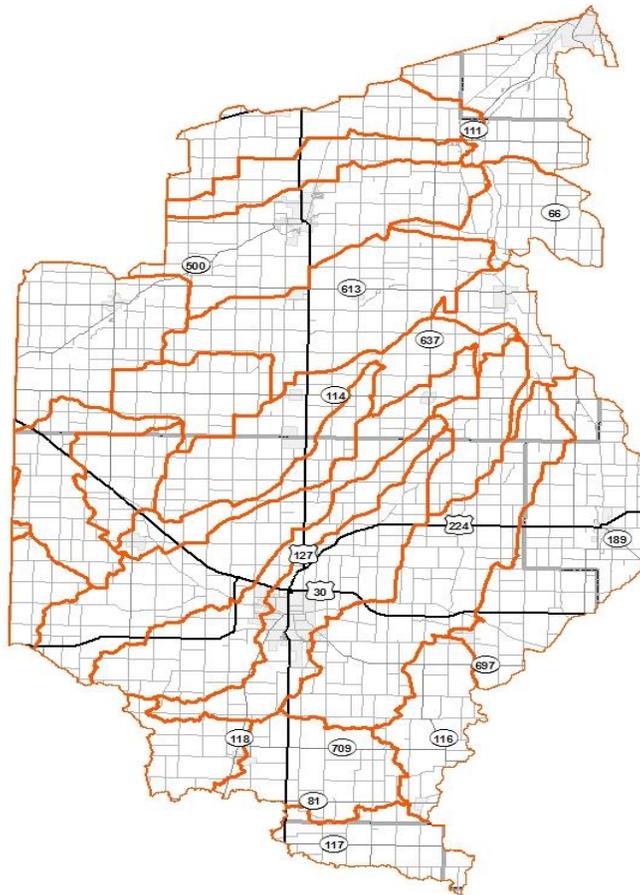




2014 Study Plan for the Lower Auglaize River Tributaries

Defiance, Mercer, Paulding, Putnam, and Van Wert
Counties, Ohio



Division of Surface Water
Ecological Assessment Section
April 11, 2014

2014 Study Plan for the Lower Auglaize River Tributaries

(Mercer, Paulding, Putnam, and Van Wert counties, OH)

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April 11, 2014

Introduction

As part of the Total Maximum Daily Load (TMDL) process and in support of the basin approach for National Pollution Discharge Elimination System (NPDES) permitting, an intensive ambient assessment will be conducted during the 2014 field sampling season within the lower Auglaize River tributaries (Figure 1). The study area is composed of all or portions of 25 HUC12 watershed assessment units. A total of 73 sampling stations will be completed in the lower Auglaize River tributary study area. Ambient biology, macrohabitat quality, water column chemistry, and bacteriological data will be collected concurrently from most of these sites. Diel water quality (DO, pH, conductivity, and temperature), sediment chemistry (metals, organics, and particle size), nutrients, and fish tissue will be evaluated at selected sampling locations Table 3.

Sampling Objectives

- 1** Systematically sample and assess the principal drainage networks of the lower Auglaize River 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 3,
- 3** Collect fish tissue samples at selected stations as listed under sample types 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

Information collected as part of this survey will support TMDL development for this 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 (Table 1), Ohio Department of Agriculture (ODA) permitting (Table 2), 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 MWH (Modified Warmwater Habitat). For some of the streams, this will be the first time that they 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.

SAMPLING ACTIVITIES

Chemical/Physical Water and Sediment

Chemical sampling locations within the study area are listed in Table 3. Conventional chemical/physical water quality samples will be collected 5 times at each designated location. Sediment samples will be collected at seven locations. Datasondes® will be deployed at 16 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 nine chemistry sites for bacteriological analyses to determine the attainment status of the Primary Contact recreational use of the streams within the study area. 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.

Chlorophyll

Benthic chlorophyll a samples are to be collected at designated wadeable and headwater sites noted in Table 3. Benthic chlorophyll samples are to be collected at least once, and should be timed to coincide with deployment of Datasonde® automated data loggers during stable, baseflow conditions (i.e., typically the second deployment).

Macroinvertebrate and Fish Assemblages

Macroinvertebrate sampling methods will be used as listed in Table 3. Fish assemblages will be sampled as listed in Table 3. Qualitative Habitat Evaluation Index (QHEI) scores will be calculated on the habitat at all fish sampling locations.

Fish Tissue

Fish tissue samples will be collected from two 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, data processing, and data analysis methods and procedures adhere to those specified in the Surface Water Field Sampling Manual for water column chemistry, bacteria and flows (Ohio EPA 2013a), Biological Criteria for the Protection of Aquatic Life, Volumes II - III (Ohio EPA 1987, 1989a, 1989b, 2014b, 2014c), and The Qualitative Habitat Evaluation Index (QHEI); Rationale, Methods, and Application (Ohio EPA 1989c, 2006) for habitat

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assessment, Ohio EPA Sediment Sampling Guide and Methodologies (Ohio EPA 2012a), and Ohio EPA Fish Tissue Collection Guidance Manual (Ohio EPA 2012b).

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 Western Allegheny Plateau (WAP) ecoregion.

