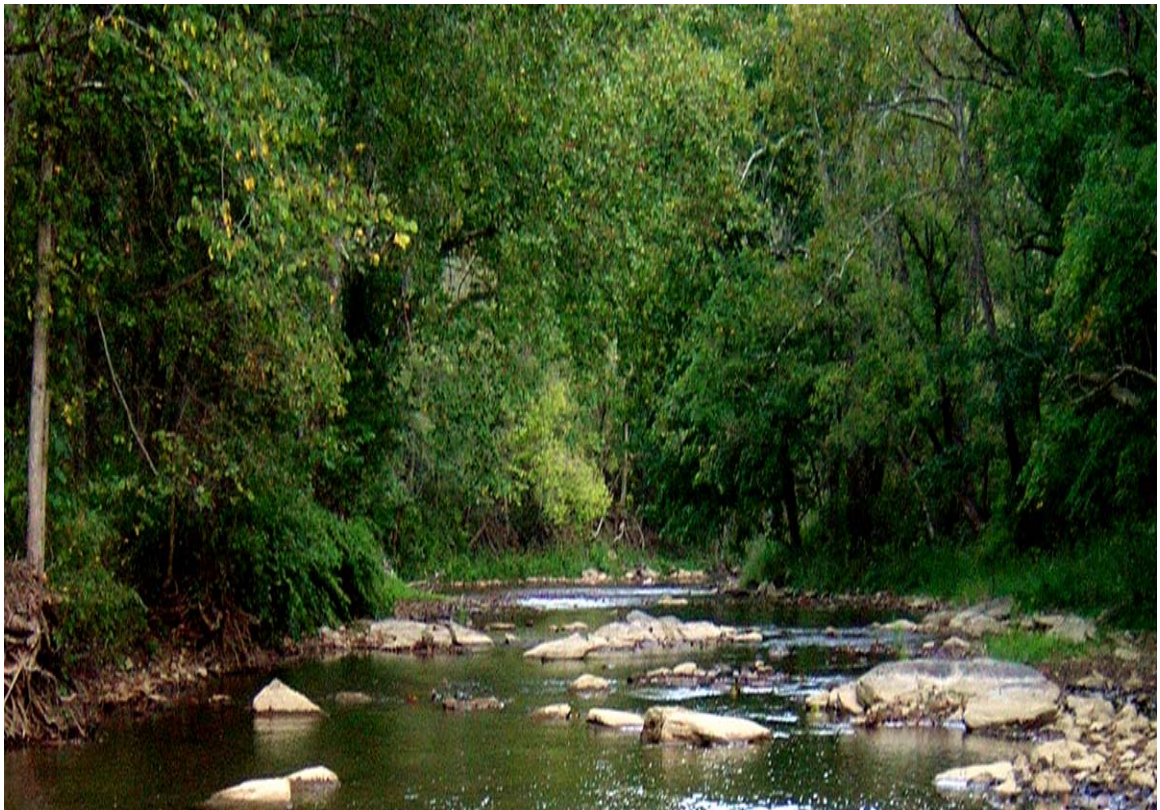




**Appendices to
Biological and Water Quality Study of Short Creek
and Selected Ohio River Tributaries**

2010

Belmont, Harrison and Jefferson Counties, Ohio



OHIO EPA Technical Report EAS/2013-02-03

Division of Surface Water
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APPENDICES

Biological and Water Quality Study of the Short Creek Watershed and Selected Ohio River Tributaries (Salt Run, Rush Run, Deep Run and Glens Run)

2010

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Appendix 1. Methods, Notice to Users, and Biosurvey Background Information

METHODS

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

Determining Use Attainment

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

Stream Habitat Evaluation

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

Sediment and Surface Water Assessment

Fine grain sediments were collected in the upper four inches of bottom material at each sediment sampling location using decontaminated stainless steel scoops. Sediment samples were mixed in stainless steel pans, transferred into glass jars with teflon lined lids, placed on ice (to maintain 4°C) in a cooler, and shipped to the Ohio EPA lab. Sediment data are reported on a dry weight basis. Decontamination of sediment sampling equipment followed the procedures outlined in the Ohio EPA sediment sampling guidance manual (Ohio EPA 2001). Sediment evaluations were conducted using guidelines established in MacDonald *et al.* (2000), and *Ohio Sediment Reference Values (SRVs)* (Ohio EPA 2003). Surface water samples were collected 1-22 times from each location from the upper 12

inches of water over 2008 and 2009. Collected water was preserved using appropriate methods, as outlined in the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (Ohio EPA 2009). Bacteriological samples were collected four to nine times at each location. Bacteriological samples were collected directly from the stream into sterilized polyethylene containers, cooled to 4°C, and transported to the Ohio EPA laboratory for analysis within 6 hours of sample collection. All samples were analyzed for *E. coli* bacteria using U.S.EPA approved methods. Surface water samples were evaluated using comparisons to Ohio Water Quality Standards criteria, reference conditions, or published literature.

Macroinvertebrate Community Assessment

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

Fish Community Assessment

Fish were sampled once or twice at each site using pulsed DC electrofishing wading or headwater methods. Electrofishing sampling distances ranged between 120 and 220 meters. Fish were processed in the field, and included identifying each individual to species, counting, weighing (wading sites only), and recording any external abnormalities. Discussion of the fish community assessment methodology used in this report is contained in Biological Criteria for the Protection of Aquatic Life: Volume III, Standardized Biological Field Sampling and Laboratory Methods for Assessing Fish and Macroinvertebrate Communities (Ohio EPA 1989a, 2008b).

Recreation Use Assessment

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

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

Field Instrument Calibration

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

Causal Associations

Using the results, conclusions, and recommendations of this report requires an understanding of the methodology used to determine the use attainment status and assigning probable causes and sources of impairment. The identification of impairment in rivers and streams is straightforward - the numerical biological criteria are used to judge aquatic life use attainment and impairment (partial and nonattainment). The rationale for using the biological criteria, within a weight of evidence framework, has been extensively discussed elsewhere (Karr *et al.* 1986; Karr 1991; Ohio EPA 1987a,b; Yoder 1989; Miner and Borton 1991; Yoder 1991; Yoder 1995). Describing the causes and sources associated with observed impairments relies on an interpretation of multiple lines of evidence including water chemistry data, sediment data, habitat data, effluent data, land use data, and biological results (Yoder and Rankin 1995). Thus the assignment of principal causes and sources of impairment in this report represent the association of impairments (based on response indicators) with stressor and exposure indicators. The reliability of the identification of probable causes and sources is increased where many such prior associations have been identified, or have been experimentally or statistically linked together. The ultimate measure of success in water resource management is the restoration of lost or damaged ecosystem attributes including aquatic community structure and function. While there have been criticisms of misapplying the metaphor of ecosystem "health" compared to human patient "health" (Suter 1993), in this document we are referring to the process for evaluating biological integrity and causes or sources associated with observed impairments, not whether human health and ecosystem health are analogous concepts.

NOTICE TO USERS

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

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

Ohio Environmental Protection Agency. 1987a. Biological criteria for the protection of aquatic life: Volume I. The role of biological data in water quality assessment. Div. Water Qual. Monit. & Assess., Surface Water Section, Columbus, Ohio.

Ohio Environmental Protection Agency. 1987b. Biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Div. Water Qual. Monit. & Assess., Surface Water Section, Columbus, Ohio.

Ohio Environmental Protection Agency. 1989b. Addendum to Biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Div. Water Qual. Plan. & Assess., Ecol. Assess. Sect., Columbus, Ohio.

Ohio Environmental Protection Agency. 1989c. Biological criteria for the protection of aquatic life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities. Div. Water Quality Plan. & Assess., Ecol. Assess. Sect., Columbus, Ohio.

Ohio Environmental Protection Agency. 1990. The use of biological criteria in the Ohio EPA surface water monitoring and assessment program. Div. Water Qual. Plan. & Assess., Ecol. Assess. Sect., Columbus, Ohio.

Ohio Environmental Protection Agency. 2008a. 2008 updates to Biological Criteria for the Protection of Aquatic Life: Volume II and Volume II Addendum. Users manual for biological field assessment of Ohio surface waters. Div. of Surface Water, Ecol. Assess. Sect., Columbus, Ohio.

Ohio Environmental Protection Agency. 2006. Methods for assessing habitat in flowing waters: Using the Qualitative Habitat Evaluation Index (QHEI). Ohio EPA Tech. Bull. EAS/2006-06-1. Div. of Surface Water, Ecol. Assess. Sect., Columbus, Ohio.

Ohio Environmental Protection Agency. 2008b. 2008 updates to Biological Criteria for the Protection of Aquatic Life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities. Div. of Surface Water, Ecol. Assess. Sect., Columbus, Ohio.

Rankin, E.T. 1989. The qualitative habitat evaluation index (QHEI): rationale, methods, and application. Div. Water Qual. Plan. & Assess., Ecol. Assess. Sect., Columbus, Ohio.

In addition to the preceding guidance documents, the following publications by the Ohio EPA should also be consulted as they present supplemental information and analyses used by the Ohio EPA to implement the biological criteria.

DeShon, J.D. 1995. Development and application of the invertebrate community index (ICI), pp. 217- 243. in W.S. Davis and T. Simon (eds.). Biological Assessment and Criteria: Tools for Riskbased Planning and Decision Making. Lewis Publishers, Boca Raton, FL.

Rankin, E. T. 1995. The use of habitat assessments in water resource management programs, pp. 181- 208. in W. Davis and T. Simon (eds.). Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making. Lewis Publishers, Boca Raton, FL.

Yoder, C.O. and E.T. Rankin. 1995. Biological criteria program development and implementation in Ohio, pp. 109-144. in W. Davis and T. Simon (eds.). Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making. Lewis Publishers, Boca Raton, FL.

Yoder, C.O. and E.T. Rankin. 1995. Biological response signatures and the area of degradation value: new tools for interpreting multimetric data, pp. 263-286. in W. Davis and T. Simon (eds.). Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making. Lewis Publishers, Boca Raton, FL.

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

Yoder, C.O. and E.T. Rankin. 1995. The role of biological criteria in water quality monitoring, assessment, and regulation. Environmental Regulation in Ohio: How to Cope With the Regulatory Jungle. Inst. of Business Law, Santa Monica, CA. 54 pp.

