.560600	-83.777200	f, M, C, S	H01S28	**G, RR**
6.31	Dunn Rd.	14.4	40.523900	-83.799700	f, m, C, D, P, CO, S	H01P03	**G, Sent.**
Van Horn Creek (14-804-000)							
0.97	St. Rt. 366	3.0	40.516300	-83.926800	f, m, C, P, CO, S	H01P19	**H**
HUC 05080001 020							
Muchinippi Creek (14-700-000)							
12.50	Upst. U.S. Rt. 33	16.0	40.557800	-83.959200	f, m, C, D	201083	**G**
7.40	Co. Rd. 87	36.0	40.499400	-83.980600	F,M, C	201082	**G, H**
4.76	Myers Rd.	77.0	40.468300	-83.957200	F,M, C	H01P05	**G**
2.37	St. Rt. 274	85.0	40.439200	-83.940800	F,M, C, S	H01P07	**MR**
0.32	Co. Rd. 60, @ mouth	88.0	40.417200	-83.925300	C, D	H01P08	**Sent.**
Trib. to Muchinippi Creek (12.66) (14-700-001)							
0.32	St. Rt. 196	6.8	40.560700	-83.952500	f, m, C, P, CO, S	H01K17	**G**

		Little Muchinippi Creek (14-703-000)					
6.05	Wones Rd.	9.3	40.467900	-84.068900	f, m, C	H01K13	**G**
0.62	Gravel road near mouth	35.2	40.484200	-83.985100	F,M, C, D	H01K12	**G**
		Jackson Center Creek (14-705-000)					
2.90	Upst. 274 & Jackson Center	1.1	40.439600	-84.052000	m,C	H01K14	**Ambient**
1.80	Lock Two Rd, dst. Jck.Ctr. WWTP	3.0	40.454000	-84.044900	f, m, C	H01P10	**H**
		Willow Creek (14-706-000)					
3.70	Dst. Wrestle Creek Rd. & dst. trib.	8.1	40.541400	-84.030200	f, m, C	H01K16	**G**
0.44	Idle Rd.	15.1	40.513400	-83.990200	f, m, C	H01K15	**G**
		HUC 05080001 030					
		Trib. to Great Miami R. (157.34) (14-001-021)					
0.07	Via dirt path (?) off SR 235	7.6	40.454000	-83.906700	f, m, C	H01W16	**G**
		Rennick Creek (14-001-022)					
0.34	St. Rt. 235	10.3	40.427400	-80.906900	f, m, C	H01K02	**G**
		Bokengehalas Creek (14-076-000)					
8.10	Twp. Rd. 31, ust Blue Jacket Cr.	21.0	40.370000	-83.847500	F,M, C	H01S23	**G, H**
4.61	Twp. Rd. 209	36.3	40.347200	-83.891100	F,M, C	H01P15	**G, H**
1.13	Miami St. in DeGraff	41.0	40.311606	-83.912129	F, M, C, D, P, CO, S	H01K01	**Sent.**
		Blue Jacket Creek (14-077-000)					
6.31	Twp. Rd. 216 at Bellefontaine	3.00	40.350300	-83.7744	f,m,c	H01P11	**H**
5.5	Co. Rd. 11, dst Bellfont. WWTP	7.80	40.348956	83.787544	f, m, C, D, P, CO, S	H01P12	**G, H**
0.72	Twp. Rd. 31	13.7	40.363500	-83.850200	f, m, C	H01P14	**G, H**
		Opossum Run (14-077-001) (14-085 in ECOS)					
0.5	Bellefontaine WWTP	NA	40.35316	-83.7773	E, P, CO	H01W07	**Effluent**
		Rum Creek (14-078-000)					
8.63	Wildermuth Rd.	8.2	40.402600	-84.025700	f, m, C	H01K09	**G**
6.58	Meranda Rd.	15.3	40.390600	-83.999200	f, m, C	H01K08	**G**
0.79	Co. Rd. 58	27.2	40.376600	-83.934600	F,M, C	H01K07	**G**
		Brandywine Creek (14-083-000)					
0.58	Notestine Rd. (upper crossing)	8.8	40.409900	-83.931800	f, m, C	H01K10	**G**
		Cherokee Mans Run (14-084-000)					
7.56	St. Rt. 117	8.5	40.414300	-83.801100	f, m, C	H01K11	**G**
3.50	U.S. Rt. 33	14.6	40.4513	-83.8352	f, M, C, S	H99Q04	**G, RR**
		HUC 05080001 040					
		Plum Creek (14-063-000)					
9.00	Meranda Rd.	7.8	40.380800	-84.121600	f, m, C	H02K11	**G**
5.22	Fort Loramie-Port Jefferson Rd	14.7	40.346000	-84.163400	f, m, C	H02K10	**G**
0.13	Canal Feeder Rd.	29.0	40.309500	-84.132900	F,M, C	H02K09	**G**
		Indian Creek (14-069-000)					
0.01	At mouth (access?)	15.9	40.318700	-84.015200	f, m, C	H01K03	**G**
		Stony Creek (14-072-000)					
2.45	Dst. St. Rt. 508 and trib.	35.4	40.287500	-83.898900	F,M, C	H01S05	**G, H**
1.58	Twp. Rd. 65A	59.1	40.290800	-83.910000	F,M, C, D	600010	**G**
		Lee Creek (14-073-000)					
3.35	Friend Rd.	9.5	40.268300	-83.926700	f, m, C	H01K04	**G**
		Graves Creek (14-074-000)					
0.48	Twp. Rd. 295	10.9	40.273600	-83.893200	f, m, C	H01K05	**G**
		McKees Creek (14-075-000)					
9.50	Co. Rd. 1 (Ludlow Rd)	3.00	40.334200	-83.744400	f, m, C	201069	**H**
5.94	Twp. Rd. 32	8.7	40.299300	-83.777300	f, m, C	H01K06	**G**