Recreational use attainment will be determined using fecal coliform bacteria and *E. coli* bacteria. Both types of organisms are indicator organisms for the potential presence of pathogens in surface water resulting from the presence of untreated human or animal wastes, and they are the basis for recreational use water quality criteria in Rule 3745-1-07 of the (OAC).

Stream Habitat Evaluation

Physical habitat is evaluated using the (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/or natural stream habitats. Artificial substrate collections will be collected at all sites with greater than 20 mi² drainage areas or at reference site locations. This sample provides quantitative data and consists of a composite sample of five modified Hester-Dendy multiple-plate artificial substrate samplers colonized for six weeks. Qualitative sampling will be conducted at all sampling locations. This sampling effort consists of an inventory of all observed macroinvertebrate taxa from the natural stream habitats at each site with no attempt to quantify populations other than notations on

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the predominance of specific taxa or taxa groups within major macrohabitat types (e.g., riffle, run, pool, and margin). Detailed macroinvertebrate assemblage sampling protocols are documented in Biological Criteria for the Protection of Aquatic Life, Volume III (1989b, 2014c).

Fish will be sampled at each sampling location using pulsed DC headwater, wading, or boat electrofishing methods depending on watershed size at each sampling zone. Sites with drainage areas greater than 20 mi² or at reference site locations will be sampled twice during the sampling index period. Fish are processed in the field which includes identifying each individual to species, counting individuals at all sites, weighing individuals at wading and boat sites, and recording any external abnormalities. Detailed fish assemblage sampling protocols are documented in Biological Criteria for the Protection of Aquatic Life, Volume III (1989b, 2014c).

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°C) and shipped to the Ohio EPA Division of Environmental Services (DES) lab. Sampling and decontamination protocols will follow those listed in the Ohio EPA Sediment Sampling Guide and Methodologies (2012a).

Chlorophyll

Benthic chlorophyll a samples will be collected and preserved using appropriate methods, as outlined in Appendix II of Surface Water Field Sampling Manual for water column chemistry, bacteria and flows (Ohio EPA 2013a) and delivered to the Ohio EPA DES lab for analyses. Alkalinity must be requested as a routine water quality parameter at all study sites along with the routine field parameters, especially temperature and pH.

Surface Water

Surface water grab samples will be collected and preserved using appropriate methods, as outlined in Surface Water Field Sampling Manual for water column chemistry, bacteria and flows (Ohio EPA 2013a) and delivered to the Ohio EPA Division of Environmental Services lab for analyses. 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 diel 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 DES laboratory 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).

Fish Tissue

Tissue fillet samples will be collected from fish of edible size, and species preferred for analysis may include spotted bass, largemouth bass, smallmouth bass, flathead catfish, walleye, saugeye, white bass, common carp, freshwater drum, and channel catfish. When possible, composite samples (by species) will be collected using a minimum of three fish and a minimum of 150 grams of material. At each sampling location, an attempt will be made to collect five fish species for fillet tissue analysis. Fish will be sampled using electrofishing boat methods at the

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reservoir and wading method at the remainder sites. Sampling locations are listed in Table 2. Fish used for tissue analysis will be filleted in the field using decontaminated stainless steel fillet knives. Filleted samples will be wrapped in aluminum foil, placed in a sealed plastic bag, and placed on dry ice. Sampling and decontamination protocols will follow those listed in the Ohio EPA Fish Collection Guidance Manual (2012b). Fish tissue samples will be stored in chest freezers at the Ohio EPA Groveport Field Facility prior to delivery to DES.

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 2013a). Matrix spike duplicates will be collected for organic water samples at a minimum of 5 percent.

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Study Planning Team: Assigned DSW Staff

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Please contact Ben Rich for any updates to this study plan

