# Biological and Water Quality Survey of the Middle Great Miami River and Selected Tributaries

Shelby, Miami, Montgomery, Clark, and Champaign Counties, Ohio

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# 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 2009 field sampling season within the Middle Great Miami River (GRM) basin. The study area is composed 15 watershed assessment units (HUC 12s). A total of 61 sampling stations are allocated to this effort and will provide for the assessment of 20 named stream (Table 1). Ambient biology, macrohabitat quality, water column chemistry, and bacteriological data will be collected from most of these sites. Diel water quality (DO, pH, conductivity, and temperature), sediment chemistry (metals, organics, and particle size) will be evaluated at selected sampling locations.

**Note:** Originally, the 2009 Middle GMR survey was to include an addition six HUC 12s, extending sampling coverage to the mainstem segment, between the Mad River and Bear Creek confluences', and all significant tributaries draining to that reach. However, due to resource constraints, these lower six watershed assessment units were deferred or otherwise removed from the 2009 study area.

**Sampling Objectives**

1) Systematically sample and assess the principal drainage network of the Middle Great Miami River in support of both the TMDL process and NPDES permits,

2) Gather ambient environmental information (biological, chemical, and physical) from undesignated water bodies, so as to recommend an appropriate suite of Beneficial Uses (e.g., aquatic life, recreational, water supply),

3) Verify the appropriateness of existing, unverified, Beneficial Use Designations, and recommend appropriate use designation to undesignated waters.

4) Establish baseline ambient biological conditions at selected reference stations to evaluate the effectiveness of future pollution abatement efforts, and

5) Document any changes in the 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]).

6) SWAP/Lakes Language?

## Issues

**Total Maximum Daily Load** (TMDL)
Information collected as part of this survey will support TMDL development for the study area. 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 redesignation if necessary) of beneficial use designations, gathering ambient information that will factor into the wasteload allocation, and ascribing causes 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 (named and unnamed) contained within the study area are unassessed. Previous Aquatic Life Use Designations for these waters were made prior to standardized approaches to the collection of in-stream biological data or numerical biological criteria. As a result, most of the existing Aquatic Life Use Designations for streams within the study area are classified as unverified. Furthermore, some water bodies within the study area are entirely unclassified (no existing Beneficial Use Designations). 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 wholly unclassified water bodies. Much of the sampling effort for this survey is allocated to fulfill this obligation.

**NPDES Permits**
Numerous major and minor NPEDES permitted facilities will be evaluated as part of this study. These include both publically owned treatment works and private entities. A list of all permitted facilities within the study area is presented in Table 2.

## Sampling Effort

**Field and Laboratory Load**
Summarized field and laboratory load (stations, number of samples, and parameters for analysis etc.) can be found in Table 3. All scheduled locations and necessary stipulations are provided in Tables 4 and 5.

**Water Quality**
Water column chemistry and bacteria samples will be collected from 61 stations within the study areas. Water column grab samples and standard field parameters will be collected/measured five times from all locations. The collection of water samples for bacteriological analysis is schedules for 27 stations (Tables 4 and 5). Sampling frequency, flow regime, and other field considerations shall comport with pending

Recreational Use rule changes. Laboratory analysis of said samples shall include *Escherichia coli (E. coli)* bacteria.

Datasonde deployment is requested for 22 locations, eight sentinel and 13 monitoring sites. If possible, the deployment of continuous monitors should coincide with typical low summer/fall flows (i.e., approaching $Q_7$10). The Modeling section will be responsible for deployment of the data center units.

Analysis of biochemical oxygen demand ($cBOD_5$) is requested for all samples collected as part of the Middle GMR study. Please see attached template regarding the inclusion of these parameters in the analysis of all grab samples.

**Sediment Chemistry**
Sediment samples are to be collected from approximately 45-50 locations (monitoring, sentinel, and reference stations) within the study area. Analysis will include a full organic scan (BNAs, PCBs, TOC, and Pesticides), a full metals scan (excluding mercury), and sediment particle size. Please note, due to very limited practical benefit, demonstrated over many years, analysis for sediment VOCs is not recommended for any sediment samples. Given the limited laboratory allocation, sediment and metal-organic sampling stations were chosen to evaluate areas likely to demonstrate contamination, aid in elucidating longitudinal trends in sediment contamination relative to a known source(s), characterization of sentinel sites, and characterization ecroregional sediment reference sites. Locations of selected sediment sampling stations are listed in Tables 4 and 5. The allocation and placement of remaining sediment sampling within the study area will be at the discretion of SWDO field staff.

**Benthic Macroinvertebrate Assessment**
The condition of the macrobenthos will be evaluated at 531locations. Artificial substrate samples (quantitative) will be collected by MEG staff at 26 stations within the study area. Qualitative benthic macroinvertebrate samples (natural substrates) will be collected at 25 locations. Locations of benthic macroinvertebrate sampling stations and type of sample required are listed in Tables 4 and 5.

**Fish Community Assessment**
The condition of the fish assemblages within the study area will be evaluated at 51 locations. Multiple pass fish community samples will be collected at 26 sites by OEPA FEG staff. Single pass fish community samples will be collected at 25 stations. Single pass evaluations are limited to headwaters, baring reference sites or significant permit issues. The locations of all fish sampling stations are listed in Tables 4 and 5.

**Sentinel Sites**
To aid in the development of a TMDL models(s), sentinel sites have been established at five designated locations. At each sentinel site, samples are collected monthly beginning prior to the routine field season that typically begins on June 15$^{th}$ to test for routine water chemistry parameters, pesticides (methods 525.2, 531.1, and 547) and stream stage is measured to the nearest 100$^{th}$ of a foot, as 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. If conditions warrant, Bacteriological sampling at all Sentinel Sites may be expanded beyond five runs. The locations of sentinel sites are indicated in Tables 4 and 5.

## QUALITY ASSURANCE

### 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). All methods are summarized in Table 6.

### 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.

Recreational use attainment will be determined using *E. coli* bacteria. *E. coli* is now the primary 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 mi². Qualitative sampling will be conducted in headwater sites with drainages smaller than 20 mi². 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, and margin). Fish will be sampled at each sampling location with pulsed DC current. Two passes will be conducted at sites larger than 20 mi² 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).

**Sediment**

Fine grained multi-incremental sediment samples will be collected in the upper 4 inches of bottom material using either decontaminated stainless steel scoops or Ekman dredges. Collected sediment will be placed into appropriate containers, placed on ice (to maintain 4$^{o}$C) and shipped to the Ohio EPA lab. Sampling and decontamination protocols will follow those listed in the Ohio EPA Sediment Sampling Guide and Methodologies, November, 2001.

**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 shipped overnight via courier 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© 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 and submitted to the lab for analysis within 6 hours of collection. All

samples will be analyzed for *E. coli* bacteria using U.S.EPA approved methods (STORET Parameter Code 31648).

**Field Quality Control Samples**

Ten percent of the sediment, water, and bacteria samples will be submitted to the lab as field duplicates. One Datasonde© 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). Matrix spike duplicates will be collected for organic water samples at a minimum of 5 percent.

