

# **2011 Study Plan for Deer Creek**

**Madison, Pickaway, Fayette and  
Ross Counties,  
Ohio**

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## CONTACTS

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### County Sheriff Offices (Dial 911 for emergency help)

- Madison Co: ((740) 852-1332
- Pickaway Co: (740) 474-2176
- Fayette Co: (740) 335-6170
- Ross Co: (740) 773-1186

### Hospitals

- Fayette County Memorial Hospital  
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## INTRODUCTION

During the 2011 field season (June through October) chemical, physical, and biological sampling will be conducted in Deer Creek basin to assess and characterize water quality conditions. The study area is a Total Maximum Daily Load (TMDL) basin, so the survey will incorporate a study design and some assessment techniques which are more comprehensive than a targeted sampling strategy alone would entail. The Deer Creek watershed is located in central Ohio and includes streams in Madison, Pickaway, Fayette and Ross counties. This study will cover the Deer Creek mainstem from the headwaters downstream to the confluence with the Scioto River, and includes the 10-digit Hydrologic Unit Codes (HUCs) 506000201, 506000202, 506000203. In addition to the mainstem, sampling will include sites on Oak Run, Sugar Run, Hay Run and Bradford Creek and other selected tributaries.

Previous sampling on portions of the Deer Creek watershed was conducted by Ohio EPA in 1985 and 1997. The current sampling effort is structured to characterize point source and nonpoint source impacts, including those from unsewered communities and agricultural activities. Table 1 contains a list of NPDES facilities in the basin. Sampling locations and types of sampling scheduled for the study area are listed in Table 2. Sample locations with geographical coordinates are included in Table 3.

### Sampling Objectives:

- Monitor and assess the chemical, physical, and biological integrity of the water bodies within Deer Creek study area.
- Assess physical habitat influences on stream biotic integrity.
- Determine recreational water quality.
- Evaluate the appropriateness of existing use designations and assign uses to undesignated streams.
- Characterize the amount of aquatic resource degradation attributable to various land uses, including agricultural practices and urbanization.
- Determine any aquatic impacts from known potential sources, including point source dischargers, and from unsewered communities.

## SAMPLING ACTIVITIES

### Chemical/Physical Water

Chemical sampling locations within the study area are listed in Tables 2&3. Conventional chemical/physical water quality samples will be collected 5 times at each designated location. Datasondes® will be deployed at 30 locations. Chemical parameters to be tested are listed in Table 4. Surface water sampling will occur across a variety of flow conditions, from lower flows to moderate and higher flows.

### Bacteriological Sampling

Water samples will be collected at 33 chemistry sites for bacteriological analyses to determine the attainment status of the Primary Contact recreational use. Testing will include *Escherichia coli* (*E. coli*) bacteria. Each site will be sampled at least 5 times, while sentinel sites may have 5-10 bacteriological samples.

### Macroinvertebrate and Fish Assemblages

Macroinvertebrate sampling methods will be used as listed in Table 2. Fish assemblages will be sampled as listed in Table 2. QHEI scores will be calculated on the habitat at all fish sampling locations.

### Fish Tissue

Fish tissue samples will be collected from 8 locations as part of the Ohio Fish Tissue Consumption Monitoring Program. Fillet samples of edible size sport fish will be tested for organochlorinated pesticides, PCBs, mercury, lead, cadmium, arsenic, and selenium. Results will be used in the Ohio Sport Fish Consumption Advisory Program.

## QUALITY ASSURANCE/SAMPLING METHODS

### Ohio EPA Manuals

All biological, chemical, 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 EPA 2006), Biological Criteria for the Protection of Aquatic Life, Volumes II – III (Ohio Environmental Protection Agency 1987, 1989a, 1989b), The Qualitative Habitat Evaluation Index (QHEI); Rationale, Methods, and Application (Rankin 1989) for habitat assessment, Ohio EPA Sediment Sampling Guide and Methodologies (Ohio EPA 2001), and Ohio EPA Fish Collection Guidance Manual (Ohio EPA 2004) .

### Use Attainment

Attainment/non-attainment of aquatic life uses will be determined by using biological criteria codified in Ohio Administrative Code (OAC) 3745-1-07, Table 7-17. 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.

Performance expectations for the basic aquatic life uses (Warmwater Habitat [WWH], Exceptional Warmwater Habitat [EWH], and Modified Warmwater Habitat [MWH]) were developed using the regional reference site approach (Hughes et al. 1986; Omernik 1987). This fits the practical definition of biological integrity as the biological performance of the natural habitats within a region (Karr and Dudley 1981). Attainment of an aquatic life use is FULL if all three indices (or those available) meet the applicable criteria, PARTIAL if at least one of the indices did not attain and performance did not fall below the fair category, and NON if all indices either fail to attain or any index indicates poor or very poor performance. The results will be compared to WWH biocriteria for the Huron Erie Plain (HELP) ecoregion.

Recreational use attainment will be determined using *E. coli* bacteria. *E. coli* is an indicator organism for the potential presence of pathogens in surface water resulting from the presence of untreated human or animal wastes, and is the basis for recreational use water quality criteria in Rule 3745-1-07 of the Ohio Administrative Code (OAC).