Yoder, C.O. and M.A. Smith. 1999. Using fish assemblages in a State biological assessment and criteria program: essential concepts and considerations, pp. 17-63. in T. Simon (ed.). Assessing the Sustainability and Biological Integrity of Water Resources Using Fish Communities. CRC Press, Boca Raton, FL.

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

Ohio EPA, Division of Surface Water
Ecological Assessment Section
4675 Homer Ohio Lane
Groveport, Ohio 43125
(614)836-8777

or

http://www.epa.ohio.gov/dsw/document_index/psdindx.aspx

BACKGROUND

What is a Biological and Water Quality Survey?

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

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

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

Hierarchy of Indicators

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

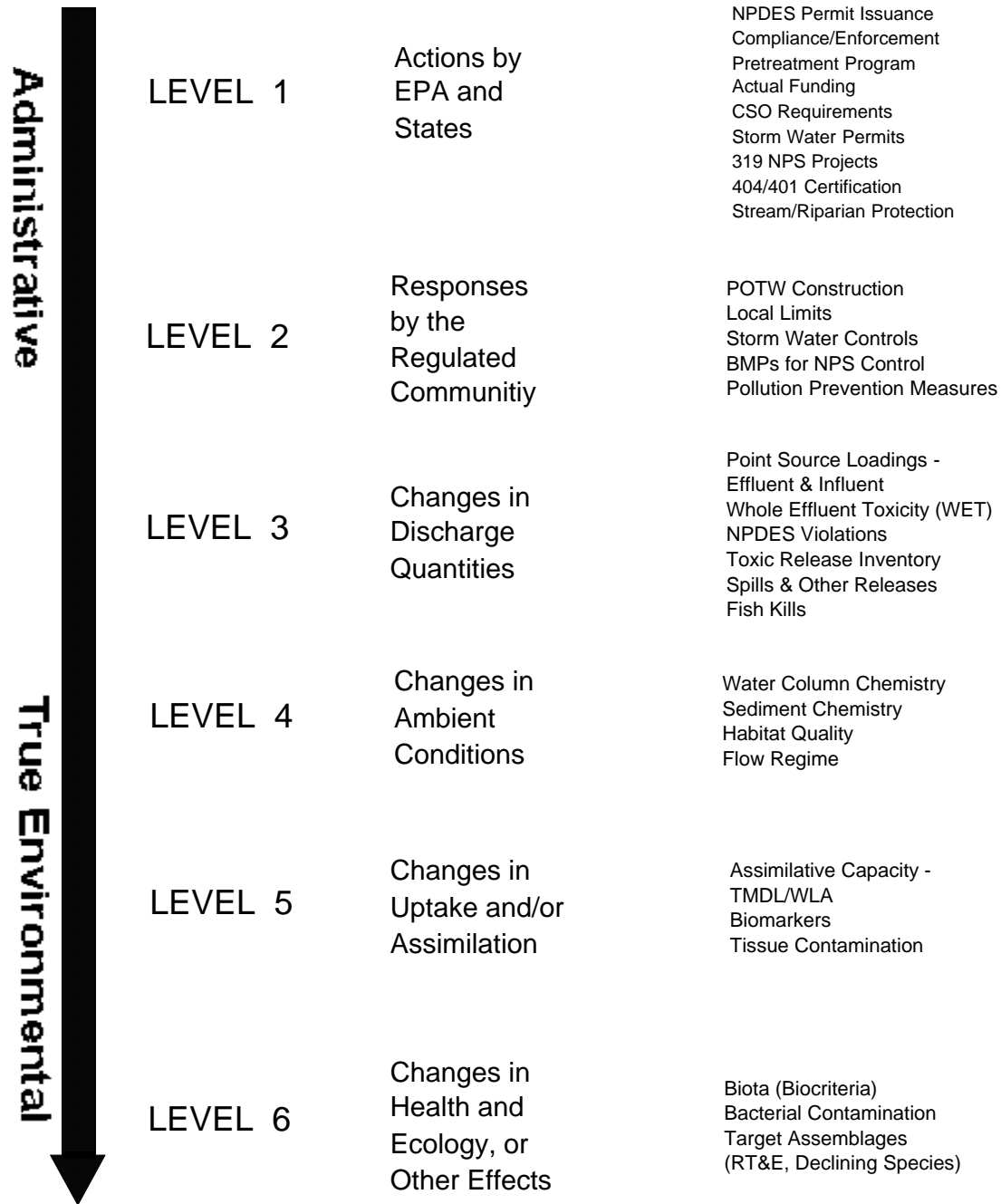


Figure 1. Hierarchy of administrative and environmental indicators which can be used for water quality management activities such as monitoring and assessment, reporting, and the evaluation of overall program effectiveness. This is patterned after a model developed by the U.S. EPA.

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

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

Ohio Water Quality Standards: Designated Aquatic Life Use

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

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

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

5) *Limited Resource Water (LRW)* - this use applies to small streams (usually <3 mi² drainage area) and other water courses which have been irretrievably altered to the extent that no appreciable assemblage of aquatic life can be supported; such waterways generally include small streams in extensively urbanized areas, those which lie in watersheds with extensive drainage modifications, those which completely lack water on a recurring annual basis (*i.e.*, true ephemeral streams), or other irretrievably altered waterways.

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

Ohio Water Quality Standards: Non-Aquatic Life Uses

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

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

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

Appendix Table 2. Surface and waste water chemical/physical results

Appendix Table A2. Short Creek watershed and direct Ohio River tributaries chemical/physical surface water sampling results, 2010 and 2011. NA = not analyzed. PT = result is estimated; sample not analyzed within required holding time. B = result is an estimate. Analyte was detected in the associated method/trip/field blank as well as in the sample.

		Site Location: SHORT CREEK AT ADENA @ CO. RD. 10											
		River Mile: 19.37						Storet: C03S07					
Parameter	Units	3/9/2010	4/26/2010	5/24/2010	6/23/2010	7/7/2010	7/22/2010	7/27/2010	8/9/2010	8/12/2010	9/13/2010	9/22/2010	9/28/2010
Acidity	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Alkalinity	mg/L	168	200	197	190	183	194	181	167	192	188	151	207
Aluminum	ug/L	335	283	224	<200	<200	<200	<200	<200	<200	<200	468	<200
Ammonia	mg/L	0.14	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Barium	ug/L	26	30	31	34	36	35	35	34	42	31	37	32
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	152	269	224	244	287	264	257	274	269	271	271	302
CBOD20	mg/L	3	3.1	3	NA	NA	5.5	NA	NA	<3	NA	5.2	<3
Chloride	mg/L	31.9	21.6	18.4	21.2	17.7	19.9	22.6	18.8	20.4	18.7	18.2	17.1
Chromium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
COD	mg/L	<20	<20	<20	<20	47	<20	<20	<20	<20	<20	<20	<20
Conductivity	umhos/cm	1230	1940	1650	2050	2340	2290	2240	2320	2470	2490	2220	2470
Copper	ug/L	<2	<2	<2	<2	<2	<2	2	<2	<2	<2	3	2.2
Hardness, Total	mg/L	639	1260	532	1190	1490	1340	1310	1400	1410	1440	1410	1560
Iron	ug/L	755	634	362	105	246	177	170	107	128	95	858	150
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Magnesium	mg/L	63	144	111	142	187	165	163	173	180	185	178	195
Manganese	ug/L	115	93	79	23	39	28	29	21	26	16	92	33
Mercury	ug/L	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	ug/L	3.7	6.3	5	6.6	5.7	5	9.1	4.6	4.8	5.9	7	5.4
Nitrate+nitrite	mg/L	1.34	0.1	0.1	0.31	<0.1	<0.1	0.21	0.13	0.1	<0.1	0.26	0.11
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Orthophosphate, dissolved	mg/L	<0.01	<0.01	<0.01	NA	NA	<0.01	NA	NA	<0.01	NA	0.02	0.02
Potassium	mg/L	3	5	4	5	7	7	7	7	7	8	8	8
Selenium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Sodium	mg/L	31	44	37	52	76	65	68	69	74	80	86	88
Strontium	ug/L	1240	2450	2040	2750	3560	3190	3240	3250	3430	3670	3550	3770
Sulfate	mg/L	530	992	776	1100	1390	1220	1250	1380	1420	1460	1210	1430
TKN	mg/L	0.31	0.38	0.8	<0.2	0.36	0.31	0.24	<0.2	0.33	0.4	0.41	0.3
Total Dissolved Solids	mg/L	952	1650	1360	1770	2130	2000	1970	2060	2170	2240	1960	2220
Total Phosphorus	mg/L	<0.01	<0.01	<0.01	0.01	0.01	<0.01	0.01	0.01	<0.01	<0.01	0.05	0.03
Total Suspended Solids	mg/L	10	12	6	<5	10	7	6	5	<5	<5	26	5
Zinc	ug/L	<10	<10	15	<10	<10	<10	<10	<10	16	<10	<10	<10
Field Measurements													
Temperature	°C	3.92	15.61	20.97	23.87	28.05	24.29	25.04	26.43	NA	20.58	NA	NA
Conductivity	umhos/cm	1245.1	1818	1672.8	1727.6	2403.5	2200.1	2211.4	2291.1	NA	2423.8	NA	NA
Dissolved Oxygen	mg/L	14.75	9.95	9.7	10	9.42	7.45	8.84	8.87	NA	10.57	NA	NA
D.O. Saturation	%	112.7	100.5	109.3	119	121.3	89.5	107.8	110.9	NA	118.4	NA	NA
pH	S.U.	8.46	8.3	8.26	8.5	8.32	8.18	8.27	8.32	NA	8.25	NA	NA

Appendix Table A2. Continued.