**Field Staff and Other Contacts**

| | |
|---|---|
| Ohio EPA-Central Office<br>Charles Boucher: (614) 836-8776<br>Ed Moore: (614) 836-8783<br>Jeff Deshon: (614) 836-8780<br>Dale White: (614) 644-2159<br>Beth Risley: (614) 728-2384<br>Chris Skalski: (614) 644-2144 | County Wildlife Officers [District 5: (937) 372-9261]<br>Clark: Byron Rice (937) 372-5639, X5212<br>Champaign: Jeffery Tipton (614) 644-3929, X1201<br>Miami: Jasmine Grossnickle (937) 372-5639, X5215<br>Montgomery: Trent Weaver (937) 372-5639, X5211<br>Shelby: Tim Rourke (937) 372-5639, X5213 |
| | |
| Ohio EPA-SWDO<br>Diana Zimmerman: (937) 285-6440<br>Louise Snyder: (937) 285-6475<br>Maryanne Mahr: (937) 285-6196<br>Hugh Trimble: (937) 285-6444<br>Greg Buthker: (937) 285-6445<br>Ohio EPA, SWDO: 1-800-686-8930 | County Sheriffs<br>Clark: G. Kelly (937) 521-2056<br>Champaign: (937) 652-1311<br>Miami: C. Cox (937) 440-6085<br>Montgomery: (937) 225-4357<br>Shelby: D. Kimpel (937) 498-1111 |
| | |
| Miami Conservancy District<br>Sarah Hippensteel: (937) 223-1278<br>shippensteel@miamiconservancy.org | |

Table 1. Waterbodies and allocated sampling effort for each watershed assessment unit (HUC 12) comprising the Middle Great Miami River study, 2009.

| HUC 12 | Name | Waterbodies[a] | Sites[b] |
|---|---|---|---|
| 050800012005 | Poplar Creek-Great Miami River | Great Miami River (RM 95.6-85.9) | 5 |
| 050800012004 | Pleasant Run-Honey Creek | Honey Creek<br>Pleasant Run | 5 |
| 050800012001 | East Fork Honey Creek | East Fork Honey Creek | 3 |
| 050800010805 | Peters Creek-Great Miami River | Great Miami River (RM 106.1-100.8)<br>Boon Creek<br>Peters Creek | 5 |
| 050800012003 | Indian Creek | Indian Creek<br>Dry Creek | 3 |
| 050800012002 | West Fork Honey Creek | West Fork Honey Creek | 6 |
| 050800010804 | Little Lost Creek-Lost Creek | Lost Creek (RM 9.8-4.3)<br>Little Lost Creek<br>Middle Branch Lost Creek | 5 |
| 050800010803 | East Branch Lost Creek | East Branch Lost Creek | 3 |
| 050800010802 | Headwaters Lost Creek | Lost Creek (RM 14.8-11.7)<br>West Branch Lost Creek | 3 |
| 050800010801 | Spring Creek | Spring Creek | 3 |
| 050800010705 | Garbry Creek-Great Miami River | Great Miami River (RM 118.5-110.0) | 4 |
| 050800010704 | Rush Creek | Rush Creek | 3 |
| 050800010701 | Leatherwood Creek | Leatherwood Creek | 3 |
| 050800010702 | Mosquito Creek | Tawawa Creek<br>Mosquito Creek | 4 |
| 050800010703 | Brush Creek-Great Miami River | Great Miami River (RM 130.0-120.0)<br>Brush Creek | 5 |

a – Unless otherwise indicated, the sampling effort allocated to each waterbody includes the entire length.
b – Site total for each HUC 12 indicates the number of sampling stations allocated to the watershed assessment unit, not specific sample type(s).

Table 2. NPEDES permitted facilities (public and private) contained within the Middle Great Miami River study area, 2009.

| NPDES | TYPE | Size | Facility | Receiving Stream | RM | Associated Municipality |
|---|---|---|---|---|---|---|
| ***Montgomery County*** | | | | | | |
| 1PD00020 | P | Major | Tri-Cities North Regional WW Authority | Great Miami River | 86.43 | Riverside |
| 1IN00044 | I | Minor | Cargill Inc Dayton | Great Miami River | 89.1 | Dayton |
| 1IN00016 | I | Minor | Tate & Lyle Citric Acid | Great Miami River | 88.9 | Dayton |
| 1IN00267 | I | Minor | Gayston Corp | Great Miami River | 84.55 | Dayton |
| 1IN00089 | I | Minor | Behr Dayton Thermal Products | Great Miami River | 83.7-84.5 | Dayton |
| 1IN00134 | I | Minor | Gem City Chemicals Inc | Great Miami River | 83.2-84.5 | Dayton |
| 1IN00163 | I | Minor | DAP Inc. Wassall USA Holdings Inc | Via GMR Trib. | 84.4 | Dayton |
| 1II00117 | I | Minor | Montgomery Co. Ash Management Facility | GMR at 90.65 | 0.1 | Dayton |
| 1IG00014 | I | Minor | Stevens Aviation Co | North Cr. trib. at 0.95 | 1.55 | Vandalia |
| 1IN00096 | I | Minor | Delphi Automotive Systems LLC | GMR Trib. at 84.5 | 1.1 | Dayton |
| 1IC00004 | I | Minor | Electrical Power Systems - Vandalia | Poplar Cr trib. At 1.79 | 1.2 | Vandalia |
| 1IC00045 | I | Minor | Delphi Thermal Systems Vandalia Operations | North Creek | 2.5 | Vandalia |
| ***Miami County*** | | | | | | |
| 1PD00008 | P | Major | Piqua WWTP | Great Miami River | 114.08 | Piqua |
| 1PD00019 | P | Major | Troy WWTP | Great Miami River | 105.6 | Troy |
| 1PT00110 | P | Minor | Piqua Springcreek Elem Sch | Garby Creek | 1.95 | Piqua |
| 1PV00109 | P | Minor | Paris Court MHP | Rush Cr. Trib. at 3.9 | 0.8 | Piqua |
| 1PW00039 | P | Minor | Country Meadows Condo Assn | Echo Lake Trib. | 2.1 | Piqua |
| 1PT00054 | P | Minor | Western Ohio Japanese Language Sch | Spring Creek | 1.1 | Troy |
| 1IJ00011 | I | Minor | Piqua Materials Inc Piqua Minerals Div | Great Miami River | 114.35 | Piqua |
| 1IN00260 | I | Minor | Kimberly-Clark * | Great Miami River | 106.75 | Troy |
| 1IC00021 | I | Minor | Goodrich Aircraft Wheels & Brakes | Peters trib. at 1.55 | 0.4 | Troy |
| 1IJ00137 | I | Minor | Troy Sand & Gravel | Peters trib. at 0.13 | 1.0 | Troy |
| ***Shelby County*** | | | | | | |
| 1PD00009 | P | Major | Sidney STP | Great Miami River | 128.6 | Sidney |
| 1PT00103 | P | Minor | Fairlawn High & Middle School | Tawaw Trib. at 4.8 | 0.8 | Sidney |
| 1PV00037 | P | Minor | Hidden Valley MHP | Tawawa Creek | 3.3 | Sidney |
| 1PG00101 | P | Minor | Hickory Dell Estates WWTP | Brush Cr trib. at 1.0 | 0.25 | Orange Twp |
| 1PT00083 | P | Minor | Fair Haven Shelby Co Home WWTP | Mill Branch | 2.25 | Sidney |