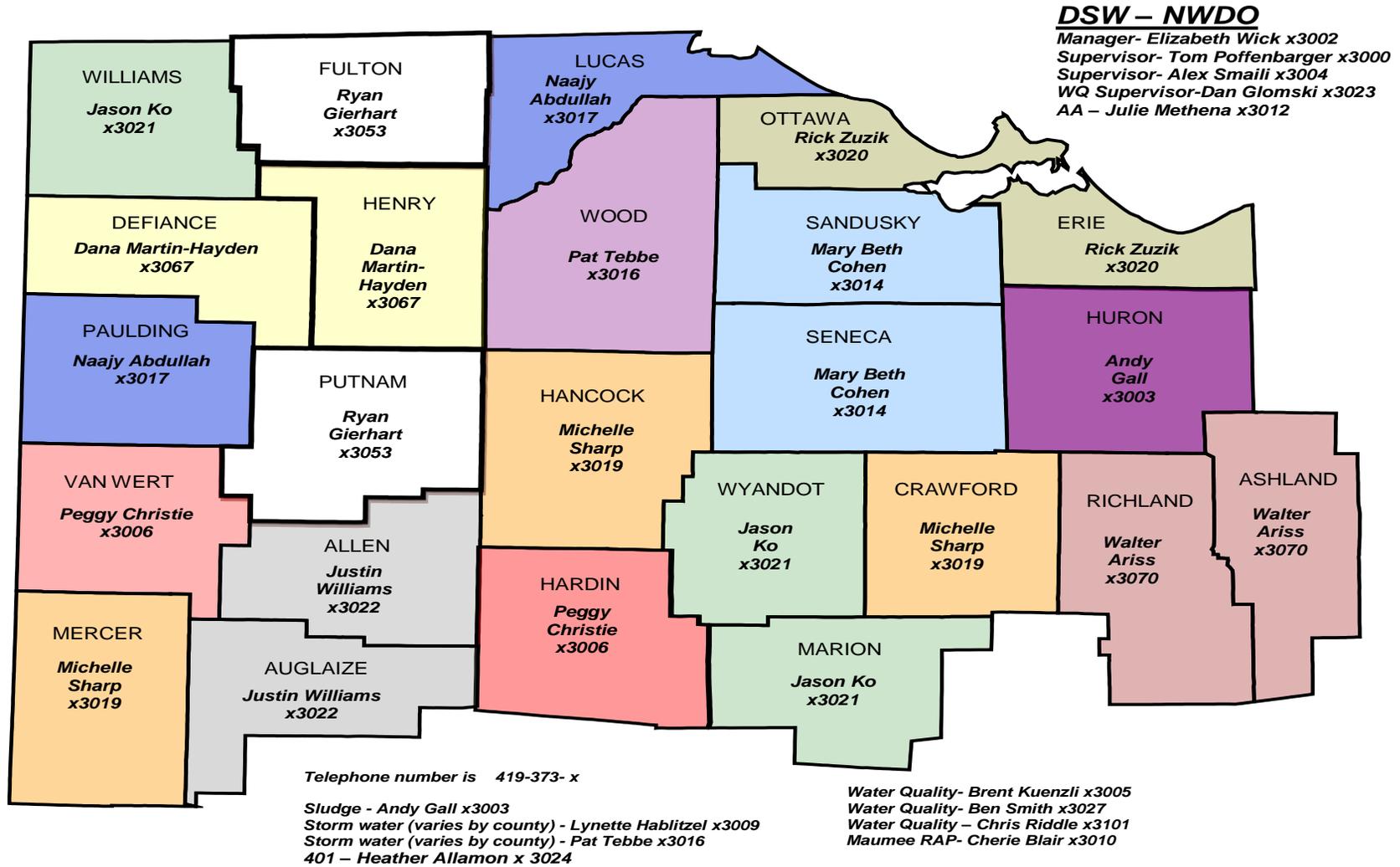
Sheriff's Offices by County:

- Defiance County (419) 784-1155
- Mercer County (567) 890-9143
- Paulding County (419) 399-3791
- Putnam County (419)-523-3208
- Van Wert County (419) 238-3866

Wildlife Officers by County:

- Defiance County (419) 429-8381
- Mercer County (937) 372-5639 x5210
- Paulding County (419) 429-8390
- Putnam County (419) 429-8391
- Van Wert County (419) 429-8395

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Table 1. Facilities regulated by an individual NPDES permit for the Auglaize River Watershed Assessment Unit (04100007).

Facility Name	Ohio EPA Permit No.	Receiving Stream	River Mile	Description
<i>Schilderink Dairy</i>	<i>2IK00015</i>	<i>UT Little Flatrock Creek</i>		<i>Storm water, manure discharge to fields; Six Mile Cutoff has been diverted to Maumee River</i>
<i>Lafarge North America</i>	<i>2IJ00015</i>	<i>Bowie Ditch & Bull Creek</i>		<i>0.715 MGD Sedimentation pond discharge; Six Mile Cutoff has been diverted to Maumee River</i>
Stone Co Inc.-Auglaize Plant	2IJ00026	UT Auglaize River	11.12	1.44 MGD Sedimentation pond discharge
Paulding WWTP	2PD00027	Flatrock Creek	9.12	0.75 MGD Aerated Lagoon
BP Amoco Oil Bulk Plant Paulding	2IN00184	UT Opossum Run		Sorption treatment of surface water to discharge; <i>Does not discharge</i>
Paulding WTP	2IW00230	Flatrock Creek	14.12	Filter backwash, lime sludge lagoon; <i>Does not discharge</i>
Payne WWTP	2PA00019	Flatrock Creek	24.6	0.270 MGD Lagoon System
Latty WWTP	2PA00073	Zielke Ditch	1.4	0.024 MGD Sequencing Batch Reactor
Wayne Trace Jr/Sr HS	2PT00039	UT Blue Creek		0.0126 MGD Package Plant – extended aeration & sand filters
Woodbridge Campground	2PR00248	UT Blue Creek		0.0125 MGD Lagoon System – controlled discharge; Has not discharged to date
Grover Hill WWTP	2PA00085	West Branch Prairie Creek	3.51	0.060 MGD Activated Sludge
Stoneco Inc Scott Plant	2IJ00061	Wahl Ditch		3.6 MGD Sedimentation Pond
Sugar Lane Dairy LLC / Arts Dairy	2IK00014	UT Upper Prairie Creek		Storm water, manure discharge to fields
Blue Stream Farms LLC	2IK00037	Blue Creek		Storm water, manure discharge to fields
Convoy WWTP	2PB00005	North Creek / Hagerman Creek	17.2	0.20 MGD Aeration
Timberwoods Camping Resort	2PS00015	Tindall Ditch		0.0225 MGD Package Plant