		McKees Creek (continued)					
0.52	Co. Rd. 31	17.7	40.310600	-83.855600	f, M, C, S	H01S06	**G, RR**
		HUC 05080001 050					
		Loramie Creek (14-600-000)					
36.84	Botkins Rd.	6.8	40.468100	-84.160600	f, m, C, P	H02S28	**G, H**
34.96	Lock Two Rd.	15.7	40.453100	-84.187200	f, m, C, P, CO, S	H02W02	**G, H**
30.42	Hardin-Wapakoneta Rd.	35.0	40.415000	-84.243600	F,M, C, D, P, CO, S	H02S27	**G, H**
22.10	@ Loramie Lake Dam	78.0	40.357500	-84.358300	F, M, C, P, D	H02S06	**H**
21.10	Lake Loramie SSD WWTP	NA	40.36198	-84.3691	E, P, CO	H02E01	**Effluent**
20.70	St. Rt. 66	82.0	40.359100	-84.373900	F,M, C, D	H02W44	**G, H**
		Miami-Erie Canal (14-600-002)					
1.8	Minster WWTP	NA	40.38207	-84.3837	E, P, CO	H02E02	**Effluent**
0.10	Near mouth, upst. old lock	4.3	40.359900	-84.372400	f, M, C, S, D, P, CO	H02S14	**MR**
		Mile Creek (14-609-000)					
9.80	Goettemoeller Rd.	9.7	40.361100	-84.534800	f, m, C	H02K07	**G**
8.74	Clune Rd.	18.5	40.358300	-84.515100	f, m, C	H02K06	**G**
5.97	Kremer Rd.	34.7	40.358200	-84.464600	F,M, C	H02K05	**G**
0.50	St. Rt. 705	62.3	40.349200	-84.386900	F,M, C, D, P, CO, S	H02P04	**G, Sent.**
		Spring Creek (14-609-001)					
0.37	Baumer-Brandewie Rd.	8.8	40.3488	-84.4155	f, m, C	H02K08	**G**
		HUC 05080001 060					
		Loramie Creek (14-600-000)					
18.82	Schlater Rd., dst. WWTP (19.25)	148	40.335800	-84.376900	F,M, C, P, CO	H02W45	**G**
16.51	Cardo-Roman Rd	152	40.306900	-84.383600	C, D, P, CO, S	H02S24	**H, Sent.**
14.80	At Newport, SR 66	158	40.293100	-84.372500	F,M, C	201075	**H**
7.50	Loramie Washington Rd	205	40.261900	-84.298300	F,M, C	H02S23	**H**
1.87	Fessler-Buxton Rd	257	40.210600	-84.243500	F, M, C, D, P, CO, S	600320	**H, Sent.**
		Turtle Creek (14-603-000)					
8.42	Mason Rd.	8.4	40.330000	-84.253400	f, m, C	H02K02	**G**
5.66	Russell Rd.	17.3	40.300900	-84.255100	f, m, C	H02K01	**G**
0.43	Stangel Rd.	35.9	40.235800	-84.248300	F,M, C	H02P10	**G**
		Ninemile Creek (14-606-000)					
6.38	Miller Rd.	3.0	40.237500	-84.414400	f, M, C, S	H02S13	**RR**
4.18	Range Line Rd.	11.5	40.236400	-84.376400	f, M, C, S	H02S10	**G, RR**
0.23	Roeth Rd.	26.6	40.254200	-84.328600	F,M, C	H02K03	**G**
		Painter Creek (14-607-000)					
0.30	Gravel road along canal	10.0	40.280600	-84.344100	f, m, C	H02K04	**G**

Sampling Methods Key

F = Fish Two Pass
f = Fish One Pass
M = Macroinvertebrate quantitative
m = Macroinvertebrate qualitative
D = Datasonde®
C = Water Chemistry
CO = Water Chemistry Organics
E = WWTP Effluent Chemistry
S = Sediment Chemistry
P = Pathogen

Site Type

G = Geo., H = Historical, RR, MR, = Reg. & Mod. Ref. Sites, Sent. = Sentinel Site, N = Nutrient

Table 3. Fish tissue sampling locations for the Upper GMR Watershed, 2008.

2008 Proposed Fish Tissue Sampling Sites		
Stream Name	**River Mile**	**Landmark**
Great Miami R.	156.4	dst. Russells Point WWTP
Great Miami R.	148.4	near Logansville - dst. SR 47
Great Miami R.	143.8	ust. Quincy Dam
Great Miami R.	134.9	near Port Jefferson
Great Miami R.	117.5	at SR 66
Great Miami R.	114.1	at Piqua Dam
Great Miami R.	110	dst. Piqua - Eldean Rd.
Great Miami R.	98.9	at Tipp City - dst. SR 571
Great Miami R.	95.6	dst. Ross Rd.
Great Miami R.	92.8	ust. Taylorsville Dam
Great Miami R.	91.1	ust. Little York Rd.
Great Miami R.	90.1	Rip Rap Rd., ust. Powell Rd.
Great Miami R.	87	at Needmore Rd., dst. Powell Rd. Landfill
Great Miami R.	84.6	near Chessie RR
Great Miami R.	81.8	at Dayton - bewtween Stillwater R and Mad River
Great Miami R.	81.3	dst. Mad R./Riverside dr.
Great Miami R.	80.4	ust Wolf Creek
Great Miami R.	80.1	dst. Wolf Creek