Parameter		Site Location: SHORT CREEK AT ADENA @ CO. RD. 10 River Mile: 19.37 Storet: C03S07							Short Creek Dst Adena WWTP River Mile: 18.4 Storet: C03S04			
		9/30/2010	10/18/2010	11/22/2010	1/10/2011	2/16/2011	4/18/2011	10/26/2011	9/22/2010			
Acidity	mg/L	<5	<5	<5	<5	<5	<5	<5	<5.0			
Alkalinity	mg/L	216	202	190	250	240	193	213	160			
Aluminum	ug/L	<200	<200	<200	<200	<200	431	<200	402			
Ammonia	mg/L	<0.05	<0.05	<0.05	0.13	0.08	<0.05	<0.05	<0.050			
Arsenic	ug/L	<2	<2	<2	<2	<2	<2	<2	<2.0			
Barium	ug/L	32	29	26	29	26	31	29	37			
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20			
Calcium	mg/L	314	301	309	269	270	197	251	293			
CBOD20	mg/L	NA	NA	NA	NA	NA	<3	NA	4.0			
Chloride	mg/L	22.4	23.7	24.6	32.1	25.3	12.6	22.1	18.7			
Chlorophyll_a (water)	ug/L	NA	NA	NA	NA	NA	NA	NA	5.9			
Chlorophyll_a (rock)	mg/m2	NA	NA	NA	NA	NA	NA	NA	554			
Chromium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2.0			
COD	mg/L	<20	<20	<20	<20	<20	<20	<20	<20			
Conductivity	umhos/cm	2480	2530	2350	2060	2010	1560	1880	2340			
Copper	ug/L	2.6	2.2	<2	<2	<2	<2	<2	2.7			
Hardness, Total	mg/L	1600	1520	1540	1240	1260	887	1190	1510			
Iron	ug/L	82	50	88	209	362	912	103	838			
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2	<2.0			
Magnesium	mg/L	197	187	186	138	142	96	136	188			
Manganese	ug/L	16	12	21	107	221	88	28	89			
Nickel	ug/L	6	6.2	6.4	6.1	5.7	8.7	7.5	6.9			
Nitrate+nitrite	mg/L	0.11	<0.1	0.24	0.4	0.4	0.21	0.13	0.18			
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.020			
Orthophosphate, dissolved	mg/L	NA	NA	NA	NA	NA	<0.01	NA	0.018			
Pheophytin_a (water)	ug/L	NA	NA	NA	NA	NA	NA	NA	2.6			
Pheophytin_a (rock)	mg/m2	NA	NA	NA	NA	NA	NA	NA	166			
Potassium	mg/L	8	7	6	5	6	4	6	8			
Selenium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2.0			
Sodium	mg/L	80	86	76	65	61	29	54	89			
Strontium	ug/L	3430	3520	3180	2670	3190	1800	2470	3670			
Sulfate	mg/L	1390	1380	1310	1070	1030	749	965	1290			
TKN	mg/L	0.29	0.22	0.4	0.35	0.38	0.34	0.32	0.31			
Total Dissolved Solids	mg/L	2180	2220	2040	1760	1710	1270	1590	2090			
Total Phosphorus	mg/L	0.02	0.02	0.02	<0.01	0.01	<0.01	NA	0.035			
Total Suspended Solids	mg/L	<5	<5	<5	<5	<5	12	<5	33			
Zinc	ug/L	<10	<10	<10	<10	<10	<10	<10	<10			
Field Measurements												
Temperature	°C	15.22	12.05	12.25	0.01	0.92	NA	NA	NA			
Conductivity	umhos/cm	2429.8	NA	2384.2	NA	1979	NA	NA	NA			
Dissolved Oxygen	mg/L	8.12	13.76	15.34	19.38	17.56	NA	NA	NA			
D.O. Saturation	%	81.6	128.7	144.3	133.4	124.1	NA	NA	NA			
pH	S.U.	7.84	8.22	8.23	7.28	7.66	NA	NA	NA			

Appendix Table A2. Continued.

Parameter	Units	Site Location: Short Creek @ CR 7 Dillonvale Ust Long Run River Mile: 12.68 Storet: 301059						Site Location: Short Ck DST Dillonvale WWTP River Mile: 8.84 Storet: C03W07					
		6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010	6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010
Acidity	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Alkalinity	mg/L	177	190	183	176	186	208	183	176	172	157	184	191
Aluminum	ug/L	487	<200	<200	<200	<200	<200	226	221	<200	<200	<200	<200
Ammonia	mg/L	<0.050	<0.050	<0.050	0.059	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.053
Arsenic	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	36	39	36	37	33	29	36	40	37	33	36	27
Cadmium	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Calcium	mg/L	202	242	264	234	257	276	206	231	220	212	236	230
Chloride	mg/L	17.8	17.1	20.4	17.7	16.4	20.9	23	23.7	32.2	85.1	26.3	113
Chromium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
COD	mg/L	<20	<20	142	<20	<20	27	35	<20	<20	<20	<20	30
Conductivity	umhos/cm	1760	1220	2030	2120	2300	2260	1740	1990	2030	2060	2270	2080
Copper	ug/L	<2.0	125	<2.0	<2.0	<2.0	2.5	2.1	<2.0	2.6	4.9	2.1	5.5
Hardness, Total	mg/L	941	<2.0	1300	1170	1320	1360	951	1120	1060	978	1180	974
Iron	ug/L	1210	150	145	252	152	79	324	356	375	118	235	529
Lead	ug/L	<2.0	14	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Magnesium	mg/L	106	5	156	143	165	162	106	132	124	109	143	97
Manganese	ug/L	66	2080	24	26	17	11	31	25	26	11	18	27
Nickel	ug/L	7.6	<2.0	4.6	4.5	5.8	5.7	6.4	5.6	5.5	4.7	6.4	6.7
Nitrate+nitrite	mg/L	0.18	<0.10	<0.10	0.1	<0.10	<0.10	0.56	0.88	0.58	9.74	0.45	10.9
Nitrite	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.026	<0.020	<0.020
Potassium	mg/L	5	6	6	7	7	7	5	6	7	9	7	11
Selenium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Sodium	mg/L	51	71	67	74	84	85	56	79	87	117	110	138
Strontium	ug/L	2310	3160	2820	3030	3380	3140	2180	2790	2690	2300	3140	2040
Sulfate	mg/L	923	1150	1090	1180	1210	1180	886	1080	1050	934	1200	775
TKN	mg/L	<0.20	0.36	<0.20	<0.20	0.32	0.24	<0.20	0.42	0.21	0.56	0.36	1.23
Total Dissolved Solids	mg/L	1480	1840	1730	1820	1990	1920	1450	1700	1650	1710	1910	1580
Total Phosphorus	mg/L	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	0.013	0.027	0.051	0.452	0.027	0.954
Total Suspended Solids	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	5	<5	19
Zinc	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	22
Field Measurements													
Temperature	°C	25.32	27.91	24.96	25.85	19.69	11.28	27.21	30.08	27.89	29.95	22.64	16.52
Conductivity	umhos/cm	1513.9	2138	2001.9	2075	2213.6	NA	1500	2032	1968.4	2044.4	2204	NA
Dissolved Oxygen	mg/L	8.78	8.86	8.61	8.63	10.51	13.13	8.58	8.59	8.86	11.77	10.25	16.46
D.O. Saturation	%	107.3	113.6	104.7	106.7	115.7	120.7	108.5	114.4	113.6	156.4	119.4	169.5
pH	S.U.	8.21	8.2	8.14	8.16	8.23	8.13	8.35	8.17	8.15	8.6	8.17	8.4

Appendix Table A2. Continued.

		Site Location: Short Ck DST Dillonvale WWTP River Mile: 8.84 Store: C03W07				Site Location: SHORT CREEK NEAR AT USGS GAGE @ ST. RT. 150 River Mile: 4.96 Store: 609240					
Parameter	Units	Dup A	Dup B	Dup A	Dup B	3/9/2010	4/26/2010	5/24/2010	6/23/2010	7/7/2010	7/22/2010
		8/11/2010	8/11/2010	9/22/2010	9/22/2010						
Acidity	mg/L	<5.0	<5.0	<5.0	<5.0	<5	<5	<5	<5	<5	<5
Alkalinity	mg/L	170	170	141	149	181	211	199	180	170	185
Aluminum	ug/L	<200	<200	<200	225	654	381	249	207	227	<200
Ammonia	mg/L	<0.050	<0.050	<0.050	<0.050	0.14	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	ug/L	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Barium	ug/L	42	41	33	34	31	34	34	37	38	37
Cadmium	ug/L	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	217	226	221	225	140	209	171	179	197	201
CBOD20	mg/L	3.3	3.3	3.9	4.2	<3	<3	<3	NA	NA	4
Chloride	mg/L	25.4	24.1	29.3	28.4	34.9	25.3	21.1	23.1	24.2	26.2
Chlorophyll_a (rock)	mg/m2	138	NA	3	2	NA	NA	NA	NA	NA	NA
Chlorophyll_a (water)	ug/L	2.4	1.9	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	ug/L	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
COD	mg/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Conductivity	umhos/cm	2110	2110	1890	1900	1130	1700	1380	1600	1770	1880
Copper	ug/L	2.2	2.4	3	3.3	2	<2	<2	<2	<2	<2
Hardness, Total	mg/L	1080	1120	1070	1090	560	938	427	447	941	955
Iron	ug/L	238	251	335	444	1810	944	443	248	306	347
Lead	ug/L	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Magnesium	mg/L	131	136	127	129	51	101	75	91	109	110
Manganese	ug/L	22	23	37	46	112	47	29	19	19	24
Mercury	ug/L	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA
Nickel	ug/L	4.7	4.8	5.4	6	4.7	6.2	5.4	5.7	5.2	5.7
Nitrate+nitrite	mg/L	0.29	0.26	1.49	1.32	1.74	0.12	0.13	0.25	0.11	0.18
Nitrite	mg/L	<0.020	<0.020	<0.020	<0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Orthophosphate, diss.	mg/L	0.013	<0.010	0.058	0.051	<0.01	<0.01	<0.01	NA	NA	<0.01
Pheophytin_a (rock)	mg/m2	42.7	NA	1.5	1.4	NA	NA	NA	NA	NA	NA
Pheophytin_a (water)	ug/L	1.7	1	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	7	7	7	7	3	5	4	5	6	6
Selenium	ug/L	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Sodium	mg/L	93	95	99	98	36	52	44	57	79	78
Strontium	ug/L	2810	2850	2580	2560	1150	2120	1650	1970	2430	2340
Sulfate	mg/L	1150	1150	933	955	425	811	571	757	925	902
TKN	mg/L	0.34	0.26	0.42	0.43	<0.2	0.29	0.2	<0.2	0.35	0.24
Total Dissolved Solids	mg/L	1770	1780	1590	1580	848	1390	1060	1280	1490	1530
Total Phosphorus	mg/L	0.01	<0.010	0.077	0.075	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Suspended Solids	mg/L	<5	<5	8	6	26	14	5	<5	<5	6
Zinc	ug/L	16	13	<10	<10	NA	<10	NA	<10	<10	<10
Field Measurements											
Temperature	°C	NA	NA	NA	NA	5.7	15.88	21.6	26.7	28.36	24.11
Conductivity	umhos/cm	NA	NA	NA	NA	1131.6	1598.1	1407.7	1362.9	1815.4	1820.6
Dissolved Oxygen	mg/L	NA	NA	NA	NA	13.2	9.29	9.68	8.73	7.66	7.57
D.O. Saturation	%	NA	NA	NA	NA	105.6	94.3	110.3	109.4	98.9	90.6
pH	S.U.	NA	NA	NA	NA	8.29	8.24	8.14	8.35	8.19	8.16

Appendix Table A2. Continued.