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Facility Name	Ohio EPA Permit No.	Receiving Stream	River Mile	Description
Boyd Theaters	2PR00213	Maddox Creek	~14.7	0.002 MGD Package Plant to leaching tile field
Hickory Sticks Golf Club	2PR00270	Town Creek	20.34	0.003 MGD Package Plant
Van Wert WTP	2IZ00131	Town Creek	18.35	Lime Sludge Lagoon
Federal Mogul Corp	2IR00025	Town Creek	15.22	Noncontact cooling water
Van Wert WWTP	2PD00006	Town Creek	13.87	4.0 MGD Aeration
Cooper Farms Cooked Meats	2IH00110	Town Creek	12.12	Lagoon – controlled discharge, spray irrigation
Huggy Bear Campground	2PS00014	Dog Creek	17.95	Lagoon – controlled discharge
Middle Point WWTP	2PA00022	Little Auglaize River	36.3	0.080 MGD Bio-Lac
Delphos Country Club	2PR00157	Little Auglaize River	26.4	0.003 MGD Package Plant – sand filtration
Ottoville WWTP	2PA00002	UT Little Auglaize River	0.35	0.339 MGD Extended Aeration
Country Manor Estates	2PY00043	Utrup Ditch		2,450 GPD Package Plant
Ohio Electro Polishing Co Inc	2IC00024	Evans Ditch		0.030 MGD pH adjustment and settling
Ohio City Auto Salvage	2II00105	Long Prairie Creek	7.98	Oil / water separator for storm water
Ohio City WWTP	2PB00030	Long Prairie Creek	7.95	0.150 MGD Oxidation Ditch
Gina Dairy	2IK00017	Roller Creek / Town Creek		Storm water, manure discharge to fields
ODOT Park 1-27	2PP00035	Monkey Run	1.3	0.004 MGD Package Plant
Defiance County Landfill	2IN00111	Three Mile Creek	0.7	Sedimentation pond discharge

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Table 2. Confined animal feeding operations (CAFO's) permitted by ODA in the lower Auglaize River tributaries study area, 2014.

Facility	Species	Animals	Address	City	Zip	County	Latitude (dec)	Longitude (dec)
Canal Farm	Swine	7,100	4486 Road 197	Cloverdale	45827	Paulding	41.04032	-84.38064
Deer Run Farm	Swine	3,500	17501 Road 60	Grover Hill	45849	Paulding	41.04837	-84.48621
Hillside Acres	Swine	4,000	22051 Road 48	Grover Hill	45849	Paulding	41.03411	-84.39896
Rose Grove Farm (Pharaoh)	Swine	2,988	17325 Twp Hwy 72	Paulding	45879	Paulding	41.06290	-84.48836
White Oak Farm	Swine	2,776	4604 Road 165	Grover Hill	45849	Paulding	41.04259	-84.43806
Van Erk Dairy, LLC	Dairy	2,100	8789 State Rt. 114	Haviland	45851	Paulding	41.01879	-84.65261

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Table 3. Lower Auglaize River tributary sampling stations, 2014.

STATION	NAME	RIVERCODE	HUC12	LATITUDE	LONGITUDE	RIVER MILE	DRAINAGE	SAMPLING
500130	AUGLAIZE R. AT OAKWOOD @ ST. RT. 613	04-100-000	041000070907	41.092200	-84.381900	19.30	1509.0	C, D, M, Sn
P06S10	AUGLAIZE R. AT CHARLOE @ CO. RD. 138	04-100-000	041000071005	41.128600	-84.431900	14.94	2041.0	C, M
P06P16	AUGLAIZE R. NEAR JUNCTION @ REST AREA AT JCT SR 111/SR 66	04-100-000	041000071209	41.195800	-84.447800	9.73	2276.0	C, M
500290	AUGLAIZE R. UPST. DEFIANCE @ HARDING RD.	04-100-000	041000071209	41.253800	-84.389600	4.14	2330.0	C, D, B, M, Sn
302568	Bobenmyer Ditch at Stouffer Rd (Trib to Auglaize at RM 13.17)	04-100-016	041000071005	41.145349	-84.419016	0.70	6.1	C, Mq, F, B
302569	Snyder Ditch at Stouffer Rd (Trib to Auglaize at RM 13.98)	04-100-017	041000071005	41.156567	-84.418686	0.30	5.2	C, Mq, F, B
302539	Fivemile Creek at Defiance-Paulding County Line Rd	04-104-000	041000071209	41.226030	-84.456979	1.70	2.9	B
P06K28	EAGLE CREEK WNW OF JUNCTION @ RIVER RD. (UPPER CROSSING)	04-105-000	041000071209	41.196872	-84.438001	1.57	3.7	B
302540	Sixmile Creek at Burns Rd	04-106-000	041000071208	41.211075	-84.534308	6.70	3.0	C
302541	Sixmile Cr at Dotterer Rd	04-106-000	041000071208	41.207989	-84.495558	3.90	12.0	C, Mq, F, D, N, B
302542	L. Flatrock Creek at Broughton Rd	04-108-000	041000071207	41.182573	-84.534148	5.90	7.6	C, Mq, F
302543	L. Flatrock Creek at Old State Route 111	04-108-000	041000071207	41.190327	-84.466439	1.50	17.8	C, Mq, F, D, N, B
302600	FLATROCK CREEK @ Kings Church Rd	04-109-000	000004100007	40.889638	-84.783840	51.7	6.3	C, Mq, F
302544	FLATROCK CREEK @ Werner Rd	04-109-000	041000071201	40.914667	-84.788954	48.30	13.4	C, Mq, F, B
P06S37	FLATROCK CREEK UPST. PAYNE WWTP @ PUGH RD.	04-109-000	041000071205	41.056700	-84.746100	28.84	119.0	C, MQ, F2, D, N, T, B, M
P06S35	FLATROCK CREEK DST PAYNE WWTP @ ST. RT. 613	04-109-000	041000071205	41.091700	-84.693300	23.72	145.0	C, MQ, F2, D, N, B, M, Sn
500250	FLATROCK CREEK UPST. PAULDING @ CO. RD. 107	04-109-000	041000071206	41.125600	-84.592500	14.11	173.0	C, DW, B, M
P06S33	FLATROCK CREEK AT PAULDING, DST. DAM, Reservoir Dr behind WTP	04-109-000	041000071206	41.127500	-84.587500	13.80	173.0	C, MQ, F2, D, N, T
P06S32	FLATROCK CREEK UPST. PAULDING WWTP LAGOONS	04-109-000	041000071206	41.156400	-84.554200	9.70	183.0	C, MQ, F2, M