| Table 2. continued. | | | | | | |
|---|---|---|---|---|---|---|
| 1IJ00052 | I | Minor | Barrett Paving Materials Inc Vandemark | Great Miami River | 125.7 | Sidney |
| 1IW00161 | I | Minor | Sidney WTP | Tawawa Creek | Near mouth | Sidney |
| 1IJ00033 | I | Minor | Barrett Paving Materials - Miami River Quarry | Great Miami River | 125.7 | Sidney |
| 1IJ00045 | I | Minor | Barrett Paving Materials - Rock Run Quarry | Mill Branch | 0.2 | Sidney |
| 1IN00061 | I | Minor | Ross Casting and Innovation LLC | Mill Branch<br>And<br>Mill Br Trib. at 3.0 | 2.9(mainstem)<br><br>0.2(tributary) | <br><br>Sidney |
| ***Champaign County*** | | | | | | |
| 1IY00310 | I | Minor | Christiansburg Water Works | W. Br. Honey Creek | 9.25 | Christiansburg |
| ***Clark County*** | | | | | | |
| 1PD00018 | P | Minor | New Carlisle WWTP | Honey Creek | 8.7 | New Carlisle |

**P** – Publically Owned Treatment Works (POTW)
**I** – Private/Industrial Entity
**Major** – Treatment works/Facility with a design flow greater than 1 MGD.
**Minor** – Treatment Work/Facility with a design flow less than 1 MGD.

Table 3. Ohio EPA laboratory and field sampling load for the 2009 Middle Great Miami survey. Total number of water column analytes does not include field parameters.

| Sample Type | No. Lab Parameters | No. Sites | Passes | Total Samples/Parameters |
|---|---|---|---|---|
| **Conventional Water Quality** (total)* | 35 | 61 | 5 | 305/10,675 |
| **Pathogen (***E. coli)* | 1 | 27 | 5+ | ~135 |
| **Water Column Organics** | | ? | 2 | -/- |
| New Age Pesticides | – | ? | 2 | -/- |
| BNA, Pesticides, PCBs | – | ? | 2 | -/- |
| **Datasonde** | – | 21 | 1 | NA |
| **Sediment** | – | TBD | 1 | -/- |
| Sediment Metals** | 10 | TBD | 1 | -/150 |
| Sediment Organic | (Full Scan)# | TBD | 1 | -/Full Scan |
| Sediment Particle Size | NA | TBD | 1 | -/- |
| **Fish Stations** (total) | – | 51 | 1-2 | 77/- |
| 2x | – | 26 | 2 | 52/- |
| 1x | – | 25 | 1 | 25/- |
| **Macrobenthos** (total)† | – | 51 | NA | 34.4 (HDs and Equivalents)/- |
| Quantitative (Hester Dendy) | – | 26 | NA | 26/- |
| Qualitative (Natural Substrates) | – | 25 | NA | 25 (8.4 HD Equivalents)/- |

* - Bacteriological measures will include a minimum of five *E. coli* runs for all stations. Analysis for $cBOD_5$ is requested for all WQ samples collected in support of the Middle Great Miami River survey.

** - Ohio EPA sediment samples will be analyzed for the following metals: Al, As, Cd, Cr, Cu, Pb, Fe, Mn, Ni, and Zn.

# - Full Scan includes BNAs, PCBs, Pesticides, and TOC. Please note, due to very limited utility, demonstrated over many years, analysis for sediment VOCs is not recommended for middle Great Miami River sediment samples.

† - The ratio of HD Equivalents and HD is 3:1.

Table 4. Middle Great Miami River sampling stations, 2009. Sample type: F-fish, B-macro-benthos, C-water column chemistry, D-datasonde, and S-sediment, and E-effluent.

| ***Stream*** **STORET** | **RM** | **DA** | **Sampling** | **Location** | **USGS 7.5' Quad.** |
|---|---|---|---|---|---|
| ***Great Miami River (14-001)*** | | | | | |
| ***EWH and WWHAquatic Life Use (verified)*** | | | | | |
| H02P12 | 130.0 | 541.0 | (C,D,S,P)[a,b] | SR 47, North St. (**Ref.** and **SS**) | Sidney |
| H02W27 | 127.7 | 547.0 | (F,B,C,D)[a] | Adj. River Rd., dst. Sidney WWTP | Sidney |
| H02W20 | 123.9 | 560.0 | (F,B,C)[a] | Kuther Rd., ust. Mill Branch | Piqua East |
| H02W39 | 120.0 | - | (F,B,C,D,P)[a] | Lockington Rd., ust. Loramie Cr. | Piqua East |
| 201922 | 118.5 | 833.0 | (F,B,C,S)[a] | Adj. SR 66, dst. Swift Run Lake outlet (**Ref.**) | Piqua West |
| **PIQUA DAM (RM 114.3)** | | | | | |
| H02S19 | 114.1 | 850.0 | (F,B,C,D,P)[a] | Dst. Piqua Dam/WWTP, ust. Hemms Dtch. | Piqua West |
| H02S01 | 112.45 | - | (F,B,C)[a] | Peterson Rd./Ferrington Rd. | Troy |
| 600090 | 110.07 | 891.0 | (C,D.P)[a,b] | Eldean Rd. | Troy |
| **TROY DAM (RM 106.9)** | | | | | |
| H05S05 | 106.1 | 926.0 | (F,B,C,D,S,P)[a] | SR 41 (**Ref. and SS**) | Troy |
| H05S04 | 104.7 | 930.0 | (F,B,C,D)[a] | Adj. SR 202, Dst. Troy WWTP | Troy |
| H05S03 | 100.84 | 971.0 | (F,B,C,D,S,P)[a] | Tipp-Elizabeth Rd. (**Ref.**) | Tipp City |
| H05S02 | 95.68 | 1142.0 | (F,B,C)[a] | Ross Rd./Old Springfield Rd. | Tipp City |
| **TAYLORSVILLE DAM (~RM 93.1)** | | | | | |
| 600080 | 93.0 | - | (F,B,C,D,S,P)[a] | Dst, Taylorsville Dam (**SS**) | Tipp City |
| H05S08 | 88.69 | 1161.0 | (F,B,C,D)[a] | Rip-Rap Rd., dst. Cargill and Tate Lyle | Dayton North |
| H05W32 | 87.05 | 1163.0 | (F,B,C,D,P)[a] | Needmore Rd., ust. Tri-Cities N. Reg. WWTP | Dayton North |
| **WELL FIELD DAM/INTAKE STRUCTURE (~RM 86.4)** | | | | | |
| H05S18 | 85.9 | 1171.0 | (F,B,C,D)[a] | Adj Troy Pike, dst. Tri-Cities N. Reg. WWTP | Dayton North |
| 300713 | 82.49 | - | (P) | Island Park, dst. Stillwater River | Dayton North |
| 610060 | 80.74 | 1161.0 | (C,D,S,P)[a] | Monument Ave. ust. Wolf Creek (**SS**) | Dayton North |
| ***Tawawa Creek (14-060)*** | | | | | |
| ***WWH Aquatic Life Use (verified)*** | | | | | |
| H02S07 | 1.2 | 52.0 | (F,B,C)[a] | Tawawa Park | Sidney |
| H02P08 | 0.22 | 54.7 | (C,D,S,P)[a] | SR 47, Dam pool, Sidney (**SS**) | Sidney |
| ***Mosquito Creek (14-061)*** | | | | | |
| ***WWH Aquatic Life Use (unverified)*** | | | | | |
| 300714 | 7.75 | 1X | (F,B,C) | Licklider Rd., dst. Kaiser Lake | St. Paris |
| H02P06 | 1.0 | 27.6 | (F,B,C,P)[a] | McCloskey School Rd. | Port Jefferson |
| ***Leatherwood Creek (14-062)*** | | | | | |
| ***WWH Aquatic Life Use (unverified)*** | | | | | |
| 300715 | 6.43 | 1X | (F,B,C) | Suber Rd. | Fletcher |
| 300716 | 3.34 | 1X | (F,B,C) | Sidney-Plattsville Rd. | Fletcher |
| 300717 | 1.2 | 17.1 | (F,B,C,P) | McCloskey School Rd. | Port Jefferson |
| ***Mill Branch (14-058)*** | | | | | |
| ***WWH Aquatic Life Use (unverified)*** | | | | | |
| 300718 | 0.34 | 3.9 | (F,B,C,P) | Kuther Rd. | Piqua East |
| ***Rush Creek (14-052)*** | | | | | |
| ***WWH Aquatic Life Use (unverified)*** | | | | | |
| 300719 | 5.3 | 1X | (F,B,C) | Vandemark Rd./Troy-Sidney Rd. | Piqua East |
| 300641 | 1.68 | 1X | (F,B,C,D,S,P) | Hetzler Rd. (**SS**) | Piqua East |
| 300720 | 0.3 | 18.4 | (F,B,C) | North Dixie Dr. | Piqua East |
| ***Spring Creek (14-050)*** | | | | | |
| ***EWH Aquatic Life Use (verified)*** | | | | | |
| H05P22 | 8.44 | 1X | (F,B,C) | SR 36, adj. Cemetery | Piqua East |