		Site Location: SHORT CREEK NEAR AT USGS GAGE @ ST. RT. 150											
		River Mile: 4.96 Storet: 609240											
Parameter	Units	7/27/2010	8/9/2010	8/11/2010	9/13/2010	9/22/2010	9/28/2010	9/30/2010	10/18/2010	11/22/2010	1/10/2011	2/16/2011	4/18/2011
Acidity	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Alkalinity	mg/L	180	180	192	190	180	196	204	211	194	254	213	217
Aluminum	ug/L	208	<200	<200	<200	<200	250	<200	<200	203	203	263	328
Ammonia	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Barium	ug/L	39	37	40	33	35	33	35	31	26	30	28	35
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	224	202	198	205	219	221	255	242	236	229	213	155
CBOD20	mg/L	NA	NA	<3	NA	<3	<3	NA	NA	NA	NA	NA	3.5
Chloride	mg/L	27.3	27.7	28.1	27.3	30	29.4	26.3	32.9	32.4	31.7	30.1	15.1
Chromium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
COD	mg/L	<20	27	<20	<20	<20	<20	<20		<20	<20	<20	<20
Conductivity	umhos/cm	1840	1860	1880	2000	1960	1930	2100	2040	1980	1670	1620	1260
Copper	ug/L	2.1	<2	2.1	2.1	2.1	2.5	2.6	2.4	<2	<2	<2	<2
Hardness, Total	mg/L	1050	953	947	985	1050	1030	1230	1120	1080	934	907	659
Iron	ug/L	354	159	191	220	223	420	279	278	465	683	835	811
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Magnesium	mg/L	120	109	110	115	122	115	143	126	120	88	91	66
Manganese	ug/L	24	17	17	14	16	30	17	12	20	75	122	60
Nickel	ug/L	5.5	4.4	4.3	5.8	5.7	6.7	6.8	6.3	6.6	6.9	5.7	6.7
Nitrate+nitrite	mg/L	<0.1	0.1	0.14	0.1	0.2	0.33	0.18	0.13	<0.1	0.76	0.68	0.52
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Orthophosphate, dissolved	mg/L	NA	NA	<0.01	NA	<0.01	<0.01	NA	NA	NA	NA	NA	<0.01
Potassium	mg/L	6	6	6	6	7	7	7	6	5	5	5	3
Selenium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Sodium	mg/L	82	91	93	108	112	114	103	111	96	67	58	30
Strontium	ug/L	2440	2480	2460	2670	2670	2580	2910	2610	2320	1920	2140	1380
Sulfate	mg/L	897	916	921	945	964	937	1240	983	956	742	730	513
TKN	mg/L	<0.2	<0.2	0.38	0.29	0.69	0.25	0.26	0.25	0.35	0.27	0.32	0.26
Total Dissolved Solids	mg/L	1490	1510	1550	1640	1650	1600	1750	1680	1610	1350	1280	938
Total Phosphorus	mg/L	<0.01	<0.01	<0.01	<0.01	0.02	0.01	0.01	<0.01	0.02	<0.01	<0.01	<0.01
Total Suspended Solids	mg/L	7	<5	<5	<5	<5	<5	<5	<5	<5	8	5	11
Zinc	ug/L	<10	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10
Field Measurements													
Temperature	°C	26.52	26.61	NA	20.33	NA	NA	15.67	12.09	11.45	0.19	1.06	NA
Conductivity	umhos/cm	1821.4	1835.1	NA	1933.8	NA	NA	2072.7	NA	2009	NA	1554.7	NA
Dissolved Oxygen	mg/L	8.21	9.21	NA	9.59	NA	NA	7.65	13.6	16.16	20.36	17.05	NA
D.O. Saturation	%	102.7	115.4	NA	106.7	NA	NA	77.5	127.2	149	140.6	120.8	NA
pH	S.U.	8.18	8.19	NA	8.17	NA	NA	7.78	8.18	8.35	7.64	7.65	NA

Appendix Table A2. Continued.

Parameter	Units	Site Location: South Fk Short Ck @ TR 83 (Greaves Rd) River Mile: 1.13 Storet: 301053						Site Location: Middle Fork Short Ck @ CR 41 River Mile: 0.23 Storet: C03S08					
		6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010	6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010
Acidity	mg/L	7.3	<5	<5	6	6.7	<5	<5	<5	<5	<5	<5	<5
Alkalinity	mg/L	238	257	247	242	263	285	186	153	173	158	156	180
Aluminum	ug/L	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Ammonia	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Barium	ug/L	19	20	19	18	22	20	43	45	46	45	36	34
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	300	327	357	311	345	360	219	257	249	268	246	290
Chloride	mg/L	12.1	11	13.8	13.5	13.5	15.5	36.1	36.9	41	28.8	35.2	36.5
Chromium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
COD	mg/L	44	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	28
Conductivity	umhos/cm	2800	NA	3060	3040	3270	3140	1990	2190	2200	2320	2270	2380
Copper	ug/L	<2	<2	<2	<2	<2	3.1	<2	<2	2	2	2.3	2.4
Hardness, Total	mg/L	1650	1870	2030	1780	1990	1970	1050	1310	1250	1360	1280	1460
Iron	ug/L	132	108	80	79	123	104	115	218	153	124	88	<50
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Magnesium	mg/L	218	257	276	244	275	260	121	162	152	167	162	178
Manganese	ug/L	35	31	32	32	26	39	36	65	44	31	19	15
Nickel	ug/L	7.2	6.2	6.6	5.1	8	7.5	7.6	5.7	5.4	5	6.6	6.5
Nitrate+nitrite	mg/L	0.12	<0.1	<0.1	0.45	<0.1	<0.1	0.96	<0.1	<0.1	0.15	0.95	0.4
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	mg/L	7	9	9	9	10	9	5	6	7	7	8	7
Selenium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Sodium	mg/L	95	127	116	118	131	130	51	63	71	76	79	88
Strontium	ug/L	4940	5390	5620	5060	5670	5350	2200	2760	2960	3160	2960	3240
Sulfate	mg/L	1720	1930	1800	1900	1980	1850	1030	1250	1240	1350	1260	1300
TKN	mg/L	<0.2	0.31	<0.2	0.29	0.38	0.32	0.29	0.6	0.3	2.01	0.45	0.36
Total Dissolved Solids	mg/L	2590	2900	2840	2800	3070	2870	1670	1950	1950	2100	1990	2080
Total Phosphorus	mg/L	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.07	0.03	0.04	0.04	0.04	0.05
Total Suspended Solids	mg/L	<5	<5	<5	<5	NA	<5	<5	15	7	6	<5	<5
Zinc	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Field Measurements													
Temperature	°C	24.13	26.79	24.62	25.01	19.65	12.03	24.21	27.92	25.8	26.97	21.37	12.01
Conductivity	umhos/cm	2389.6	3121.2	3002.6	2989.4	3149	NA	1645.1	2234.9	2180	2304.6	2212.7	NA
Dissolved Oxygen	mg/L	7.31	8.73	7.63	8.59	9.35	11.83	10.23	11.6	11.01	12.68	13.84	17.52
D.O. Saturation	%	87.7	110.1	92.5	104.8	103.1	110.8	122.5	149	136.1	160.1	157.4	163.7
pH	S.U.	8.3	8.15	8.11	8.18	8.11	8.1	8.58	8.55	8.53	8.61	8.66	8.58

Appendix Table A2. Continued.

		Site Location: Middle Fork Short Ck @ CR 15 (Foxy Bottom Rd)											
		River Mile: 5.35						Storet: C03S09					
Parameter	Units	6/23/2010	7/7/2010	7/27/2010	8/9/2010	8/12/2010	9/13/2010	9/22/2010	10/18/2010	11/3/2010			
Acidity	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5			
Alkalinity	mg/L	178	166	166	163	153	156	148	177	183			
Aluminum	ug/L	<200	200	<200	<200	<200	<200	207	<200	<200			
Ammonia	mg/L	0.55	0.07	0.13	0.17	0.07	0.37	0.17	0.98	0.94			
Arsenic	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2			
Barium	ug/L	41	43	40	34	37	34	33	29	32			
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2			
Calcium	mg/L	196	232	266	255	249	225	265	255	252			
CBOD20	mg/L	NA	6.2	4.8	4.9	5	NA	6.2	NA	NA			
CBOD5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	2			
Chloride	mg/L	50.3	53.3	44.6	40.9	41.2	42.9	31.6	39.5	47.4			
Chlorophyll_a (rock)	mg/m2	NA	NA	NA	NA	NA	NA	440	NA	NA			
Chlorophyll_a (water)	ug/L	NA	NA	NA	NA	NA	NA	4.3	NA	NA			
Chromium	ug/L	2	2	2	2	2	2	2	2	2			
COD	mg/L	<20	61	23	<20	22	<20	<20	36	<20			
Conductivity	umhos/cm	1800	1990	2070	2190	2200	2120	2130	2310	2290			
Copper	ug/L	2.8	2	2.5	2.3	2.2	2.9	2.6	3	2.1			
Hardness, Total	mg/L	889	1090	1250	1220	1200	1100	1300	1240	1200			
Iron	ug/L	179	483	317	120	259	313	381	296	205			
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2			
Magnesium	mg/L	97	123	143	141	140	130	156	146	139			
Manganese	ug/L	63	91	84	68	77	91	116	149	146			
Nickel	ug/L	6.7	6	6.3	5.4	4.9	6.6	7.3	6.9	7.1			
Nitrate+nitrite	mg/L	1.04	1.56	0.84	1.25	1.27	1.6	1.57	0.79	0.52			
Nitrite	mg/L	0.22	0.03	0.07	0.09	0.06	0.19	0.11	0.12	0.06			
Orthophosphate, diss.	mg/L	NA	NA	NA	NA	0.16	NA	0.28	NA	NA			
Pheophytin_a (rock)	mg/m2	NA	NA	NA	NA	NA	NA	94.6	NA	NA			
Pheophytin_a (water)	ug/L	NA	NA	NA	NA	NA	NA	2.5	NA	NA			
Potassium	mg/L	5	7	7	7	7	8	9	7	7			
Selenium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2			
Sodium	mg/L	65	85	83	91	91	96	100	97	98			
Strontium	ug/L	2040	2660	2760	3130	3050	2960	3430	3260	3330			
Sulfate	mg/L	838	1030	1050	1200	1180	1080	1140	1200	1260			
TKN	mg/L	1.02	0.73	0.75	0.61	0.63	1.05	0.87	1.5	1.89			
Total Dissolved Solids	mg/L	1420	1690	1720	1870	1840	1780	1850	1970	1910			
Total Phosphorus	mg/L	0.22	0.16	0.14	0.19	0.21	0.41	0.33	0.78	0.18			
Total Suspended Solids	mg/L	14	18	7	<5	<5	<5	10	7	<5			
Zinc	ug/L	<10	<10	<10	<10	16	<10	<10	<10	<10			
Field Measurements													
Temperature	°C	24.48	26	23.05	25.53	NA	20.3	NA	12.54	4.5			
Conductivity	umhos/cm	1506.3	2024.5	2026.8	2162.5	NA	2050.3	NA	NA	NA			
Dissolved Oxygen	mg/L	7.36	8.12	7.27	8.48	NA	8.46	NA	9.85	13.31			
D.O. Saturation	%	88.5	100.6	85.3	104.3	NA	94.2	NA	93.1	103.7			
pH	S.U.	8.34	8.14	7.93	8.04	NA	7.88	NA	7.8	7.54			