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STATION	NAME	RIVERCODE	HUC12	LATITUDE	LONGITUDE	RIVER MILE	DRAINAGE	SAMPLING
P06S31	FLATROCK CREEK DST. PAULDING WWTP @ BROUGHTON RD.	04-109-000	041000071206	41.157800	-84.535300	8.13	184.0	C, MQ, F2, D, N, B, Sd
P06S30	FLATROCK CREEK NE OF PAULDING @ LOUCK RD.	04-109-000	041000071206	41.163300	-84.515300	6.02	189.0	C, MQ, F2, D, N, T, B, M, Sn
P06P02	WILDCAT CREEK NE OF PAYNE @ ST. RT. 500	04-115-000	041000071205	41.091400	-84.697800	0.27	7.9	C, Mq, F
302545	Blue Creek at Dixon Cavett Rd	04-120-000	041000071002	40.945805	-84.755293	31.95	7.4	C, Mq, F
P06K31	BLUE CREEK @ SUGAR GROVE CHURCH RD.	04-120-000	041000071002	40.975300	-84.776700	29.43	15.9	C, Mq, F, D, N, B
302546	Blue Creek at Yoakum Rd	04-120-000	041000071003	40.999289	-84.669123	22.00	41.0	C, MQ, F2, D, N
302547	Blue Creek at Allison Rd	04-120-000	041000071003	41.036103	-84.611738	17.15	51.5	C, MQ, F2, D, N, T, B, M
P06W14	BLUE CREEK E OF LATTY @ PAULDING CO. RD. 123	04-120-000	041000071004	41.074700	-84.534700	10.00	77.0	C, MQ, F2, T C, MQ, F2, D, N, T, B, M, Sn
P06S02	BLUE CREEK @ CO. RD. 151	04-120-000	041000071004	41.118300	-84.457200	3.43	104.0	C, MQ, F2, D, N, T, B, M, Sn
302548	Barcer Run	04-121-000	041000071004	41.109420	-84.477311	0.75	6.9	C, Mq, F
302549	Upper Prairie Creek at Van wert Paulding county Rd 12	04-125-000	041000071001	40.989555	-84.676672	0.90	8.8	C, Mq, F, B
302556	Middle Creek at Parker Rd	04-125-001	041000071001	40.992636	-84.683354	0.50	5.0	C, Mq, F, B
P02S25	L. AUGLAIZE R. AT JONESTOWN @ JONESTOWN RD.	04-130-000	041000070602	40.771700	-84.516100	47.20	31.5	C, MQ, F2, D, N, B, M, Sn
P02K02	L. AUGLAIZE R. N OF VENEDOCIA @ WREN-LANDECK RD.	04-130-000	041000070603	40.801700	-84.459700	42.66	54.0	C, MQ, F2, T
P02S35	L. AUGLAIZE R. S OF MIDDLE POINT @ ST. RT. 697	04-130-000	041000070603	40.837500	-84.441900	38.26	61.0	C, MQ, F2, B, Sd, M
P02S05	L. AUGLAIZE R. DST. MIDDLEPOINT @ CONVERSE ROSELMS RD. (TWP. RD. 197)	04-130-000	041000070604	40.861400	-84.418900	34.75	68.0	C, MQ, F2, D, N, T, B, M
302550	L. Auglaize drinking water	04-130-000	041000070604	40.877447	-84.371295	28.90	74.8	DW
P02S04	L. AUGLAIZE R. AT OTTOVILLE @ U.S. RT. 224	04-130-000	041000070604	40.932675	-84.344180	23.60	93.0	C, MQ, F2, M
P02S03	L. AUGLAIZE R. DST. OTTOVILLE @ CO. RD. P	04-130-000	041000070604	40.946900	-84.341700	22.51	96.0	C, MQ, F2, D, N, T, B, Sd, M
204284	L. AUGLAIZE R. W OF MANDALE @ ST. RT. 114	04-130-000	041000070604	41.019700	-84.373900	12.65	120.0	C, MQ, F2, D, N, T, B, M