### 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). 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.

### Biological Community Assessment

Macroinvertebrates will be collected from artificial substrates and from the natural habitats. Quantitative sampling will be conducted at reference sites and at sites with drainage areas in excess of 20 mi<sup>2</sup>. Qualitative sampling will be conducted in headwater sites with drainages smaller than 20 mi<sup>2</sup>. The artificial substrate collection provides quantitative data and consists of a composite sample of 5 modified Hester-Dendy (HD) multiple-plate samplers colonized for six weeks. At the time of the artificial substrate collection, a qualitative multihabitat composite sample is also collected. This sampling effort consists 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). Fish will be sampled at each sampling location with pulsed DC current. Two passes will be conducted at sites larger than 20 mi<sup>2</sup> and at reference sites.

Detailed biological sampling protocols are documented in the Ohio EPA manual Biological Criteria for the Protection of Aquatic Life, Volume III (1989).

### **Surface Water**

Surface water grab samples will be collected from the upper 12 inches of river water into appropriate containers. Collected water will be preserved using appropriate methods, as outlined in Parts II and III of the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (Ohio EPA 2006) and delivered to the Ohio EPA lab for analysis. Field measurements of dissolved oxygen, pH, temperature, and conductivity will be made using YSI 556MPS meters along with all grab samples for surface water chemistry. Datasonde<sup>®</sup> continuous recorders will be placed at select locations to evaluate diurnal measurements of dissolved oxygen, pH, temperature, and conductivity.

### **Bacteria**

Water samples will be collected into appropriate containers, cooled to 4°C, and transported to the Ohio EPA lab in Columbus, Ohio, within 6 hours of sample collection. All samples will be analyzed for *E. coli* bacteria using U.S.EPA approved methods (STORET Parameter Code 31648).

### **Sentinel Sites**

To aid in the development of a TMDL model(s), sentinel sites have been established at 9 locations (Table 2). At each sentinel site, samples are collected monthly prior to the more encompassing survey that starts on June 15th. The purpose of the sentinel sites is to establish a baseline of water chemistry values under varying flow conditions. Stream stage is to be measured to the nearest hundredth of a foot as given by the water line against a designated bridge piling or abutment. Sampling events at sentinel sites should cover the range of stream flow from the 10th to 90th percentiles.

### **Field Quality Control Samples**

Ten percent of the water and bacteria samples will be submitted to the lab as field duplicates. One Datasonde<sup>®</sup> recorder site will have two instruments placed in the river as field duplicates. Field blanks will occur at a minimum of 5 percent of the water samples. Field instruments will be calibrated daily, using manufacturer guidelines and requirements noted in the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (Ohio EPA 2006).

### **Inland Lakes Monitoring**

Deer Creek Lake and Madison Lake will be sampled and assessed at locations to be determined during 2011. The protocols for inland lakes monitoring are outlined in the Ohio EPA Inland Lakes Sampling Procedure Manual, which is available at [http://www.epa.state.oh.us/dsw/inland\\_lakes/index.aspx](http://www.epa.state.oh.us/dsw/inland_lakes/index.aspx)

Table 1. Facilities regulated by the National Pollution Discharge Elimination System in Deer Creek study area.

**Deer Creek Watershed – Individual NPDES Permits**

Permit #	TYPE	FACILITY	MAJOR	FLOW DESIGN (MGD)	STREAM	RIVER MILE	EXPIRATION	DISTRICT	COUNTY
4IK00026	Industrial	Assen Dairy LLC	No	NA	Madden Ditch	5.50	5/31/2011	CDO	Madison
4PG00049	Municipal	Choctaw Lake WWTP & SSD #2	No	0.300	Deer C.	68.90	7/31/2013	CDO	Madison
4PV00109	Municipal	Gary Stites DBA Spring Valley MHP	No	0.008	UT Deer C.	(@RM 60.9)	6/30/2014	CDO	Madison
4IM00001	Industrial	London Correctional Institution	No	NA	Jones Ditch #2	0.50	11/30/2010	CDO	Madison
4IW00090	Industrial	London WTP	No	0.300	Oak Run	9.60	5/31/2013	CDO	Madison
4PC00003	Municipal	London WWTP	Yes	5.800	Oak Run	7.90	10/31/2014	CDO	Madison
4PG00045	Municipal	Madison Co Sewer Dist No 1	No	0.150	Glade Run	7.90	6/30/2012	CDO	Madison
4PT00001	Municipal	Madison Plains HS	No	0.033	Roberts Ditch	3.35	7/31/2010	CDO	Madison
4PB00015	Municipal	Mount Sterling WWTP	No	0.500	UT Deer C.	0.20	3/31/2015	CDO	Madison
4PP00015	Municipal	ODOT Rest Area 6-21	No	0.020	UT Deer C.	1.00	7/31/2013	CDO	Madison
4IM00105	Industrial	Ohio Willow Wood Co	No	0.002	Deer C.	36.39	5/31/2012	CDO	Madison
4PV00105	Municipal	Pickett Fences MHP	No	0.003	UT Glade Run	0.80	4/30/2012	CDO	Madison
4IN00019	Industrial	Travel Centers of America London	No	NA	UT Glade Run	(@ RM 8.20)	8/31/2015	CDO	Madison
4PX00016	Municipal	Deer Creek Camping Resort	No	0.028	Deer C.	22.95	3/31/2014	CDO	Pickaway
4PP00000	Municipal	ODNR Deer Creek State Park STP	No	0.080	Deer C.	23.60	2/28/2013	CDO	Pickaway
4PY00014	Municipal	Sunset MHP	No	0.010	Deer C.	37.60	11/30/2014	CDO	Pickaway
4IJ00010	Industrial	The Melvin Stone Co	No	NA	Deer C.	22.60	7/31/2013	CDO	Pickaway
4PT00116	Municipal	Westfall High School	No	0.026	Dry Run	3.19	3/31/2012	CDO	Pickaway
4PA00004	Municipal	Williamsport WWTP	No	0.150	Deer C.	14.10	10/31/2015	CDO	Pickaway
0PA00001	Municipal	Clarksburg WWTP	No	0.060	Hay Run	3.90	6/30/2013	SEDO	Ross
0PV00025	Municipal	Country Woods Estates MHP	No	0.012	UT Deer C.	1.10	1/31/2012	SEDO	Ross