Table 4. continued.

| ***Stream*** **STORET** | **RM** | **DA** | **Sampling** | **Location** | **USGS 7.5' Quad.** |
|---|---|---|---|---|---|
| ***Spring Creek*** *(continued)* | | | | | |
| 300638 | 3.5 | 1X | (F,B,C,D,S,P) | Rusk Rd.(**SS**) | Troy |
| H05S07 | 0.844 | 25.8 | (F,B,C)[a] | Troy-Piqua Rd. | Troy |
| ***Boon Creek [at RM 103.8 (14-097)]*** | | | | | |
| ***Aquatic Life Use Designation Absent***[d] | | | | | |
| 300725 | 0.1 | 2.88 | (F,B,C,P) | At mouth | Troy |
| ***Peters Creek (14-096)*** | | | | | |
| ***Aquatic Life UseDesignation Absent***[d] | | | | | |
| 300726 | 0.59 | 1X | (F,B,C) | Dixie Rd./Old US 25 | Troy |
| ***Lost Creek (14-048)*** | | | | | |
| ***EWH Aquatic Life Use (verified)*** | | | | | |
| H05P12 | 11.7 | 1X | (F,B,C,P) | Peterson Rd. | Troy |
| H05P09 | 9.8 | 31.0 | (F,B,C) | Troy-Urbana Rd. | Troy |
| 300640 | 4.3 | 2X | (F,B,C,D,S,P)[a] | Knoop Rd. (**SS**) | Troy |
| H05P18 | 0.45 | 62.5 | (F,B,C)[a] | Tipp-Elizabeth Rd. | Tipp City |
| ***West Br. Lost Creek (14-???)*** | | | | | |
| ***Unlisted***[e] | | | | | |
| 300724 | 0.5 | 1X | (F,B,C) | US 36 | Piqua East |
| ***East Br. Lost Creek (14-049)*** | | | | | |
| ***EWH Aquatic Life Use (unverified)*** | | | | | |
| 203488 | 6.4 | 1X | (F,B,C) | Sodom-Ballou Rd. | Fletcher |
| H05P26 | 5.2 | 1X | (F,B,C) | Burr Oak Rd. | Fletcher |
| H05P19 | 0.7 | 14.4 | (F,B,C,P) | Peterson Rd. | Christianburg |
| ***Middle Br. Lost Creek (14-???)*** | | | | | |
| ***Unlisted***[e] | | | | | |
| H05P15 | 1.2 | 1X | (F,B,C) | SR 589 | Christianburg |
| ***Little Lost Creek (14-???)*** | | | | | |
| ***Unlisted***[e] | | | | | |
| H05P13 | 0.27 | 1X | (F,B,C) | Casstown Rd. | Troy |
| ***Honey Creek (14-043)*** | | | | | |
| ***EWH Aquatic Life Use (verified)*** | | | | | |
| H05P06 | 9.96 | 34.0 | (F,B,C,D)[a] | New Carlisle Pike, ust. New Carisle WWTP | New Carlisle |
| H05P07 | 8.08 | 37.0 | (F,B,C,D)[a] | SR 571, dst. New Carlisle WWTP | New Carlisle |
| H05S20 | 3.18 | 86.0 | (F,B,C,D,S,P)[a] | Rudy Rd. (**SS**) | |
| H05P16 | 0.8 | 89.4 | (F,B,C,D)[a] | SR 202 | Tipp City |
| ***Pleasant Run (14-???)*** | | | | | |
| ***Unlisted***[e] | | | | | |
| 300732 | 0.5 | 1X | (F,B,C) | Rudy Rd. | New Carlisle |
| ***East Fork Honey Creek (14-047)*** | | | | | |
| ***WWH Aquatic Life Use (unverified)*** | | | | | |
| 300727 | 5.9 | 1X | (F,B,C) | Ayres Rd. | Thackery |
| H05P05 | 3.6 | 1X | (F,B,C) | St. Paris Rd. | Donnelsville |
| H05P04 | 1.58 | 13.0 | (F,B,C,P) | Sigler Rd. | New Carlisle |
| ***West Fork Honey Creek (14-046)*** | | | | | |
| ***WWH Aquatic Life Use (unverified)*** | | | | | |
| H05W09 | 9.52 | - | (C,P) | East St., ust. Christiansburg | Christiansburg |
| H05W10 | 8.9 | - | (C,P) | Dst. SR 55, dst. Christiansburg Sewers | Christiansburg |
| H05P01 | 8.04 | - | (C) | Addison-New Carlisle Rd., dst. Christiansburg | Christiansburg |

Table 4. continued.