Appendix Table A2. Continued.

		Site Location: Sally Buffalo Ck just ust Cadiz WWTP												
		River Mile: 0.17					Storet: 301058							
Parameter	Units	6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010	11/3/2010						
Acidity	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0						
Alkalinity	mg/L	160	173	171	157	163	172	174						
Aluminum	ug/L	<200	<200	<200	<200	<200	<200	<200						
Ammonia	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050						
Arsenic	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0						
Barium	ug/L	35	34	32	29	30	25	27						
Cadmium	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20						
Calcium	mg/L	227	268	314	275	299	304	277						
CBOD5	mg/L	NA	3.2	NA	NA	NA	NA	<2.0						
Chloride	mg/L	32.6	29.5	25.5	21.4	20.7	20.3	23.2						
Chromium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0						
COD	mg/L	<20	<20	<20	<20	<20	24	<20						
Conductivity	umhos/cm	2030	2180	2300	2400	2510	2570	2510						
Copper	ug/L	<2.0	<2.0	2.1	<2.0	2.1	2.8	2.1						
Hardness, Total	mg/L	1060	1280	1510	1340	1480	1500	1350						
Iron	ug/L	137	203	175	129	222	85	161						
Lead	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0						
Magnesium	mg/L	120	149	176	159	178	180	159						
Manganese	ug/L	38	48	45	38	57	43	79						
Nickel	ug/L	7	6.1	6	6.1	8.1	8.5	8.9						
Nitrate+nitrite	mg/L	0.12	<0.10	<0.10	0.36	<0.10	<0.10	<0.10						
Nitrite	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020						
Potassium	mg/L	6	7	7	7	7	7	8						
Selenium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0						
Sodium	mg/L	78	92	92	96	101	107	112						
Strontium	ug/L	2920	3510	3630	3850	4100	4180	4430						
Sulfate	mg/L	1090	1250	1280	1420	1420	1430	1510						
TKN	mg/L	<0.20	0.42	<0.20	<0.20	0.37	0.29	0.39						
Total Dissolved Solids	mg/L	1710	1920	1970	2110	2240	2260	2210						
Total Phosphorus	mg/L	<0.010	<0.010	0.012	0.01	<0.010	<0.010	0.017						
Total Suspended Solids	mg/L	<5	<5	<5	<5	7	<5	<5						
Zinc	ug/L	<10	<10	<10	<10	<10	<10	<10						
Field Measurements														
Temperature	°C	26.3	27.95	24.55	26.26	20.56	13.58	5.65						
Conductivity	µmhos/cm	1719.4	2241.2	2246.6	2368.8	2419.4	NA	NA						
Dissolved Oxygen	mg/L	7.02	7.37	6.52	6.93	8.38	10.29	13.8						
D.O. Saturation	%	87.4	94.7	78.7	86.4	93.8	99.7	110.8						
pH	S.U.	8.43	8.16	8.11	8.12	7.99	8.04	7.93						

Appendix Table A2. Continued.

Parameter	Units	Site Location: Liming Ck @ TR 76 (Jackson Rd) River Mile: 0.15 Storet: 301063						Site Location: North Fork Short Ck @ CR 12 Dst Harmon Ck River Mile: 6.21 Storet: 301054					
		6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010	6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010
Acidity	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5	<5.0	
Alkalinity	mg/L	186	193	180	191	191	192	114	114	111	124	114	143
Aluminum	ug/L	<200	<200	<200	<200	<200	<200	895	<200	<200	<200	370	<200
Ammonia	mg/L	<0.050	<0.050	0.676	<0.050	0.087	<0.050	<0.050	0.054	0.089	<0.050	<0.050	<0.050
Arsenic	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	63	79	73	80	96	76	39	44	38	39	44	35
Cadmium	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Calcium	mg/L	172	218	182	187	219	234	202	280	251	266	294	292
Chloride	mg/L	86.4	128	95.4	120	129	144	21.8	17.9	31.8	25	20.4	21.7
Chromium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
COD	mg/L	62	<20	<20	<20	<20	22	24	<20	<20	<20	<20	<20
Conductivity	umhos/cm	1400	1790	1560	1690	1890	1880	1560	1990	1780	2000	2190	2110
Copper	ug/L	<2.0	<2.0	2.3	2.1	<2.0	2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Hardness, Total	mg/L	429	931	755	800	950	988	891	1290	1120	1230	1380	1330
Iron	ug/L	236	162	366	344	302	291	2940	3090	816	529	832	604
Lead	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Magnesium	mg/L	62	94	73	81	98	98	94	143	119	138	156	147
Manganese	ug/L	88	101	167	428	339	165	500	706	629	563	799	607
Nickel	ug/L	4.6	4.6	4.3	4.1	5.2	4.6	15.7	17.3	15	13.8	17.9	14.7
Nitrate+nitrite	mg/L	0.71	<0.10	0.58	0.15	0.18	<0.10	<0.10	<0.10	<0.10	0.73	0.24	<0.10
Nitrite	mg/L	0.068	<0.020	0.102	0.149	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Potassium	mg/L	4	5	5	7	6	6	3	4	4	4	5	4
Selenium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2	<2.0	<2.0
Sodium	mg/L	45	66	57	68	68	70	22	27	40	29	34	32
Strontium	ug/L	760	1110	854	962	1130	1080	1040	1500	1170	1440	1670	1540
Sulfate	mg/L	481	703	574	607	644	670	831	1200	941	1150	1220	1180
TKN	mg/L	0.51	0.73	1.66	1.95	0.88	0.66	<0.20	0.26	0.28	0.25	0.5	0.27
Total Dissolved Solids	mg/L	1110	1510	1150	1270	1430	1520	1310	1820	1500	1750	2000	1830
Total Phosphorus	mg/L	0.053	0.023	0.038	0.085	0.048	0.031	0.011	<0.010	0.014	<0.010	0.011	<0.010
Total Suspended Solids	mg/L	<5	<5	<5	<5	<5	<5	10	10	<5	<5	7	<5
Zinc	ug/L	<10	<10	<10	<10	<10	<10	17	36	<10	<10	23	15
Field Measurements													
Temperature	°C	23.74	25.98	21.32	24.08	19.63	10.43	24.79	25.65	24.28	23.75	20.14	11.1
Conductivity	umhos/cm	1179	1836.3	1506.5	1680.8	1829.5	NA	1316.5	2038.5	1741.8	1953.4	2097.8	NA
Dissolved Oxygen	mg/L	8.19	10.48	7.18	8.67	8.57	13.06	7.33	7.7	8.04	8.85	8.33	11.79
D.O. Saturation	%	97.1	129.8	81.4	103.7	94.1	117.4	88.7	94.8	96.5	105.2	92.4	107.8
pH	S.U.	8.43	8.24	7.87	7.93	7.8	8.13	8.15	7.68	7.91	7.99	7.76	7.83

Appendix Table A2. Continued.

		Site Location: North Fork Short Ck @ Nagy Ln from CR 10												
		River Mile: 0.09					Storet: 301055							
Parameter	Units	6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010	10/26/2011						
Acidity	mg/L	<5	<5	<5	<5	<5	<5	<5						
Alkalinity	mg/L	159	159	153	148	166	178	181						
Aluminum	ug/L	<200	<200	<200	<200	<200	<200	<200						
Ammonia	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05						
Arsenic	ug/L	<2	<2	<2	<2	<2	<2	<2						
Barium	ug/L	34	39	36	34	35	31	26						
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2						
Calcium	mg/L	216	250	257	229	259	280	216						
Chloride	mg/L	10.5	8.4	14	11.4	7.4	11.6	15.5						
Chromium	ug/L	<2	<2	<2	<2	<2	<2	<2						
COD	mg/L	25	34	<20	<20	<20	<20	<20						
Conductivity	umhos/cm	1610	1770	1720	1780	1870	1910	1550						
Copper	ug/L	<2	<2	<2	<2	<2	<2	<2						
Hardness, Total	mg/L	947	1120	1150	1040	1180	1240	914						
Iron	ug/L	138	97	141	97	167	67	90						
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2						
Magnesium	mg/L	99	121	124	114	129	131	91						
Manganese	ug/L	22	17	18	18	21	<10	35						
Nickel	ug/L	5.7	5	5	4	6.1	6.1	7.2						
Nitrate+nitrite	mg/L	<0.1	<0.1	<0.1	0.22	<0.1	<0.1	<0.1						
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02						
Potassium	mg/L	4	5	5	5	5	5	4						
Selenium	ug/L	<2	<2	<2	2.1	<2	<2	<2						
Sodium	mg/L	17	20	21	21	22	24	23						
Strontium	ug/L	1640	2110	1790	1890	2170	2000	1350						
Sulfate	mg/L	861	1000	909	991	938	998	763						
TKN	mg/L	<0.2	0.32	<0.2	0.22	0.24	<0.2	0.23						
Total Dissolved Solids	mg/L	1380	1570	1460	1530	1620	1620	1260						
Total Phosphorus	mg/L	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01						
Total Suspended Solids	mg/L	<5	<5	<5	<5	15	5	<5						
Zinc	ug/L	<10	<10	<10	<10	<10	<10	<10						
Field Measurements														
Temperature	°C	23.3	27.83	25.1	27.08	21.13	12.55	NA						
Conductivity	umhos/cm	1368.1	1810.3	1678.9	1759.6	1796.3	NA	NA						
Dissolved Oxygen	mg/L	8.76	8.04	8	8.27	9.58	11.27	NA						
D.O. Saturation	%	103	102.9	97.5	104.4	108.3	106.4	NA						
pH	S.U.	8.44	8.18	8.18	8.22	8.17	8.1	NA						

Appendix Table A2. Continued.