Source: Ohio EPA GIS – Individual NPDES Permits (January 11, 2011). River Mile Maps (September 24, 2009) (<http://epa.ohio.gov/dsw/gis/index.aspx>). Individual NPDES Permits Station Layer at Ohio EPA GIS Karta Server (undated).

NA – Not applicable

Table 2. Lower Deer Creek 2011 study area sampling sites.

Station Code	Stream	Location	River Mile	Drain Area	ALU	Sampling	Issue	USGS Quad	County
V09P15	DEER CREEK	@ SUMMERFORD CEMETERY	69.60	6.50	WWH	C,M,F,E	Status and Trends	South Vienna	MADISON
V09P03	DEER CREEK	@ ST. RT. 56, DST. NORTH FORK	69.30	17.20	WWH	C,M,F,E	Status and Trends	South Vienna	MADISON
300400	DEER CREEK	UST. RICHMOND RUN	66.10	28.90	WWH	C,MT,F2,E,D	Dst. Lake Choctaw	London	MADISON
V09Q11	DEER CREEK	@ ST. RT. 38	64.70	33.00	WWH	C,MT,F2,E,T	Status and Trends	London	MADISON
V09S25	DEER CREEK	@ U.S. RT. 40	62.00	38.40	WWH	C,MT,F2,E,D	Status and Trends	London	MADISON
V09W08	DEER CREEK	@ ST. RT. 142	58.54	50.70	WWH	C,MT,F2,E,D	Sentinel Site	London	MADISON
V09Q08	DEER CREEK	@ GLADE RUN RD.	53.30	60.00	WWH	C,MT,F2,E	Dst. Madison Lake	Big Plain	MADISON
V09S10	DEER CREEK	@ BIG PLAIN-CIRCLEVILLE RD.	51.39	82.00	WWH	C,MT,F2,E,T	Status and Trends	Big Plain	MADISON
V09Q07	DEER CREEK	@ MOUTH OF TURKEY RUN	49.40	129.00	WWH	C,MT,F2,E,D	Status and Trends	Big Plain	MADISON
V09S08	DEER CREEK	@ ROBISON RD.	44.37	141.00	WWH	C,MT,F2,E,D	Sentinel Site	Big Plain	MADISON
V09Q06	DEER CREEK	UST. ANDERSON RD.	41.30	147.00	WWH	C,MT,F2,E,T,D	Status and Trends	Big Plain	MADISON
V09P04	DEER CREEK	UST. WWTP @ ST. RT. 56	35.56	228.00	EWH	C,MT,F2,E,D	Sentinel Site	Mt. Sterling	MADISON
V09S06	DEER CREEK	DST. MT. STERLING WWTP	35.47	228.00	EWH	C,MT,F2,E,D	Status and Trends	Mt. Sterling	MADISON
V09S05	DEER CREEK	@ YANKEETOWN RD.	31.10	237.00	EWH	C,MT,F2,E,T,D	Status and Trends	Mt. Sterling	FAYETTE
V09W09	DEER CREEK	@ CROWNOVER MILL RD.	23.72	278.00	EWH	C,MT,F2,E,D	Sentinel Site	Clarksburg	PICKAWAY
V09Q03	DEER CREEK	ADJ. WILLIAMSPORT-CROWNOVER RD.	21.20	284.00	EWH	C,MT,F2,E,T,D	Lake Effect Recovery	Clarksburg	PICKAWAY
V09W10	DEER CREEK	@ WALSTON RD. ACCESS	17.60	310.00	EWH	C,MT,F2,E,D	Status and Trends	Clarksburg	PICKAWAY
V09S24	DEER CREEK	@ U.S. RT. 22	14.76	333.00	EWH	C,MT,F2,E,T,D	Sentinel Site	Williamsport	PICKAWAY
V09W11	DEER CREEK	@ ST. RT. 138	11.65	340.00	EWH	D	Status and Trends	Williamsport	PICKAWAY
V09Q01	DEER CREEK	@ END OF PECK RD.	8.80	345.00	EWH	C,MT,F2,E	Status and Trends	Williamsport	PICKAWAY
V09W12	DEER CREEK	@ WESTFALL RD.	5.75	381.00	EWH	C,MT,F2,E	Status and Trends	Andersonville	ROSS
600930	DEER CREEK	@ ST. RT. 104	1.05	411.00	EWH	C,MT,F2,E,T,D	Sentinel Site	Andersonville	ROSS
V09P17	N. FK. DEER CREEK	NEAR MOUTH	0.10	10.60	WWH	C,M,F,E,D	Status and Trends	South Vienna	MADISON
V09P16	GEORGES FORK	@ SR 187	0.80	4.20	-	C,M,F	Status and Trends	London	MADISON
V09Q19	GLADE RUN	UST. ST. RT. 142	5.17	4.80	WWH	C,M,F	Status and Trends	West Jefferson	MADISON