| ***Stream*** **STORET** | **RM** | **DA** | **Sampling** | **Location** | **USGS 7.5' Quad.** |
|---|---|---|---|---|---|
| ***West Fork Honey Creek*** *(continued)* | | | | | |
| H05P02 | 1.3 | 1X | (F,B,C,D) | SR 235 | New Carlisle |
| 300728 | 0.1 | 20.9 | (F,B,C,P)[a] | At mouth | New Carlisle |
| ***Indian Creek (14-044)*** | | | | | |
| ***WWH Aquatic Life Use (unverified)*** | | | | | |
| 300730 | 4.95 | 1X | (F,B,C) | Walnut Grove Rd., ust. Dry Creek | New Carlisle |
| 300731 | 1.52 | 25.6 | (F,B,C,P)[a] | SR 201 | New Carlisle |
| ***Dry Creek (14-045)*** | | | | | |
| ***WWH Aquatic Life Use (unverified)*** | | | | | |
| 300729 | 1.2 | 7.78 | (F,B,C) | Walnut Grove Rd. | New Carlisle |
| ***Poplar Creek (14-???)*** | | | | | |
| | | | | | |
| 203499 | 0.7 | - | (P) | Brown School Rd. | Dayton North |

**Sampling**: F-fish community, B-benthic macroinvertebrates, C-water column chemistry, S-sediment, D-datasonde, and P-pathogens.

**DA -** Drainage Area (miles$^2$).

**Ref -** Ecoregional reference stations.

**SS -** Modeling sentinel sites.

**a -** Sites draining an area ≥20 miles$^2$. Therefore, all sites so identified will receive: 2x fish and quantitative macrobenthos, sampling. All remaining sites (<20 mlies$^2$) will receive 1x fish, qualitative macrobenthos sampling.

**b -** Ambient biological assessment of selected mainstem stations (RMs 130.0 and 110.07) shall be derived from 2007 survey results.

**c -** Nutrient study site: Filtered samples for chlorophyll analysis, datasonde deployment, and $cBOD_5$ analysis are requested (TBD).

**d -** Although recognized and listed in the Ohio WQS, waters so identified lack an Aquatic Life Use Designation.

**e -** Waterbodies so identified are presently unlisted or otherwise not specifically recognized in the Ohio WQS.

**Table 5. Master station identifiers for the Middle Great Miami River study area , 2009.**

| MAP | METER SITE ID | STORET | DAY | LOCATION | COMMENT | RM | Latitude | Longitude | Quad | County | Sampling |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Great Miami River (14-001)** | | | | | | | | | | | |
| **HUC 05080001-07-03** | | | | | | | | | | | |
| **1** | **4053** | **H02P12** | **1** | **SR 47 (E. North St) Sidney** | **Sentinel** | **130.00** | **40.2868076** | **-84.1498847** | **Sidney** | **Shelby** | **C,D,S,P** |
| **2** | 4047 | H02W27 | 1 | adj. River Rd | dst. Sidney WWTP | 127.70 | 40.2663850 | -84.1652609 | Sidney | Shelby | C,D,F,B |
| **3** | 4040 | H02W20 | 1 | Kuther Rd | Upst Mill Branch | 123.90 | 40.2241414 | -84.2049830 | Piqua East | Shelby | C,F,B |
| **4** | 4059 | H02W39 | 1 | Lockington Rd | ust. Loramie Creek | 120.46 | 40.1889134 | -84.2336196 | Piqua East | Miami | C,D,P,F,B |
| **HUC 05080001-07-05** | | | | | | | | | | | |
| **5** | 10052 | 201922 | 1 | Adj SR 66 | dst Swift Run Lake | 118.50 | 40.1736194 | -84.2572535 | Piqua West | Miami | C,S,F,B |
| **6** | 10036 | H02S19 | 1 | Dst Piqua Dam and WWTP | Upst Hemm Ditch | 114.10 | 40.1308526 | -84.2355464 | Piqua East | Miami | C,D,P,F,B |
| **7** | 10031 | H02S01 | 1 | Peterson Rd/Ferrington Rd | | 112.45 | 40.1080748 | -84.2312266 | Troy | Miami | C,F,B |
| **8** | 10026 | 600090 | 1 | Eldean Rd | chem only | 110.07 | 40.0779311 | -84.2165222 | Troy | Miami | C,D,P |
| **HUC 05080001-08-05** | | | | | | | | | | | |
| 9 | 10022 | H05S05 | 1 | SR 41 | Sentinel | 106.13 | 40.0306023 | -84.1875197 | Troy | Miami | C,D,S,P,F,B |
| 10 | 10017 | H05S04 | 1 | Adj SR 202 | Dst. Troy WWTP | 104.70 | 40.0117074 | -84.1828132 | Troy | Miami | C,D,F,B |
| 11 | 10014 | H05S03 | 1 | Tipp-Elizabeth Rd | | 100.84 | 39.9678187 | -84.1662038 | Tipp City | Miami | C,D,S,P,F,B |
| HUC 05080001-20-05 | | | | | | | | | | | |
| **12** | 10012 | H05S02 | 2 | Old Springfield Rd (Ross Rd) | | 95.68 | 39.9155547 | -84.1637780 | Tipp City | Montgm./Miami | C,F,B |
| **13** | **10004** | **600080** | **2** | **Downstream Taylorsville Dam** | **Sentinel** | **93.00** | **39.8727985** | **-84.1641751** | **Dayton N.** | **Montgomery** | **C,D,S,P,F,B** |
| **14** | 10000 | H05S08 | 2 | Rip-Rap Rd (Wagoner Ford) | Dst Cargill and Tate Lyle outfalls | 88.69 | 39.8273428 | -84.1670930 | Dayton N. | Montgomery | C,D,F,B |
| **15** | 9995 | H05W32 | 2 | Needmore Rd | Ust Tri-Cities North Regional WWTP | 87.05 | 39.8201975 | -84.1561730 | Dayton N. | Montgomery | C,D,P,F,B |
| **16** | 9992 | H05S18 | 2 | Adj Troy Pike (SR 202) | Dst Tri-Cities North Regional WWTP | 85.90 | 39.8052785 | -84.1530538 | Dayton N. | Montgomery | C,D,F,B |
| **A** | | 300713 | | Island Park | Dst Stillwater River | 82.49 | 39.7770836 | -84.1981908 | Dayton N. | Montgomery | P |
| **HUC 05080002-01-05** | | | | | | | | | | | |
| **17** | **607** | **610060** | **2** | **Monument Avenue** | **Sentinel** | **80.74** | **39.7632497** | **-84.2018854** | **Dayton N.** | **Montgomery** | **C,D,S,P** |
| **Tawawa Creek (14-060)** | | | | | | | | | | | |
| **HUC 05080001-07-02** | | | | | | | | | | | |
| **18** | 4091 | H02S07 | 1 | Tawawa Park | | 1.20 | 40.2885875 | -84.1286508 | Sidney | Shelby | C,F,B |
| **19** | **4090** | **H02P08** | **1** | **SR 47** | **Sentinel (chem only)** | **0.22** | **40.2909263** | **-84.1437919** | **Sidney** | **Shelby** | **C,D,S,P** |