Parameter	Units	Site Location: Long Run @ CR 7 (Dillonvale-Long Run Rd) River Mile: 0.26 Storet: 301060						Site Location: Piney Fork @ TR 192 Ust L. Piney Fork River Mile: 10.51 Storet: 301056					
		6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010	6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010
Acidity	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Alkalinity	mg/L	199	190	178	171	171	193	180	216	201	213	218	205
Aluminum	ug/L	258	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Ammonia	mg/L	<0.050	<0.050	<0.050	0.067	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Arsenic	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	54	61	64	68	61	50	43	53	45	48	48	44
Cadmium	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Calcium	mg/L	115	147	188	210	273	304	172	216	190	200	212	222
Chloride	mg/L	20.4	19	20.9	21.5	20.1	22.4	24.1	27.2	29.8	31.2	29.6	36.8
Chromium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
COD	mg/L	<20	<20	<20	<20	<20	<20	22	<20	<20	<20	<20	<20
Conductivity	umhos/cm	1060	1340	1730	1870	2430	2440	1310	1540	1450	1570	1670	1620
Copper	ug/L	<2.0	<2.0	2.8	2.8	3.5	5.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Hardness, Total	mg/L	287	552	679	747	945	1040	429	964	837	903	974	978
Iron	ug/L	526	299	369	201	122	90	243	215	278	150	125	79
Lead	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Magnesium	mg/L	37	45	51	54	64	68	76	103	88	98	108	103
Manganese	ug/L	61	52	84	101	64	148	67	73	80	65	52	40
Nickel	ug/L	5.1	4.8	5.1	5.3	7.6	8.9	4.7	4.5	4	3.6	5.5	5.6
Nitrate+nitrite	mg/L	0.71	0.39	0.3	0.11	0.24	0.23	0.62	0.71	0.44	0.16	0.77	0.16
Nitrite	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Potassium	mg/L	4	5	5	6	7	7	4	5	5	5	6	6
Selenium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Sodium	mg/L	68	115	149	170	234	247	15	20	20	22	23	26
Strontium	ug/L	1380	1830	2090	2300	2850	2910	1020	1510	1240	1480	1730	1480
Sulfate	mg/L	345	558	787	898	1210	1220	580	727	622	704	696	691
TKN	mg/L	<0.20	0.47	0.2	<0.20	0.29	<0.20	<0.20	0.51	0.3	0.27	0.54	0.33
Total Dissolved Solids	mg/L	762	1020	1350	1480	2010	2010	1120	1350	1150	1260	1410	1310
Total Phosphorus	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	0.011	0.023	0.015	0.024	0.018	0.027	<0.010
Total Suspended Solids	mg/L	5	6	7	<5	<5	<5	<5	5	6	<5	<5	<5
Zinc	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Field Measurements													
Temperature	°C	24.57	26.51	24.83	26.61	20.56	13.11	23.59	22.61	21.71	21.07	17.25	9.33
Conductivity	umhos/cm	907.1	1385.5	1710.7	1846.7	2352.5	NA	1117.8	1581.5	1423.4	1526.2	1617.8	NA
Dissolved Oxygen	mg/L	7.93	8.93	8.35	7.58	8.83	12.24	8.18	9.4	7.93	9.07	10.25	12.78
D.O. Saturation	%	95.4	111.5	101.2	95	98.9	117.2	96.7	109.2	90.6	102.3	107.1	111.9
pH	S.U.	8.35	8.21	8.11	8.1	8.06	8.05	8.31	8.21	8.09	8.15	8.06	7.82

Appendix Table A2. Continued.

		Site Location: Piney Fork @ SR 150 River Mile: 0.35 Storet: C03K02						Site Location: Dry Fork @ SR 150 River Mile: 0.15 Storet: C03W17					
Parameter	Units	6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010	6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010
Acidity	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Alkalinity	mg/L	190	186	200	185	192	214	229	243	262	247	254	297
Aluminum	ug/L	<200	<200	<200	<200	<200	<200	<200	438	<200	<200	<200	<200
Ammonia	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Arsenic	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	39	44	40	39	40	36	39	44	36	35	31	30
Cadmium	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Calcium	mg/L	141	149	150	143	150	166	91	90	76	72	73	92
Chloride	mg/L	20.6	18.3	24.2	20.5	18.8	25.7	32.7	30.9	33.3	32.8	31.7	36.5
Chromium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
COD	mg/L	<20	<20	<20	<20	<20	<20	<20	22	<20	<20	<20	37
Conductivity	umhos/cm	1220	1280	1320	1280	1360	1410	1070	1110	1140	1160	1260	1340
Copper	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.1	2.4	2.5	2.5	3.1
Hardness, Total	mg/L	352	648	655	633	671	715	227	414	371	357	363	419
Iron	ug/L	235	491	176	201	369	<50	152	864	116	59	<50	<50
Lead	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Magnesium	mg/L	60	67	68	67	72	73	45	46	44	43	44	46
Manganese	ug/L	17	29	13	<10	24	<10	<10	63	<10	<10	<10	<10
Nickel	ug/L	4.3	3.7	3.3	2.8	3.8	3.9	3	3.3	2	<2.0	2	2.5
Nitrate+nitrite	mg/L	0.37	0.24	0.2	<0.10	<0.10	<0.10	<0.10	<0.10	1.04	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Potassium	mg/L	4	5	6	6	6	6	4	5	5	5	6	5
Selenium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Sodium	mg/L	36	53	50	53	61	60	79	105	123	125	143	145
Strontium	ug/L	1360	1690	1610	1670	1870	1760	1520	1700	1710	1690	1760	1830
Sulfate	mg/L	483	539	544	543	562	551	308	334	318	346	377	375
TKN	mg/L	<0.20	0.27	0.23	<0.20	0.24	0.29	<0.20	0.2	<0.20	<0.20	<0.20	<0.20
Total Dissolved Solids	mg/L	914	978	990	962	1040	1080	730	746	738	786	868	892
Total Phosphorus	mg/L	<0.010	0.012	<0.010	<0.010	0.013	0.01	<0.010	0.01	<0.010	<0.010	0.011	<0.010
Total Suspended Solids	mg/L	<5	15	<5	5	8	<5	<5	13	5	<5	<5	<5
Zinc	ug/L	13	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Field Measurements													
Temperature	°C	25.18	27.32	25.6	26.32	21.02	12.2	25.01	27.29	25.98	26.67	21.5	12.81
Conductivity	umhos/cm	1030.2	1310	1278.3	1272.1	1329.7	NA	926.2	1146.7	1130.3	1156.3	1231.6	NA
Dissolved Oxygen	mg/L	8.64	8.35	8.38	8.64	8.37	12.04	7.83	8.54	8.59	8.76	8.59	11.36
D.O. Saturation	%	105.1	105.8	102.9	107.5	94.2	112.7	95.1	108.1	106.2	109.6	97.6	107.7
pH	S.U.	8.38	8.2	8.17	8.24	8.18	8.26	8.42	8.28	8.31	8.37	8.33	8.29

Appendix Table A2. Continued.

		Site Location: Little Short Ck @ TR 113													
		River Mile: 0.08						Storet: 300815							
Parameter	Units	3/9/2010	4/26/2010	5/24/2010	6/23/2010	7/7/2010	7/27/2010	8/9/2010	8/11/2010	9/13/2010	9/22/2010	9/28/2010	9/30/2010		
Acidity	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
Alkalinity	mg/L	175	203	209	171	182	182	180	189	198	193.5	189	221		
Aluminium	ug/L	415	252	201	<200	<200	<200	<200	<200	<200	<200	<200	<200		
Ammonia	mg/L	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Arsenic	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
Barium	ug/L	43	50	46	46	48	48	46	53	50	49.5	47	47		
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
Calcium	mg/L	106	142	124	118	131	136	135	141	162	161	155	156		
CBOD20	mg/L	<3	<3	<3	NA	NA	NA	NA	<3	NA	<3	NA	NA		
Chloride	mg/L	33.7	32.7	30.7	34.6	44.4	49.4	50.5	53.3	55.8	57.65	66.4	62.6		
Chlorophyll_a	ug/L	NA	NA	NA	NA	NA	NA	2.9	NA	NA	NA	NA	NA		
Chromium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
COD	mg/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20		
Conductivity	umhos/cm	826	1140	1080	1140	1330	1430	1460	1510	1650	1575	1730	1720		
Copper	ug/L	<2	<2	<2	<2	<2	2.2	2.2	2.4	3.1	2.6	4.1	3.2		
Hardness, Total	mg/L	376	528	310	295	496	508	502	521	586	583.5	572	571		
Iron	ug/L	1090	265	174	75	<50	89	68	58	52	189	76	60		
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
Magnesium	mg/L	27	42	38	38	41	41	40	41	44	44	45	44		
Manganese	ug/L	48	40	14	<10	<10	<10	10	10	<10	21	<10	<10		
Mercury	ug/L	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Nickel	ug/L	3.7	5.4	4.1	3.3	2.6	2.8	2.1	2.2	3.5	3.6	2.6	2.8		
Nitrate+nitrite	mg/L	1.58	<0.1	<0.1	0.11	0.21	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
Orthophosphate, dissolved	mg/L	<0.01	<0.01	<0.01	NA	NA	NA	NA	<0.01	NA	0.01	<0.01	NA		
Pheophytin_a	ug/L	NA	NA	NA	NA	NA	NA	1.8	NA	NA	NA	NA	NA		
Potassium	mg/L	3	3	3	3	4	4	4	4	4	5	5	4		
Selenium	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
Sodium	mg/L	35	74	61	76	115	126	132	137	148	157	203	175		
Strontium	ug/L	815	1310	1160	1180	1280	1230	1220	1240	1270	1255	1380	1270		
Sulfate	mg/L	220	382	325	402	512	525	550	573	630	587.5	679	651		
TKN	mg/L	<0.2	0.8	0.48	<0.2	0.42	0.21	<0.2	0.28	0.39	1.655	0.39	0.32		
Total Dissolved Solids	mg/L	566	812	774	800	980	1020	1040	1090	1230	1145	1240	1240		
Total Phosphorus	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.22	<0.01	<0.01		
Total Suspended Solids	mg/L	10	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
Zinc	ug/L	<10	<10	<10	<10	<10	137	<10	19	<10	<10	14	<10		
Field Measurements															
Temperature	°C	5.66	15.72	21.13	26.55	26.98	25.25	25.24	NA	19.96	NA	NA	16.11		
Conductivity	umhos/cm	836.8	1072.5	1103.4	963.3	1361.7	1419.8	1450.4	NA	1599.9	NA	NA	1709.5		
Dissolved Oxygen	mg/L	12.89	9.42	9.09	7.57	8.01	7.39	7.75	NA	7.91	NA	NA	7.18		
D.O. Saturation	%	103	95.2	102.5	94.5	100.8	90.2	94.6	NA	87.4	NA	NA	73.3		
pH	S.U.	8.25	8.31	8.08	8.33	8.06	8.01	7.99	NA	7.85	NA	NA	7.85		