Station Code	Stream	Location	River Mile	Drain Area	ALU	Sampling	Issue	USGS Quad	County
301503	GLADE RUN	@ PRIVATE LANE	0.50	19.52	WWH	C,M,F,E,D	Status and Trends	Big Plain	MADISON
301504	WALNUT RUN	@ ST. RT. 38	5.20	11.61	WWH	C,M,F	Status and Trends	Walnut Run	MADISON
V09Q18	WALNUT RUN	@ ST. RT. 56	0.20	15.30	WWH	C,M,F,E,D2	Status and Trends	Walnut Run	MADISON
V09S14	OAK RUN	@ OLD SPRINGFIELD RD.	10.28	9.30	WWH	C,M,F	Status and Trends	London	MADISON
V09P01	OAK RUN	UST. LONDON WWTP	7.94	14.70	WWH	C,M,F	Ust. London WWTP	Walnut Run	MADISON
V09S13	LONDON WWTP 001	OUTFALL TO OAK RUN	7.93	14.70	-	C	Effluent	Walnut Run	MADISON
V09S11	OAK RUN	@ OLD XENIA RD.	6.78	20.30	WWH	C,MT,F2,E,D	Dst. London WWTP	Walnut Run	MADISON
601120	OAK RUN	@ GREGG MILL RD.	2.10	41.00	WWH	C,MT,F2,E,D	Sentinel Site	Big Plain	MADISON
301505	BRADFORD CREEK	@ MOORMAN RD.	7.15	16.19	-	C,M,F,E,D	Status and Trends	Walnut Run	MADISON
301506	S. FK. BRADFORD CREEK	@ YANKEETOWN CHENOWETH RD.	1.30	8.82	WWH	C,M,F	Status and Trends	Walnut Run	MADISON
301507	BRADFORD BRANCH	@ JOHNSTON ROAD	1.95	5.30	-	C,D	Livestock Facility	Walnut Run	MADISON
201251	SUGAR RUN	UST. U.S. RT. 56	0.50	51.70	EWH	C,MT,F2,E,T,D	Status and Trends	Big Plain	MADISON
201252	MUD RUN	@ BRAGG RD.	0.70	6.60	WWH	C,M,F	Status and Trends	Mt. Sterling	MADISON
301319	BRADFORD CREEK	@ JUNK RD.	2.60	37.30	EWH	C,D <sub>2</sub>	Sentinel Site	Big Plain	MADISON
201253	BRADFORD CREEK	UST. I-71	1.70	36.60	EWH	C,MT,F2	Status and Trends	Mt. Sterling	MADISON
201250	OPOSSUM RUN	@ MANTLE RD.	4.40	10.30	WWH	C,M,F	Status and Trends	Harrisburg	PICKAWAY
301508	OPOSSUM RUN	@ TENNY RD.	0.85	17.52	WWH	C,M,F,E,D	Status and Trends	Harrisburg	PICKAWAY
201249	DUFFS FORK	@ ST. RT. 207	0.50	12.40	WWH	C,M,F	Status and Trends	Mt. Sterling	FAYETTE
V09Q14	CLARK RUN	@ DAWSON-YANKEETOWN RD.	1.30	7.60	WWH	C,M,F,E,D2	Status and Trends	Five Points	PICKAWAY
201247	BUSSKIRK CREEK	@ SR 56	5.20	9.10	WWH	C,M,F	Status and Trends	Five Points	PICKAWAY
201245	BUSSKIRK CREEK	@ CROWNOVER MILL RD.	1.20	17.60	WWH	C,M,F,E,D	Status and Trends	Five Points	PICKAWAY
301509	DRY RUN	@ U.S. RT. 56	3.60	13.47	WWH	C,M,F	Status and Trends	Five Points	PICKAWAY
V09P06	DRY RUN	@ PALESTINE-WILLIAMSPORT RD.	0.42	21.00	WWH	C,MT,F2,E,D	Status and Trends	Clarksburg	PICKAWAY
301511	BRUSH CREEK	@ ST. RT. 207	0.25	6.50	-	C,M,F	Status and Trends	Clarksburg	PICKAWAY
V09S03	HAY RUN	@ ST. RT. 138	3.91	21.90	WWH	C,MT,F2	Status and Trends	Clarksburg	ROSS
301510	HAY RUN	DST. JUDAS RD./DST. TRIB.	6.80	9.50	WWH	C,M,F	Status and Trends	Clarksburg	PICKAWAY