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STATION	NAME	RIVERCODE	HUC12	LATITUDE	LONGITUDE	RIVER MILE	DRAINAGE	SAMPLING
P02S01	L. AUGLAIZE R. @ CO. RD. 60	04-130-000	041000070806	41.048600	-84.388900	8.72	184.0	C, MQ, F2, D, N
510200	L. AUGLAIZE R. E OF MELROSE @ ST. RT. 613	04-130-000	041000070806	41.092200	-84.407800	2.02	401.0	C, MQ, F2, D, N, T, B, M, Sn
P02S11	PRAIRIE CREEK W OF SCOTT @ PAULDING/VAN WERT CO. LINE	04-131-000	041000070703	40.989700	-84.604200	18.04	15.0	C, Mq, F, M
P02S09	PRAIRIE CREEK NE OF HAVILAND @ ALLISON RD. (TWP. RD. 48)	04-131-000	041000070703	41.033600	-84.534700	12.50	25.9	C, MQ, F2, B, Sd, M
302551	PRAIRIE CREEK S OF MELROSE @ Mercile Rd	04-131-000	041000070703	41.053528	-84.457530	5.90	49.7	C, MQ, F2, D, N
P02S08	PRAIRIE CREEK S OF MELROSE @ ROSELMS RD.	04-131-000	041000070703	41.061900	-84.419200	1.50	105.0	C, MQ, F2, D, N, T, B, M, Sn
P02W22	West Branch at Grover Hill @ ST. RT. 114	04-132-000	041000070702	41.019300	-84.482800	4.40	47.0	C, MQ, F2, M, T
302554	West Branch at Matson Rd	04-132-000	041000070702	41.048395	-84.443880	0.60	49.7	C, MQ, F2, D, N, T, B, M
302552	Hoaglin Creek at Terry Rd	04-134-000	041000070702	40.894929	-84.644999	19.90	17.0	C, Mq, F
302553	Hoaglin Creek at Wetsel Rd	04-134-000	041000070702	40.946002	-84.567246	13.10	34.1	C, MQ, F2, B
302555	Monkey Run at Dull Robinson Rd	04-135-000	041000070702	40.898717	-84.666887	3.30	6.8	C, Mq, F
P02S14	HAGERMAN CREEK NE OF CONVOY @ RICHEY RD.	04-137-000	041000070701	40.932722	-84.648649	12.22	5.4	C, Mq, F, B, M
P02K04	HAGERMAN CREEK E OF HAVILAND @ ALLISON RD. (TWP. RD. 48)	04-137-000	041000070701	41.033600	-84.526400	0.86	16.2	C, Mq, F, D, N, B
P02S18	MIDDLE CREEK NE OF ROSELMS @ CO. RD. 60	04-139-000	041000070805	41.048600	-84.409700	1.32	102.0	C, MQ, F2, D, N, T, B, M, Sn
302601	Big Run @ T-155	04-139-001	000004100007	40.994083	-84.447589	1.05	5.5	C, Mq, F
302557	Maddox Creek at Union Rd	04-140-000	041000070803	40.866412	-84.629338	16.20	9.9	C, Mq, F
P02G02	MADDOX CREEK NEAR VAN WERT @ W. RIDGE RD. (LINCOLN HIGHWAY)	04-140-000	041000070803	40.875500	-84.615100	14.75	22.0	C, MQ, F2, B
302558	Maddox Creek at Dutch John Rd	04-140-000	041000070803	40.894884	-84.591405	12.20	23.6	C, MQ, F2, M
302559	Maddox Creek at SR 637	04-140-000	041000070803	40.993484	-84.476483	0.90	32.7	C, MQ, F2, D, N, B, M
302560	Town Creek at Dull Robinson Rd	04-143-000	041000070802	40.789922	-84.666596	27.45	3.8	C, Mq, F
302561	Town Creek at Richey Rd	04-143-000	041000070802	40.807064	-84.647817	25.35	16.3	C, Mq, F, B
P02S21	Town Creek S of Van Wert @ Peter Collins Rd	04-143-000	041000070804	40.833600	-84.572800	19.67	22.0	C, MQ, F2, D, N, M
302562	Town Creek at Drinking water dam pool	04-143-000	041000070804	40.847452	-84.571799	18.30	24.8	DW