**Table 5. continued.**

| MAP | METER SITE ID | STORET | DAY | LOCATION | COMMENT | RM | Latitude | Longitude | Quad | County | Sampling |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mosquito Creek (14-061)** | | | | | | | | | | | |
| **20** | 13118 | 300714 | 1 | Licklider Rd | Dst Kiser Lake | 7.75 | 40.2022767 | -83.9870078 | Saint Paris | Shelby | C,F,B |
| **21** | 4094 | H02P06 | 1 | McCloskey School Rd | | 1.00 | 40.2530954 | -84.0813895 | Port Jefferson | Shelby | C,**P**,F,B |
| **HUC 05080001-07-01** | | | | | | | | | | | |
| **Leatherwood Creek (14-062)** | | | | | | | | | | | |
| **22** | 13119 | 300715 | 1 | Suber Rd | | 6.43 | 40.1999763 | -84.0572498 | Fletcher | Shelby | C,F,B |
| **23** | 13120 | 300716 | 1 | Sidney-Plattsville Rd | | 3.34 | 40.2331584 | -84.0764774 | Fletcher | Shelby | C,F,B |
| **24** | 13121 | 300717 | 1 | McCloskey School Rd | | 1.20 | 40.2535276 | -84.0895566 | Port Jefferson | Shelby | C,**P**,F,B |
| **HUC 05080001-07-03** | | | | | | | | | | | |
| **Mill Branch (14-058)** | | | | | | | | | | | |
| **25** | 13122 | 300718 | 1 | Kuther Rd | | 0.34 | 40.2276837 | -84.2073988 | Piqua East | Shelby | C,**P**,F,B |
| **HUC 05080001-07-04** | | | | | | | | | | | |
| **Rush Creek (14-052)** | | | | | | | | | | | |
| **26** | 13123 | 300719 | 1 | Vandemark Rd (Troy-Sidney Rd) | | 5.30 | 40.1931913 | -84.1934069 | Piqua East | Miami | C,F,B |
| **27** | **12390** | **300641** | **1** | **Hetzler Rd** | **Sentinel** | **1.68** | **40.1715466** | **-84.2400257** | **Piqua East** | **Miami** | **C,D,S,P,F,B** |
| **28** | 13124 | 300720 | 1 | N. Dixie Dr | | 0.30 | 40.1566629 | -84.2383525 | Piqua East | Miami | C,F,B |
| **HUC 05080001-08-01** | | | | | | | | | | | |
| **Spring Creek (14-050)** | | | | | | | | | | | |
| **29** | 11826 | H05P22 | 1 | US 36 | adj. cemetery | 8.44 | 40.1475318 | -84.1590824 | Piqua East | Miami | C,F,B |
| **30** | **12387** | **300638** | **1** | **Rusk Rd** | **Sentinel** | **3.50** | **40.0900159** | **-84.1696397** | **Troy** | **Miami** | **C,D,S,P,F,B** |
| **31** | 11834 | H05S07 | 1 | Troy-Piqua Rd | | 0.84 | 40.0724776 | -84.1991204 | Troy | Miami | C,F,B |
| **HUC 05080001-08-02** | | | | | | | | | | | |
| **Lost Creek (14-048)** | | | | | | | | | | | |
| **32** | 11816 | H05P12 | 1 | Peterson Rd | | 11.70 | 40.1024663 | -84.1309612 | Troy | Miami | C,**P**,F,B |
| **HUC 05080001-08-04** | | | | | | | | | | | |
| **33** | 11813 | H05P09 | 1 | Troy-Urbana Rd | | 9.74 | 40.0776194 | -84.1343097 | Troy | Miami | C,F,B |
| **34** | **12389** | **300640** | **1** | **Knoop Rd** | **Sentinel** | **4.30** | **40.0180244** | **-84.1578001** | **Troy** | **Miami** | **C,D,S,P,F,B** |
| **35** | 11822 | H05P18 | 1 | Tipp-Elizabeth Rd | | 0.45 | 39.9697801 | -84.1580668 | Tipp City | Miami | C,F,B |

Table 5. continued.

| MAP | METER SITE ID | STORET | DAY | LOCATION | COMMENT | RM | Latitude | Longitude | Quad | County | Sampling |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **HUC 05080001-08-02** | | | | | | | | | | | |
| **West Branch Lost Creek (14-___)** | | | | | | | | | | | |
| **36** | 13125 | 300724 | 1 | US 36 | | 0.50 | 40.1461098 | -84.1327971 | Piqua East | Miami | C,F,B |
| **HUC 05080001-08-03** | | | | | | | | | | | |
| **East Branch Lost Creek (14-049)** | | | | | | | | | | | |
| **37** | 12017 | 203488 | 1 | Sodom Ballou Rd | | 6.40 | 40.1396831 | -84.0649893 | Fletcher | Miami | C,F,B |
| **38** | 11830 | H05P26 | 1 | Burr Oak Rd | | 5.24 | 40.1377133 | -84.0839699 | Fletcher | Miami | C,F,B |
| **39** | 11823 | H05P19 | 1 | Peterson Rd | | 0.70 | 40.1017830 | -84.1222426 | Christiansburg | Miami | C,**P**,F,B |
| **HUC 05080001-08-04** | | | | | | | | | | | |
| **Middle Branch Lost Creek (14-048-002)** | | | | | | | | | | | |
| **40** | 11819 | H05P15 | 1 | SR 589 | | 1.20 | 40.0766595 | -84.1178223 | Christiansburg | Miami | C,F,B |
| **Little Lost Creek (14-048-001)** | | | | | | | | | | | |
| **41** | 11817 | H05P13 | 1 | Casstown Rd | | 0.27 | 40.0566762 | -84.1358170 | Troy | Miami | C,F,B |
| **HUC 05080001-08-05** | | | | | | | | | | | |
| **Boon Creek (14-097)** | | | | | | | | | | | |
| **42** | 13126 | 300725 | 1 | | at mouth | 0.10 | 40.0022042 | -84.1914368 | Troy | Miami | C,**P**,F,B |
| **Peters Creek (14-096)** | | | | | | | | | | | |
| **43** | 13127 | 300726 | 1 | Dixie Rd/Old US 25 | | 0.59 | 40.0087391 | -84.2007103 | Troy | Miami | C,F,B |
| **HUC 05080001-20-04** | | | | | | | | | | | |
| **Honey Creek (14-043)** | | | | | | | | | | | |
| **44** | 11810 | H05P06 | 2 | New Carlisle Pike | Upst New Carlisle WWTP | 9.96 | 39.9403553 | -84.0171365 | New Carlisle | Clark | C,D,F,B |
| **45** | 11811 | H05P07 | 2 | SR 571 | Dst New Carlisle WWTP | 8.08 | 39.9354514 | -84.0410715 | New Carlisle | Clark | C,D,F,B |
| **46** | **12279** | **H05S20** | **2** | **Rudy Rd** | **Sentinel** | **3.18** | **39.9693766** | **-84.1092066** | **New Carlisle** | **Miami** | **C,D,S,P,F,B** |
| **47** | 11820 | H05P16 | 2 | SR 202 | | 0.84 | 39.9698328 | -84.1389948 | Tipp City | Miami | C,D,F,B |
| **HUC 05080001-20-01** | | | | | | | | | | | |
| **East Fork Honey Creek (14-047)** | | | | | | | | | | | |
| **48** | 13128 | 300727 | 2 | Ayres Pike | | 5.90 | 40.0081036 | -83.9899115 | Thackery | Clark | C,F,B |
| **49** | 11809 | H05P05 | 2 | St. Paris Rd | | 3.60 | 39.9832668 | -83.9922492 | Donnelsville | Clark | C,F,B |