Station Code	Stream	Location	River Mile	Drain Area	ALU	Sampling	Issue	USGS Quad	County
V09S21	HAY RUN	JUST DST. CLARKSBURG WWTP	3.80	21.90	WWH	C,MT,F2	Reference Site	Clarksburg	ROSS
V09S01	HAY RUN	@ TWP. RD. 132	0.90	28.70	WWH	C,MT,F2,E,D	Sentinel Site	Andersonville	ROSS
301512	STALL RUN	@ST. RT. 207	0.40	4.00	WWH	C,M,F	Status and Trends	Frankfort	ROSS
301513	WAUGH RUN	@ EGYPT RD.	4.95	19.60	WWH	C,M,F,E,D	Status and Trends	Frankfort	ROSS
V09P10	WAUGH RUN	@ WESTFALL RD.	1.03	16.90	WWH	C,M,F	Status and Trends	Andersonville	ROSS

C – Inorganic water chemistry and metals sampling  
 F – Single pass fish site  
 F2 – Two-pass fish site (for reference sites, or drainage area 20 sq. miles or greater)  
 M – Macroinvertebrate qualitative site  
 MT – Macroinvertebrate quantitative site (for reference sites, or drainage area 20 sq. miles or great  
 E –E-Coli bacteria sampling  
 D- Datasonde site  
 D2- Datasonde secondary site

Type	Number of Sites
Total	56
Water chemistry	55
Bacteria	33
Effluent	1
Fish	1 Pass 27 2 Pass 27
Macroinvertebrate	Qual 27 Quant 27
Datasonde©	30

Table 3. Lower Deer Creek site locations by stream, with latitude and longitude and HUC 12 designation.

Station	Name	River Mile	Drain. Area	Latitude	Longitude	HUC 12 (05060002)	County	USGS Quad
V09P15	Deer Creek Ust. North Fork @ Summerford Cemetery	69.60	6.50	39.946460	-83.504122	01 01	South Vienna	Madison
V09P17	N. Fk. Deer Creek N Of Summerford, Near Mouth	0.10	10.60	39.947860	-83.503522	01 01	South Vienna	Madison
V09P15	Deer Creek Ust. North Fork @ Summerford Cemetery	69.60	6.50	39.946460	-83.504122	01 01	South Vienna	Madison
V09P17	N. Fk. Deer Creek N Of Summerford, Near Mouth	0.10	10.60	39.947860	-83.503522	01 01	South Vienna	Madison
V09P03	Deer Creek W Of Summerford @ St. Rt. 56, Dst. North Fork	69.30	17.20	39.945860	-83.502422	01 02	South Vienna	Madison
300400	Deer Creek Dst Lake Choctaw, Ust. Richmond Run	66.10	28.90	39.959300	-83.462800	01 02	London	Madison
V09Q11	Deer Creek N Of London @ St. Rt. 38	64.70	33.00	39.949908	-83.444596	01 02	London	Madison
V09S25	Deer Creek At Lafayette @ U.S. Rt. 40	62.00	38.40	39.937561	-83.413819	01 02	London	Madison
V09P16	Georges Fork @ Sr 187	0.80	4.20	39.971960	-83.491322	01 02	London	Madison
V09P03	Deer Creek W Of Summerford @ St. Rt. 56, Dst. North Fork	69.30	17.20	39.945860	-83.502422	01 02	South Vienna	Madison
300400	Deer Creek Dst Lake Choctaw, Ust. Richmond Run	66.10	28.90	39.959300	-83.462800	01 02	London	Madison
V09Q11	Deer Creek N Of London @ St. Rt. 38	64.70	33.00	39.949908	-83.444596	01 02	London	Madison
V09S25	Deer Creek At Lafayette @ U.S. Rt. 40	62.00	38.40	39.937561	-83.413819	01 02	London	Madison
V09P16	Georges Fork @ Sr 187	0.80	4.20	39.971960	-83.491322	01 02	London	Madison
V09Q19	Glade Run Near London, Ust. St. Rt. 142	5.17	4.80	39.918661	-83.351018	01 03	West Jefferson	Madison
301503	Glade Run Near Mouth, @ Private Lane	0.50	19.52	39.859347	-83.350270	01 03	Big Plain	Madison
V09Q19	Glade Run Near London, Ust. St. Rt. 142	5.17	4.80	39.918661	-83.351018	01 03	West Jefferson	Madison
301503	Glade Run Near Mouth, @ Private Lane	0.50	19.52	39.859347	-83.350270	01 03	Big Plain	Madison
301504	Walnut Run @ St. Rt. 38	5.20	11.61	39.842171	-83.467207	01 04	Walnut Run	Madison
V09Q18	Walnut Run SE Of London @ St. Rt. 56	0.20	15.30	39.843661	-83.389918	01 04	Walnut Run	Madison