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STATION	NAME	RIVERCODE	HUC12	LATITUDE	LONGITUDE	RIVER MILE	DRAINAGE	SAMPLING
P02W10	Town Creek N of Van Wert @ Stripe Rd	04-143-000	041000070804	40.912500	-84.561800	11.32	33.8	C, MQ, F2, B, Sd, M, Sn
302563	Town Creek at Van wert Paulding county rd 12	04-143-000	041000070804	40.990105	-84.464007	0.90	52.5	C, MQ, F2, D, N, T
302564	Roller Creek@ Liberty Union Rd.	04-144-000	041000070802	40.791339	-84.629040	1.35	6.7	C, Mq, F, B
302565	Dog Creek at Gamble Rd	04-145-000	041000070801	40.844680	-84.504278	22.10	13.5	C, Mq, F
P02K07	DOG CREEK @ Church Rd	04-145-000	041000070801	40.903600	-84.443300	14.06	28.8	C, MQ, F2, B
P02K06	DOG CREEK E OF ROSELMS @ ST. RT. 114	04-145-000	041000070801	41.019400	-84.389400	0.97	57.0	C, MQ, F2, D, N, T, B, M, Sn
P02S23	LONG PRAIRIE CREEK DST. OHIO CITY WWTP @ ST. RT. 709	04-153-000	041000070602	40.778600	-84.592800	6.79	3.5	C, Mq, F, B, Sd, M
P02S22	LONG PRAIRIE CREEK W OF VENEDOCIA @ JONESTOWN RD.	04-153-000	041000070602	40.783600	-84.513900	0.68	11.4	C, Mq, F, D, N
302566	Kyle Prairie Creek at Mercer Van wert county rd 18	04-154-000	041000070601	40.728168	-84.508609	3.30	6.9	C, Mq, F
302567	Kyle Prairie Creek UST Firsinger ditch at Van wert mercer county rd 18	04-154-000	041000070601	40.727881	-84.561689	0.20	15.9	C, Mq, F, D, N, B
P02P04	EVANS DITCH N OF VENEDOCIA @ State Rd	04-159-000	041000070603	40.815657	-84.450160	0.29	3.0	C, B, Sd, M

Sample Type Key		# Sites
Water Chemistry	C	70
Macroinvertebrate quantitative	MQ	34
Macroinvertebrate qualitative	Mq	28
Fish 2 pass	F2	34
Fish single pass	F	28
Datasonde©	D	30
Nutrient Site*	N	30
Drinking Water	DW	3
Fish Tissue (possible sites)	T	17
E.coli	B	39
Metals	M	32
Sentinel	Sn	12
Sediment	Sd	7

Chem Only
Drinking Water or Drinking Water/Chem

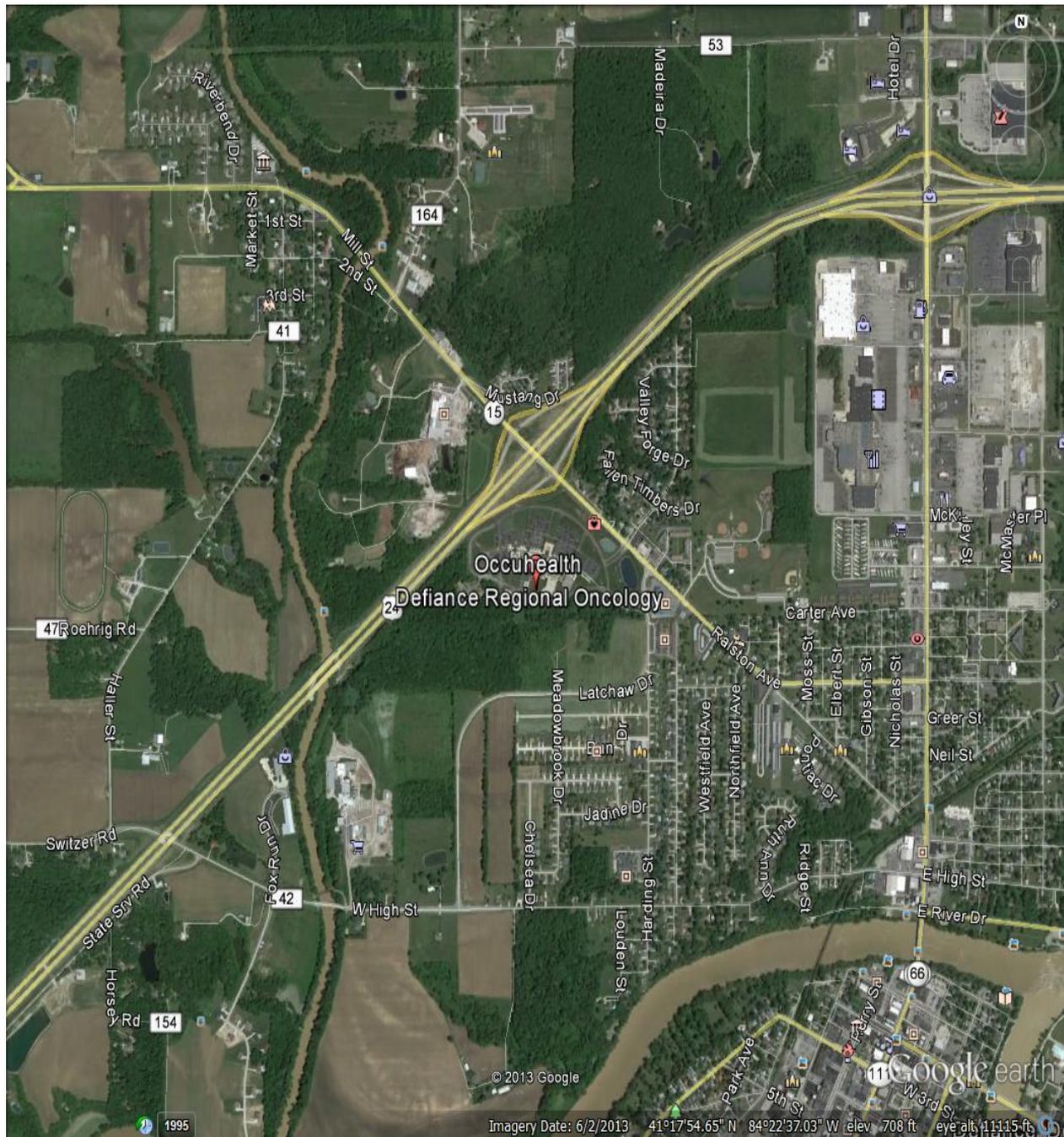
* Follow procedures outlined in the Chlorophyll a, BOD5 and site selection (revision #3) dated March 10, 2014