Appendix Table A2. Continued.

Parameter	Units	Site Location: Little Short Ck @ TR 113 River Mile: 0.08 Storet: 300815						Site Location: Little Short Ck @ TR 472 ust Parkers Run River Mile: 4.99 Storet: 301061					
		10/18/2010	11/22/2010	1/10/2011	2/16/2011	4/18/2011	10/26/2011	6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010
Acidity	mg/L	<5	<5	<5	<5	5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Alkalinity	mg/L	205	216	260	199	226	237	230	232	249	224	264	302
Aluminum	ug/L	<200	<200	219	329	536	<200	<200	288	<200	615	1410	321
Ammonia	mg/L	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Arsenic	ug/L	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Barium	ug/L	44	38	43	45	45	45	75	81	80	83	96	79
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Calcium	mg/L	163	160	174	138	106	134	106	98	99	91	105	118
CBOD20	mg/L	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	65.8	64.5	46.4	39	15.7	27.2	27.8	27.4	29	31.7	43.7	43.5
Chromium	ug/L	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
COD	mg/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	26
Conductivity	umhos/cm	1750	1750	1400	1050	839	1110	918	886	927	918	1050	1110
Copper	ug/L	4.2	2.6	2.5	<2	3.2	<2	<2.0	<2.0	<2.0	2.3	3.6	2.6
Hardness, Total	mg/L	596	597	640	497	384	499	265	409	408	388	435	488
Iron	ug/L	<50	<50	819	1270	1090	169	306	435	269	946	2170	498
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	2.2	<2.0
Magnesium	mg/L	46	48	50	37	29	40	36	40	39	39	42	47
Manganese	ug/L	<10	<10	67	54	41	33	36	47	36	102	218	64
Nickel	ug/L	3.4	3.6	6.1	4.7	5.4	6.1	3.3	2.6	2.4	2.9	4.9	3.1
Nitrate+nitrite	mg/L	<0.1	<0.1	0.42	0.58	0.53	<0.1	0.16	0.1	<0.10	2.73	<0.10	<0.10
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Orthophosphate, diss.	mg/L	NA	NA	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	4	3	3	3	2	3	3	3	3	3	4	3
Selenium	ug/L	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Sodium	mg/L	173	184	102	60	30	66	33	47	50	56	78	75
Strontium	ug/L	1300	1360	1470	1160	869	1250	1300	1440	1380	1350	1510	1590
Sulfate	mg/L	651	658	489	326	218	351	214	226	209	226	226	237
TKN	mg/L	0.33	0.39	0.4	0.22	0.3	0.25	<0.20	0.26	<0.20	<0.20	0.22	0.21
Total Dissolved Solids	mg/L	1250	1250	1010	736	560	782	618	612	598	614	696	744
Total Phosphorus	mg/L	<0.01	0.01	0.01	0.02	<0.01	<0.01	0.019	0.022	0.017	0.015	0.062	0.012
Total Suspended Solids	mg/L	<5	<5	11	7	10	<5	11	29	12	18	164	41
Zinc	ug/L	<10	<10	14	<10	<10	<10	<10	24	<10	<10	<10	<10
Field Measurements													
Temperature	°C	13.66	12.16	0.48	1.57	NA	NA	NA	NA	NA	NA	NA	NA
Conductivity	umhos/cm	NA	1781.9	NA	1021.5	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Oxygen	mg/L	9.34	12.19	16.92	15.97	NA	NA	NA	NA	NA	NA	NA	NA
D.O. Saturation	%	90.4	114.2	117.8	114.5	NA	NA	NA	NA	NA	NA	NA	NA
pH	S.U.	7.93	8.28	7.9	7.9	NA	NA	NA	NA	NA	NA	NA	NA

Appendix Table A2. Continued.

		Site Location: Hopedale Mine										
		Samples collected 06/02/2011										
Parameter	Units	Storet: 301497	N.	Storet: 301498	Trib	Storet: 301496	N.	Storet: 301499	Seep	Storet: 301494	Storet: 301495	
		Fk Short Ust Hopedale Mine	to N. Fk Short Cr. at CR 13 at RM 7.25	Fk Short Creek Dst Hopedale Mine				to Trib to N. Fk Short Creek at RM 7.25	Hopedale Mining 001	outfall	Mining	Hopedale outfall 002
Acidity	mg/L	<5.0		185		<5.0		9740		<5.0		<5.0
Alkalinity	mg/L	148		<5.0		44.6		<5.0		39		38.2
Aluminum	ug/L	<200		23000		4520		379000		779		533
Ammonia	mg/L	<0.050		0.531		0.145		10.6		0.514		0.141
Arsenic	ug/L	<2.0		22.7		3.4		1250		<2.0		<2.0
Barium	ug/L	44		45		47		110		17		16
Cadmium	ug/L	<0.20		0.82		0.3		12.2		<0.20		<0.20
Calcium	mg/L	134		250		196		430		244		198
Chloride	mg/L	22.7		29.2		25.4		9.4		27.5		18.7
Chromium	ug/L	<2.0		8		<2.0		181		<2.0		<2.0
COD	mg/L	<20		21		<20		398		<20		<20
Conductivity	umhos/cm	1100		2170		1500		9110		2760		2100
Copper	ug/L	<2.0		26.5		6.8		151		7.3		5
Hardness, Total	mg/L	545		1140		823		1690		893		733
Iron	ug/L	135		76000		16600		2260000		80		60
Lead	ug/L	<2.0		<2.0		<2.0		<4.0		<2.0		<2.0
Magnesium	mg/L	51		126		81		150		69		58
Manganese	ug/L	149		2190		977		20300		228		120
Nickel	ug/L	3.8		88		32.8		1740		7.2		6.6
Nitrate+nitrite	mg/L	0.13		<0.10		0.13		<0.10		0.57		0.36
Nitrite	mg/L	<0.020		<0.020		<0.020		<0.020		0.062		<0.020
Potassium	mg/L	2		4		3		12		3		3
Selenium	ug/L	<2.0		2.1		<2.0		17.4		4.6		3.6
Sodium	mg/L	14		23		34		37		287		193
Strontium	ug/L	526		1410		857		736		705		578
Sulfate	mg/L	449		1440		826		9420		1580		1170
TKN	mg/L	0.27		0.31		0.42		1.65		0.82		0.45
Total Dissolved Solids	mg/L	858		2110		1270		14200		2290		1730
Total Phosphorus	mg/L	<0.010		0.252		0.028		7.53		<0.010		<0.010
Total Suspended Solids	mg/L	<5		141		52		7		6		<5
Zinc	ug/L	<10		286		78		6910		<10		<10
Field Measurements												
Temperature	°C	18.98		26.32		22.5		19.06		24.09		25.96
Conductivity	µmhos/cm	1049		2097		1451		8764		2644		2011
Dissolved Oxygen	mg/L	7.81		6.02		6.82		3.14		7.75		6.83
D.O. Saturation	%	84.4		75.1		79.1		34.9		93		84.5
pH	S.U.	7.77		4.58		6.33		2.38		8.25		8.29

Appendix Table A2. Continued.