Station	Name	River Mile	Drain. Area	Latitude	Longitude	HUC 12 (05060002)	County	USGS Quad
301504	Walnut Run @ St. Rt. 38	5.20	11.61	39.842171	-83.467207	01 04	Walnut Run	Madison
V09Q18	Walnut Run SE Of London @ St. Rt. 56	0.20	15.30	39.843661	-83.389918	01 04	Walnut Run	Madison
V09S14	Oak Run Dst. London Corr. Inst. @ Old Springfield Rd.	10.28	9.30	39.890948	-83.459638	01 05	London	Madison
V09P01	Oak Run Ust. London WWTP	7.94	14.70	39.874527	-83.435560	01 05	Walnut Run	Madison
V09S13	London WWTP 001 Outfall To Oak Run	7.93	14.70	39.874565	-83.435318	01 05	Walnut Run	Madison
V09S11	Oak Run Dst. London @ Old Xenia Rd.	6.78	20.30	39.865860	-83.423819	01 05	Walnut Run	Madison
601120	Oak Run S Of Madison London @ Gregg Mill Rd.	2.10	41.00	39.840361	-83.366818	01 05	Big Plain	Madison
V09S14	Oak Run Dst. London Corr. Inst. @ Old Springfield Rd.	10.28	9.30	39.890948	-83.459638	01 05	London	Madison
V09P01	Oak Run Ust. London WWTP	7.94	14.70	39.874527	-83.435560	01 05	Walnut Run	Madison
V09S13	London WWTP 001 Outfall To Oak Run	7.93	14.70	39.874565	-83.435318	01 05	Walnut Run	Madison
V09S11	Oak Run Dst. London @ Old Xenia Rd.	6.78	20.30	39.865860	-83.423819	01 05	Walnut Run	Madison
601120	Oak Run S Of Madison London @ Gregg Mill Rd.	2.10	41.00	39.840361	-83.366818	01 05	Big Plain	Madison
V09W08	Deer Creek Near London @ St. Rt. 142	58.54	50.70	39.905061	-83.393019	01 06	London	Madison
V09Q08	Deer Creek Dst. Madison Lake @ Glade Run Rd.	53.30	60.00	39.854261	-83.360217	01 06	Big Plain	Madison
V09S10	Deer Creek Ust. Oak Run @ Big Plain-Circleville Rd.	51.39	82.00	39.842861	-83.342717	01 06	Big Plain	Madison
V09Q07	Deer Creek 0.8 Mi. Dst. Oak Run @ Mouth Of Turkey Run	49.40	129.00	39.816161	-83.344117	01 06	Big Plain	Madison
V09S08	Deer Creek Near Kiousville @ Robison Rd.	44.37	141.00	39.788661	-83.301616	01 06	Big Plain	Madison
V09W08	Deer Creek Near London @ St. Rt. 142	58.54	50.70	39.905061	-83.393019	01 06	London	Madison
V09Q08	Deer Creek Dst. Madison Lake @ Glade Run Rd.	53.30	60.00	39.854261	-83.360217	01 06	Big Plain	Madison
V09S10	Deer Creek Ust. Oak Run @ Big Plain-Circleville Rd.	51.39	82.00	39.842861	-83.342717	01 06	Big Plain	Madison
V09Q07	Deer Creek 0.8 Mi. Dst. Oak Run @ Mouth Of Turkey Run	49.40	129.00	39.816161	-83.344117	01 06	Big Plain	Madison