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Table 4. List of chemical/physical water quality parameters to be analyzed/measured in surface water, sediment, and fish tissue samples from the lower Auglaize River tributary sampling locations. The reporting limit or an "X" is placed in the column where samples will be collected. Not all sites will be sampled for all parameters.

Parameters	Test Method	Stream	Sediment	Fish Tissue	Lake
cBOD, 5 day	SM 5210B	2 mg/L			
cBOD, 20 day	OEPA 310.2	2 mg/L			
BOD, 5 day	SM 5210B	2 mg/L			
Solids Dissolved (TDS)	USEPA 160.1	10 mg/L			10 mg/L
Solids Suspended (TSS)	USEPA 160.2	5 mg/L			5 mg/L
Total Organic Carbon (TOC)	SM 5310B / OEPA 335.2	2 mg/L	0.1 %		
Alkalinity	USEPA 305.1	5 mg/L			5 mg/L
Chemical Oxygen Demand (COD)	USEPA 410.4	20 mg/L			
Ammonia	USEPA 350.1	0.05 mg/L			0.05 mg/L
Total Kjeldahl Nitrogen (TKN)	USEPA 351.2	0.2 mg/L			0.2 mg/L
Nitrate + Nitrite	USEPA 353.1	0.5 mg/L			0.5 mg/L
Nitrite	USEPA 353.2	0.02 mg/L			0.02 mg/L
Chloride	USEPA 325.1	5 mg/L			5 mg/L
Phosphorus, Total	USEPA 365.4	0.01 mg/L	50 mg/kg		0.01 mg/L
Orthophosphate (as P)	USEPA 365.4	0.01 mg/L			0.01 mg/L
Aluminum	USEPA 200.7	200 µg/L			200 µg/L
Barium	USEPA 200.7	15 µg/L			15 µg/L
Calcium	USEPA 200.7	2 mg/L			2 mg/L
Iron	USEPA 200.7	50 µg/L			50 µg/L
Magnesium	USEPA 200.7	1 mg/L			1 mg/L
Manganese	USEPA 200.7	10 µg/L			10 µg/L
Sodium	USEPA 200.7	5 mg/L			5 mg/L
Potassium	USEPA 200.7	2 mg/L			2 mg/L
Strontium	USEPA 200.7	300 µg/L			300 µg/L
Zinc	USEPA 200.7	10 µg/L	8 mg/kg		10 µg/L
Hardness	USEPA 200.7	10 mg/L			10 mg/L
Arsenic	USEPA 200.8 / SM 3113B	2.0 µg/L	0.8 mg/kg	X	2.0 µg/L
Cadmium	USEPA 200.8 / SM 3113B	0.2 µg/L	0.08 mg/kg	X	0.2 µg/L
Chromium	USEPA 200.8	2.0 µg/L			2.0 µg/L
Copper	USEPA 200.8	2.0 µg/L	0.8 mg/kg		2.0 µg/L
Nickel	USEPA 200.8	2.0 µg/L	0.8 mg/kg		2.0 µg/L
Lead	USEPA 200.8 / SM 3113B	2.0 µg/L	0.8 mg/kg	X	2.0 µg/L
Selenium	USEPA 200.8 / SM 3113B	2.0 µg/L		X	2.0 µg/L
Silver	USEPA 200.8		0.08 mg/kg		
Percent Solids	SM 2540G		0%		
pH	Field Meter	X			X
Conductivity	Field Meter / USEPA 120.1	X (2 µs/cm)			X
Dissolved Oxygen (mg/L and % sat)	Field Meter	X			X
Temperature	Field Meter	X			X
Mercury	USEPA 245.1, 7470A, 7471A		0.02 mg/kg	X	
Herbicides	USEPA 525.2	X			X
SVOCs (BNA)	USEPA 625 / USEPA 8270C	X	0.4-2.0 mg/kg		
PCBs / Pesticides / Chlordane	USEPA 8082 / OEPA 590.1			X	
<i>E. coli</i>	USEPA 1603	2 CFU			2 CFU
chlorophyll-a	USEPA 445.0	X			X
microcystins	OEPA 701.0				0.3 µg/L
Turbidity	OEPA 180.1				2 NTU
Volitile Suspended Solids	SM 2540 D/E				5 mg/L
Carbonate / Bicarbonate	SM 2320 B				5 mg/L
Sulfate	USEPA 375.2	10 mg/L			10 mg/L
Organic Carbon	SM 5310B			X	
Percent Lipids	OEPA 581.5			X	

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