Table 5 . continued.

| MAP | METER SITE ID | STORET | DAY | LOCATION | COMMENT | RM | Latitude | Longitude | Quad | County | Sampling |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **East Fork Honey Creek (14-047)** | | | | | | | | | | | |
| **50** | 11808 | H05P04 | 2 | Sigler Rd | | 1.58 | 39.9573447 | -84.0011974 | New Carlisle | Clark | C,**P**,F,B |
| **HUC 05080001-20-02** | | | | | | | | | | | |
| **West Fork Honey Creek (14-046)** | | | | | | | | | | | |
| **51** | 11848 | H05W09 | 2 | East St. (N. Bollinger Rd) | Upst Christiansburg, (chem only) | 9.52 | 40.0612125 | -84.0334988 | Christiansburg | Champaign | C,**P** |
| **52** | 11849 | H05W10 | 2 | Dst SR 55 | Christiansburg sewers (chem only) | 8.90 | 40.0534800 | -84.0294621 | Christiansburg | Champaign | C,**P** |
| **53** | 11805 | H05P01 | 2 | Addison-New Carlisle Rd | Dst Christiansburg (chem only) | 8.04 | 40.0439779 | -84.0291169 | Christiansburg | Champaign | C |
| **54** | 11806 | H05P02 | 2 | SR 235 | | 1.30 | 39.9635915 | -84.0144319 | New Carlisle | Clark | C,D,F,B |
| **55** | 13129 | 300728 | 2 | at mouth | | 0.10 | 39.9470528 | -84.0130288 | New Carlisle | Clark | C,**P**,F,B |
| **HUC 05080001-20-03** | | | | | | | | | | | |
| **Indian Creek (14-044)** | | | | | | | | | | | |
| **56** | 13131 | 300730 | 2 | Walnut Grove Rd | Upstream Dry Creek | 4.95 | 39.9971172 | -84.0620320 | New Carlisle | Miami | C,F,B |
| **57** | 13132 | 300731 | 2 | SR 201 | | 1.52 | 39.9659672 | -84.0808198 | New Carlisle | Miami | C,**P**,F,B |
| **Dry Creek (14-045)** | | | | | | | | | | | |
| **58** | 13130 | 300729 | 2 | Walnut Grove Rd | | 1.20 | 39.9979220 | -84.0747713 | New Carlisle | Miami | C,F,B |
| **HUC 05080001-20-04** | | | | | | | | | | | |
| **Pleasant Run (14-___)** | | | | | | | | | | | |
| **59** | 13133 | 300732 | 2 | Rudy Rd | | 0.50 | 39.9818000 | -84.1197090 | New Carlisle | Miami | C,F,B |
| **HUC 05080001-20-05** | | | | | | | | | | | |
| **Poplar Creek (14-___)** | | | | | | | | | | | |
| **B** | | 203499 | | Brown School Rd | | 0.70 | 39.8646083 | -84.1797237 | Dayton North | Montgomery | **P** |

Table 6. List of chemical/physical water quality parameters to be analyzed/measured in surface water, sediment, and fish tissue from the Central Ohio River tributaries sampling locations. Not all sites will be samples for all parameters. Water samples will be collected 5 times (organics once), 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 4).

| Parameters | Test Method | Water | Sediment | Fish Tissue |
|---|---|---|---|---|
| cBOD, 5 day | ? | 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 | ? | X | | |
| GLYPHOSATE | USEPA 547 | 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 | | X | |
| **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 | | X | |
| MERCURY, TOTAL | USEPA 245.1,7470A,7471A | X | X | X (245.1) |
| pH – grab | YSI 556MPS meter | X field | | |
| Conductivity – grab | YSI 556MPS meter/ USEPA 120.1 | X field/lab | | |
| Dissolved Oxygen – grab | YSI 556MPS meter | X field | | |
| Temperature – grab | YSI 556MPS meter | X field | | |
| VOCs | USEPA 624/USEPA 8260 | X | X | |
| Herbicides | USEPA 525.2 | X | | |
| SVOCs (BNAS) | USEPA 625/ USEPA 8270C | X | X | |
| Pesticides/PCBs/ Chlordane | USEPA 608/ USEPA 8081A, 8082 | X (PCBs only) | X (PCBs only) | X (OEPA 590.1) |
| *E. coli* | USEPA 1103.1/ 640.1 | X | | |
| Percent Solids | SM 2540G | | X | X |

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**http://www.epa.state.oh.us/dsw/bioassess/BioCriteriaProtAqLife.html**

# Medical Services

## Wilson Memorial Hospital

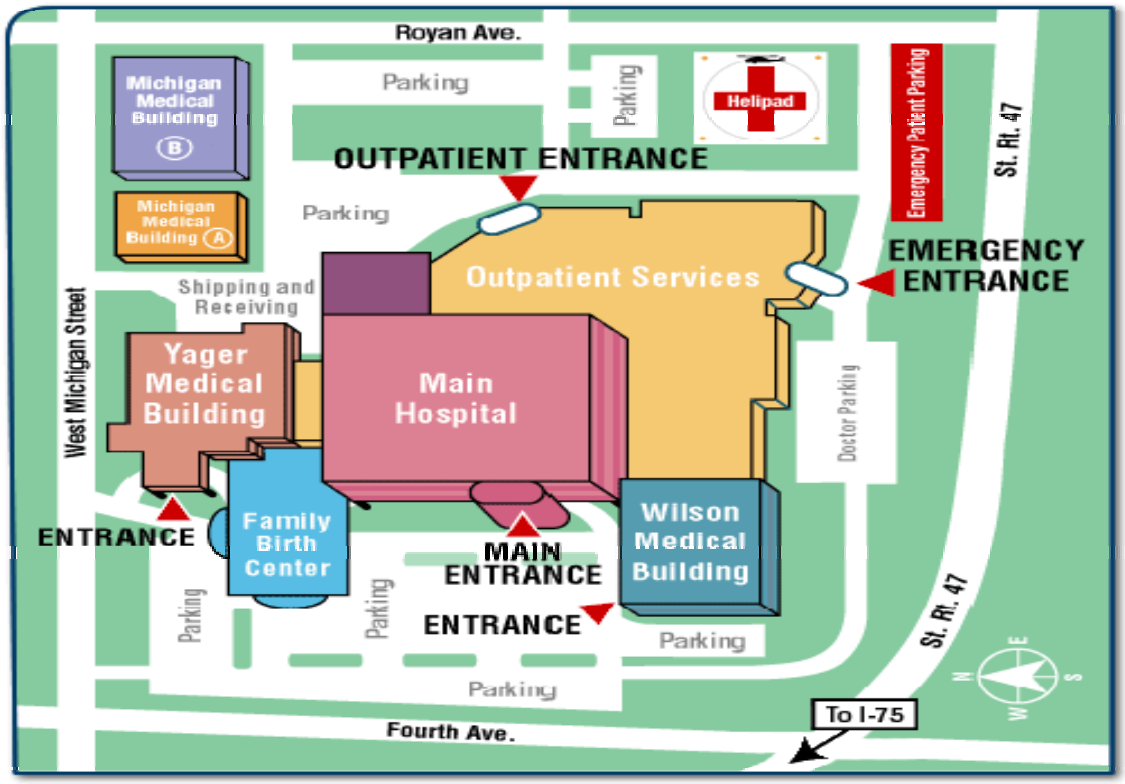
915 West Michigan Street
Sidney, Ohio 45365
(937) 498-2311