Station	Name	River Mile	Drain. Area	Latitude	Longitude	HUC 12 (05060002)	County	USGS Quad
V09S08	Deer Creek Near Kiousville @ Robison Rd.	44.37	141.00	39.788661	-83.301616	01 06	Big Plain	Madison
301505	Bradford Creek @ Moorman Rd.	7.15	16.19	39.784918	-83.382950	02 01	Walnut Run	Madison
301506	S. Fk. Bradford Creek @ Yankeetown Chenoweth Rd.	1.30	8.82	39.773626	-83.393154	02 01	Walnut Run	Madison
301507	Bradford Branch @ Johnston Road	1.95	5.30	39.790513	-83.413785	02 01	Walnut Run	Madison
301505	Bradford Creek @ Moorman Rd.	7.15	16.19	39.784918	-83.382950	02 01	Walnut Run	Madison
301506	S. Fk. Bradford Creek @ Yankeetown Chenoweth Rd.	1.30	8.82	39.773626	-83.393154	02 01	Walnut Run	Madison
301507	Bradford Branch @ Johnston Road	1.95	5.30	39.790513	-83.413785	02 01	Walnut Run	Madison
201251	Sugar Run NW Of Mt. Sterling, Ust. U.S. Rt. 56	0.50	51.70	39.752261	-83.294616	02 02	Big Plain	Madison
201252	Mud Run W Of Mt. Sterling @ Bragg Rd.	0.70	6.60	39.727161	-83.337216	02 02	Mt. Sterling	Madison
301319	Bradford Creek @ Junk Rd.	2.60	37.30	39.758471	-83.321727	02 02	Big Plain	Madison
201253	Bradford Creek NW Of Mt. Sterling, Ust. I-71	1.70	36.60	39.748661	-83.325216	02 02	Mt. Sterling	Madison
201250	Opossum Run NW Of Derby @ Mantle Rd.	4.40	10.30	39.798161	-83.236614	02 03	Harrisburg	Pickaway
301508	Opossum Run @ Tenny Rd.	0.85	17.52	39.752826	-83.246054	02 03	Harrisburg	Pickaway
V09Q06	Deer Creek Ust. Sugar Run, Ust. Anderson Rd.	41.30	147.00	39.757261	-83.289615	02 04	Big Plain	Madison
V09P04	Deer Creek Just Ust. Mt. Sterling WWTP @ St. Rt. 56	35.56	228.00	39.715361	-83.257415	02 04	Mt. Sterling	Madison
V09S06	Deer Creek Dst. Mt. Sterling WWTP	35.47	228.00	39.713961	-83.258015	02 04	Mt. Sterling	Madison
V09S05	Deer Creek S Of Mt. Sterling @ Yankeetown Rd.	31.10	237.00	39.659761	-83.263014	02 04	Mt. Sterling	Fayette
201249	Duffs Fork N Of Pancoastburg @ St. Rt. 207	0.50	12.40	39.656461	-83.271615	02 04	Mt. Sterling	Fayette
V09Q06	Deer Creek Ust. Sugar Run, Ust. Anderson Rd.	41.30	147.00	39.757261	-83.289615	02 04	Big Plain	Madison
V09P04	Deer Creek Just Ust. Mt. Sterling WWTP @ St. Rt. 56	35.56	228.00	39.715361	-83.257415	02 04	Mt. Sterling	Madison
V09S06	Deer Creek Dst. Mt. Sterling WWTP	35.47	228.00	39.713961	-83.258015	02 04	Mt. Sterling	Madison
V09S05	Deer Creek S Of Mt. Sterling @ Yankeetown Rd.	31.10	237.00	39.659761	-83.263014	02 04	Mt. Sterling	Fayette
V09Q14	Clark Run @ Dawson-Yankeetown	1.30	7.60	39.650062	-83.238514	02 05	Five Points	Pickaway

Station	Name	River Mile	Drain. Area	Latitude	Longitude	HUC 12 (05060002)	County	USGS Quad
	Rd.							
201251	Sugar Run NW Of Mt. Sterling, Ust. U.S. Rt. 56	0.50	51.70	39.752261	-83.294616	02 05	Big Plain	Madison
201247	Buskirk Creek At Five Points @ Sr 56	5.20	9.10	39.675662	-83.182712	02 06	Five Points	Pickaway
201245	Buskirk Creek @ Crownover Mill Rd.	1.20	17.60	39.628162	-83.161611	02 06	Five Points	Pickaway
V09W09	Deer Creek Dst. Deer Creek Dam @ Crownover Mill Rd.	23.72	278.00	39.620662	-83.213213	02 07	Clarksburg	Pickaway
V09Q03	Deer Creek Adj. Williamsport-Crownover Rd., Dst. South Trib.	21.20	284.00	39.605062	-83.188012	02 07	Clarksburg	Pickaway
V09W10	Deer Creek NW Of Williamsport@ Walston Rd. Access	17.60	310.00	39.611962	-83.139610	02 07	Clarksburg	Pickaway
V09W09	Deer Creek Dst. Deer Creek Dam @ Crownover Mill Rd.	23.72	278.00	39.620662	-83.213213	02 07	Clarksburg	Pickaway
V09Q03	Deer Creek Adj. Williamsport-Crownover Rd., Dst. South Trib.	21.20	284.00	39.605062	-83.188012	02 07	Clarksburg	Pickaway
V09W10	Deer Creek NWOf Williamsport@ Walston Rd. Access	17.60	310.00	39.611962	-83.139610	02 07	Clarksburg	Pickaway
301509	Dry Run @ U.S. Rt. 56	3.60	13.47	39.659722	-83.126462	03 01	Five Points	Pickaway
V09P06	Dry Run N Of Williamsport @ Palestine-Williamsport Rd.	0.42	21.00	39.615362	-83.127710	03 01	Clarksburg	Pickaway
301511	Brush Creek @ St. Rt. 207	0.25	6.50	39.514895	-83.157459	03 02	Clarksburg	Pickaway
V09S03	Hay Run Just Ust. Clarksburg WWTP @ St. Rt. 138	3.91	21.90	39.506162	-83.150710	03 02	Clarksburg	Ross
301510	Hay Run Dst. Judas Rd./Dst. Trib.	6.80	9.50	39.540400	-83.157400	03 02	Clarksburg	Pickaway
V09S21	Hay Run Just Dst. Clarksburg WWTP	3.80	21.90	39.505662	-83.150510	03 02	Clarksburg	Ross
V09S01	Hay Run SE Of Clarksburg @ Twp. Rd. 132	0.90	28.70	39.492862	-83.114308	03 02	Andersonville	Ross
301512	Stall Run @St. Rt. 207	0.40	4.00	39.487117	-83.127590	03 02	Frankfort	Ross
301513	Waugh Run @ Egypt Rd.	4.95	19.60	39.456157	-83.137739	03 03	Frankfort	Ross
V09P10	Waugh Run 3 Mi. Ne Of Greenland @ Westfall Rd.	1.03	16.90	39.478162	-83.088007	03 03	Andersonville	Ross
V09S24	Deer Creek At Williamsport @ U.S. Rt. 22	14.76	333.00	39.585487	-83.121802	03 04	Williamsport	Pickaway
V09W11	Deer Creek S Of Williamsport @ St. Rt. 138	11.65	340.00	39.550862	-83.108009	03 04	Williamsport	Pickaway