**From the South**
Take I-75 North to exit 92. Turn right onto St. Rt. 47. At the second light turn left onto Fourth Avenue. At the next light turn right onto Michigan Street. Turn right into the hospital.

**From the North**
Take I-75 South to exit 92. Turn left onto St. Rt. 47. At the third light turn left onto Fourth Avenue. At the next light turn right onto Michigan Street. Turn right into the hospital.

**From the East**
Take St. Rt. 47 West into Sidney. Stay on 47 through downtown Sidney, and when you get to Fourth Avenue turn right at the light. At the next light turn right onto Michigan Street. Turn right into the hospital.

**From the West**
Take St. Rt. 47 East into Sidney. Go through five lights, at the sixth light turn left onto Fourth Avenue. At the next light turn right onto Michigan Street. Turn right into the hospital



## Miami Valley Hospital

One Wyoming Street
Dayton, Ohio 45409-2793
(937) 208-8000

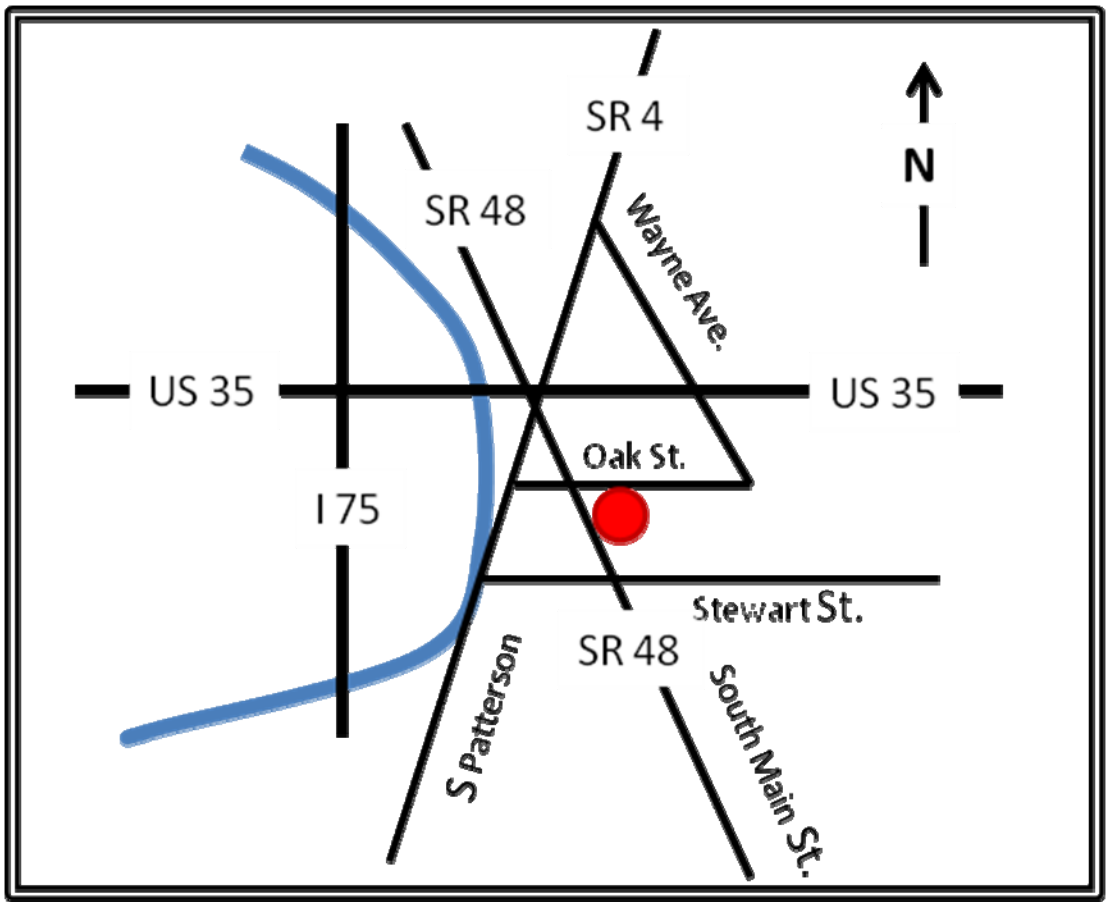
**From the north:** Take I-75 south to U.S. 35 east (exit 52B – Xenia). Continue east on U.S. 35 to the Main-Jefferson exit (this ramp exits left). Turn left at Jefferson Street and follow Jefferson/Warren streets to the hospital.

**From the south:** Take I-75 north to U.S. 35 east (exit 52B – Xenia). Continue east on U.S. 35 to the Main-Jefferson exit (this ramp exits left). Continue as "From the north."

**From the east:** Take I-70 west to I-675 south (exit 44). Continue on I-675 to U.S. 35 west (exit 13B – Dayton). Take U.S. 35 west to the Main-Jefferson exit. Continue as "From the north."

**From the west via I-70:** Take I-70 east to I-75 south. Continue as "From the north."

**From the west via U.S. 35:** Take U.S. 35 east, past the I-75 interchange, to the Main-Jefferson exit (this ramp exits left). Continue as "From the north."



## Good Samaritan Hospital

2222 Philadelphia Dr.
Dayton, OH 45406-1891
(937) 278-2612
(937) 274-3367 (TTY)

**From the North (and East)**
Follow I-70 West to I-75 South. Follow I-75 South to the, Needmore Road exit (exit #58). Turn right at the end of ramp onto Needmore Road. Continue on Needmore (Wright Brothers Parkway, Shoup Mill Road, Turner Road) for approximately 2.5 miles. Turn left onto Philadelphia Drive. Continue on Philadelphia for approximately 1.5 miles. The entrance to Good Samaritan Hospital is on the left just before you reach Salem Avenue.

**From the West (and Northwest)**
From I-70, follow State Route 49 South approximately 7 miles. (Route 49 will become Salem Avenue). Turn left onto Philadelphia Drive. The entrance to the hospital is on the right.

**From the South**
Follow I-75 North to Salem Avenue (State Route 49) exit 53B. Turn left at the bottom of the ramp and go across the bridge. Follow Salem Avenue for approximately 2.25 miles. Turn right onto Philadelphia Drive. The entrance to the hospital is on the right.