Station	Name	River Mile	Drain. Area	Latitude	Longitude	HUC 12 (05060002)	County	USGS Quad
V09Q01	Deer Creek @ End Of Peck Rd.	8.80	345.00	39.513362	-83.110208	03 04	Williamsport	Pickaway
V09W12	Deer Creek @ Westfall Rd.	5.75	381.00	39.486762	-83.083807	03 04	Andersonville	Ross
600930	Deer Creek N Of Andersonville @ St. Rt. 104	1.05	411.00	39.458162	-83.019105	03 04	Andersonville	Ross
V09S24	Deer Creek At Williamsport @ U.S. Rt. 22	14.76	333.00	39.585487	-83.121802	03 04	Williamsport	Pickaway
V09W11	Deer Creek S Of Williamsport @ St. Rt. 138	11.65	340.00	39.550862	-83.108009	03 04	Williamsport	Pickaway
V09Q01	Deer Creek @ End Of Peck Rd.	8.80	345.00	39.513362	-83.110208	03 04	Williamsport	Pickaway
V09W12	Deer Creek @ Westfall Rd.	5.75	381.00	39.486762	-83.083807	03 04	Andersonville	Ross
600930	Deer Creek N Of Andersonville @ St. Rt. 104	1.05	411.00	39.458162	-83.019105	03 04	Andersonville	Ross

Table 4. List of chemical/physical water quality parameters to be analyzed/measured in surface water, sediment, and fish tissue from Deer Creek sampling locations. Not all sites will be samples for all parameters. Water samples will be collected 5 times sediment once. Bacteria samples will be collected 5 times during the recreation season (5– 10 times at sentinel sites). Select sampling locations will be monitored for dissolved oxygen, pH, temperature, and conductivity using Datasonde© continuous recorders (Table 2).

Parameters	Test Method	Water	Fish Tissue
Cbod, 20 day (Modeling)	?	X	
SOLIDS, DISSOLVED (TDS)	USEPA 160.1	X	
SOLIDS, SUSPENDED (TSS)	USEPA 160.2	X	
AMMONIA	USEPA 350.1	X	
TKN	USEPA 351.2	X	
NITRATE+NITRITE	USEPA 353.1	X	
Nitrite	USEPA 354.1	X	
Chloride	USEPA 325.1	X	
COD	USEPA 410.4	X	
TOTAL PHOSPHORUS	USEPA 365.4	X	
ORTHOPHOSPHATE, Dissolved (Modeling)	?	X	
ICP 1 (Al,Ba,Ca, Fe, Mg, Mn, Na, Ni, K, Sr, Zn, Hardness)	USEPA 200.7	X	
ICP 3 (Al,Ba,Ca,Fe,Mg,Mn,Na,K,Sr,Zn)	USEPA 200.7		
ICPMS 1 (As,Cd,Cr,Cu,Ni,Pb,Se)	USEPA 200.9, SM 3113B	X	X
ICPMS 2 (As,Cd,Cr,Cu,Ni,Pb,Se)	USEPA 200.9, SM 3113B		
MERCURY, TOTAL	USEPA 245.1,7470A,7471A	X	X (245.1)
pH – grab	YSI 600XL Sonde/USEPA 120.1	X – field	
Conductivity – grab	YSI 600XL Sonde / USEPA 120.1	X – field / lab	
Dissolved Oxygen – grab	YSI 600XL Sonde	X – field	
Temperature – grab	YSI 600XL Sonde	X – field	
Pesticides/PCBs/ Chlordane	USEPA 608/ USEPA 8081A, 8082		X (OEPA 590.1)
E.coli	USEPA 1103.1/ 640.1	X	
Percent Solids	SM 2540G		X

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## Hospital Directions and Maps

### Fayette County Memorial Hospital

1510 Columbus Avenue, Washington Court House, OH 43160-1899 (740) 335-1210 fcmh.org



### Doctors Hospital

5100 West Broad Street  
Columbus, Ohio 43228  
(614) 544-1000



### Driving directions

#### From the North

Interstate-270 West to West Broad Street (Rt. 40) exit, turn right (west) on Broad Street

**From the South**

Interstate-270 West to West Broad Street (Rt. 40) exit, turn left (west) on Broad Street

**From the East**

Interstate-70 West through Columbus to Interstate-270 Cincinnati; to West Broad Street (R. 40) exit to hospital.

**From the West**

Interstate-70 East to Interstate-270 Cincinnati; to West Broad Street (Rt. 40) exit, turn right (west) on Broad Street; or take Rt. 40 East toward Columbus.

**Parking**

Doctors Hospital offers free parking in front of the hospital main entrance, west parking lot and emergency department entrance. You can reach security by calling (614) 544-5841, should you need security assistance.

Parking for the physically challenged is available directly in front of the main entrance. If no spaces are available, please ask for assistance.