		Site Location: Cadiz WWTP												
		Discharge to Sally Buffalo Creek						Storet: C03S10						
Parameter	Units	6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010	Grab		Comp				
								11/3/2010	11/3-11/4	1/10/2011	2/16/2011			
Acidity	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0		
Alkalinity	mg/L	276	302	130	162	162	207	211	206	187	132			
Aluminum	ug/L	207	321	<200	<200	<200	297	<200	<200	<200	<200			
Ammonia	mg/L	19.7	<0.050	2.75	4.82	6.01	12	11.7	11.6	6.45	2.68			
Arsenic	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0			
Barium	ug/L	24	79	19	19	18	19	16	17	25	33			
Cadmium	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20			
Calcium	mg/L	107	118	87	91	78	93	101	102	96	108			
CBOD5	mg/L	NA	NA	NA	NA	NA	NA	16	19	NA	6.9			
CBOD20	mg/L	NA	NA	14	17	NA	NA	NA	NA	NA	NA			
Chloride	mg/L	91.1	43.5	78.4	88.8	80.8	84.9	88.6	88.2	105	110			
Chromium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0			
COD	mg/L	52	26	34	36	<20	132	57	NA	39	24			
Conductivity	umhos/cm	1310	1110	1060	1150	1120	1180	1180	NA	1060	1070			
Copper	ug/L	5.9	2.6	6.1	4.6	6.6	8	5.3	5.2	5.9	2.1			
Hardness, Total	mg/L	267	488	341	371	327	376	392	395	355	393			
Hexavalent Chromium	ug/L	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA			
Iron	ug/L	354	498	184	176	260	563	347	347	366	227			
Lead	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0			
Magnesium	mg/L	29	47	30	35	32	35	34	34	28	30			
Manganese	ug/L	226	64	119	186	181	394	403	401	287	245			
Mercury	ug/L	NA	NA	NA	NA	NA	NA	NA	<0.20	NA	NA			
Nickel	ug/L	5.4	3.1	2.9	2.6	3.7	3.1	3.1	3.2	2.5	2.7			
Nitrate+nitrite	mg/L	3.01	<0.10	8.34	3.79	3.06	<0.10	0.32	0.32	0.55	0.61			
Nitrite	mg/L	0.479	<0.020	0.133	0.416	0.286	<0.020	0.112	0.124	0.093	0.133			
Oil & Grease	mg/L	NA	NA	NA	NA	NA	NA	<2.0	NA	NA	NA			
Potassium	mg/L	10	3	8	9	11	10	11	10	6	4			
Selenium	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0			
Sodium	mg/L	92	75	77	86	90	88	88	88	82	68			
Strontium	ug/L	449	1590	424	520	407	475	466	469	407	529			
Sulfate	mg/L	239	237	254	294	261	260	262	264	211	223			
TKN	mg/L	23.6	0.21	4.9	6.68	8.07	15	14.1	14	6.41	4.12			
Total Dissolved Solids	mg/L	758	744	702	760	716	720	718	716	654	694			
Total Phosphorus	mg/L	4.2	0.012	1.34	1.8	2.61	2.04	1.61	1.45	0.652	0.046			
Total Suspended Solids	mg/L	12	41	<5	5	6	21	11	7	11	6			
Zinc	ug/L	25	<10	18	<10	17	25	16	22	15	10			
Field Measurements														
Temperature	°C	20.22	21.64	22.06	22.49	19.57	15.51	7.53	NA	4.83	5.27			
Conductivity	µmhos/cm	1122.7	1110.9	1055	1137.2	1097.9	NA	NA	NA	NA	1042.8			
Dissolved Oxygen	mg/L	4.3	5.59	4.19	4.34	4.12	3.71	7.875	NA	8.27	7.65			
D.O. Saturation	%	47.7	63.7	48.1	50.2	45	37.4	63.4	NA	64.6	60.5			
pH	S.U.	8	7.03	7.01	7.17	7.09	7.29	7.08	NA	7.35	7.11			

Appendix Table A2. Continued.

		Site Location: Salt Run Adj TR 157 (church bridge xing) River Mile: 0.60 Storet: 301072					
Parameter	Units	6/23/2010	7/7/2010	7/27/2010	8/11/2010	9/13/2010	10/18/2010
Acidity	mg/L	<5	NA	<5	<5	<5	<5
Alkalinity	mg/L	178	NA	207	192	212	200
Aluminum	ug/L	298	<200	231	<200	<200	<200
Ammonia	mg/L	<0.05	NA	<0.05	<0.05	<0.05	<0.05
Arsenic	ug/L	<2	<2	<2	<2	NA	<2
Barium	ug/L	50	53	50	56	46	43
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	160	167	171	181	193	199
Chloride	mg/L	16.7	16.9	17	15.5	18.7	22
Chromium	ug/L	<2	<2	<2	<2	NA	<2
COD	mg/L	<20	NA	<20	<20	NA	20
Conductivity	umhos/cm	1590	NA	1820	1850	2050	2000
Copper	ug/L	2.4	2	2.4	2.4	2	2.7
Hardness, Total	mg/L	400	944	884	930	1020	1030
Iron	ug/L	475	263	396	228	111	121
Lead	ug/L	<2	<2	<2	<2	<2	<2
Magnesium	mg/L	97	128	111	116	NA	130
Manganese	ug/L	30	22	26	19	NA	10
Nickel	ug/L	4.3	3.7	3.8	2.9	3.1	3.6
Nitrate+nitrite	mg/L	0.13	NA	<0.1	<0.1	<0.1	<0.1
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	mg/L	5	6	6	6	6	6
Selenium	ug/L	<2	<2	<2	<2	NA	<2
Sodium	mg/L	75	102	94	94	120	116
Strontium	ug/L	2340	2770	2690	2620	NA	2730
Sulfate	mg/L	681	909	908	933	890	944
TKN	mg/L	<0.2	NA	<0.2	0.31	0.24	<0.2
Total Dissolved Solids	mg/L	1240	1420	1460	1500	1660	1640
Total Phosphorus	mg/L	0.015	NA	0.031	<0.01	<0.01	<0.01
Total Suspended Solids	mg/L	19	24	14	11	6	5
Zinc	ug/L	<10	<10	<10	14	NA	<10
Field Measurements							
Temperature	°C	25.12	26.55	21.12	23.7	16.15	11.7
Conductivity	umhos/cm	1379.9	1840.3	1762.5	1827.6	2024.5	1777.1
Dissolved Oxygen	mg/L	6.7	7	8.29	8.39	10.45	11.08
D.O. Saturation	%	81.6	87.6	93.7	99.6	106.9	102.7
pH	S.U.	8.2	8.2	8.2	7.76	8.28	8.23

Appendix Table A2. Continued.

Parameter	Units	Site Location: Rush Run adj. CR 17 (Rush Run Road) River Mile: 2.80 Storet: 301069						Site Location: Rush Run Adj CR 17 (Rush Run Road) River Mile: 0.65 Storet: 301070					
		6/23/2010	7/7/2010	7/27/2010	8/11/2010	9/13/2010	10/18/2010	6/23/2010	7/7/2010	7/27/2010	8/11/2010	9/13/2010	10/18/2010
Acidity	mg/L	<5	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5
Alkalinity	mg/L	193	NA	215	193	205	217	168	NA	178	170	172	187
Aluminum	ug/L	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Ammonia	mg/L	<0.05	NA	<0.05	<0.05	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.05	<0.05
Arsenic	ug/L	<2	<2	<2	<2	NA	<2	<2	<2	<2	NA	<2	<2
Barium	ug/L	46	52	48	55	50	49	44	53	51	54	55	50
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	129	148	156	156	175	194	123	147	156	154	187	198
Chloride	mg/L	22	24	25.3	23.9	24.2	26.8	20	22.9	24.9	23.8	24	29.1
Chromium	ug/L	<2	<2	<2	<2	NA	<2	<2	<2	<2	NA	<2	<2
COD	mg/L	<20	NA	<20	<20	NA	35	<20	NA	<20	<20	NA	<20
Conductivity	umhos/cm	1100	NA	1330	1300	1500	1540	1060	NA	1330	1310	1530	1550
Copper	ug/L	2.5	<2	<2	2	<2	<2	2.1	<2	<2	2.7	<2	<2
Hardness, Total	mg/L	322	666	694	698	779	834	307	655	678	665	809	840
Iron	ug/L	126	85	105	116	136	99	98	69	77	201	71	64
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Magnesium	mg/L	60	72	74	75	NA	85	56	70	70	68	NA	84
Manganese	ug/L	13	12	14	16	NA	13	12	11	11	25	NA	<10
Nickel	ug/L	3.4	3	2.9	2.3	2.7	3.4	3.8	3.4	3.5	3	3.2	3.7
Nitrate+nitrite	mg/L	0.14	NA	0.17	0.1	<0.1	<0.1	0.12		0.19	<0.1	<0.1	<0.1
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	mg/L	4	5	5	5	5	5	4	4	5	5	5	5
Selenium	ug/L	<2	<2	<2	<2	NA	<2	<2	<2	<2	NA	<2	<2
Sodium	mg/L	23	30	33	33	40	39	23	32	35	34	43	44
Strontium	ug/L	1510	1830	1960	1890	NA	2140	1310	1630	1700	1590	NA	1940
Sulfate	mg/L	408	507	545	537	630	627	405	528	568	569	665	691
TKN	mg/L	<0.2	NA	<0.2	0.31	0.23	0.21	<0.2	NA	<0.2	0.27	0.22	0.3
Total Dissolved Solids	mg/L	824	964	1020	1010	1160	1170	796	968	1020	1010	1200	1180
Total Phosphorus	mg/L	<0.01	NA	0.01	<0.01	<0.01	0.01	<0.01	NA	<0.01	<0.01	<0.01	<0.01
Total Suspended Solids	mg/L	<5	<5	<5	7	8	<5	<5	<5	<5	<5	<5	<5
Zinc	ug/L	<10	<10	<10	17	NA	<10	<10	<10	<10	15	NA	<10
Field Measurements													
Temperature	°C	24.07	25.82	21.01	25.14	15.27	11.65	25.18	27.69	21.52	25.6	15.31	12.16
Conductivity	umhos/cm	955.2	1277.9	1316.7	1231.4	1449.1	1367.4	928.4	1272.2	1301	1272.1	1468.8	1399.1
Dissolved Oxygen	mg/L	6.92	6.75	9.23	7.97	10.79	11.16	6.81	6.89	8.57	8.7	10.36	11.53
D.O. Saturation	%	82.6	83.2	104	97	108.1	103.2	82.9	87.9	97.4	106.8	103.9	107.9
pH	S.U.	8.17	8.09	8.13	7.98	8.24	8.21	8.23	8.23	8.22	7.82	8.27	8.31

Appendix Table A2. Continued.

Parameter	Units	Site Location: Deep Run adj Deep Run Rd ust Patton Run River Mile: 2.40 Storet: 301082						Site Location: Deep Run at Deep Run Rd at RR Tressel River Mile: 0.25 Storet: 301083					
		6/23/2010	7/8/2010	7/28/2010	8/9/2010	9/13/2010	10/18/2010	6/23/2010	7/8/2010	7/28/2010	8/9/2010	8/11/2010	9/13/2010
Acidity	mg/L	<5	NA	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5
Alkalinity	mg/L	169	NA	176	196	209	225	126	NA	89.7	101	93.8	76.8
Aluminum	ug/L	<200	<200	<200	<200	<200	<200	263	357	<200	<200	<200	<200
Ammonia	mg/L	<0.05	NA	<0.05	<0.05	<0.05	<0.05	<0.05	NA	0.054	<0.05	<0.05	<0.05
Arsenic	ug/L	<2	<2	<2	<2	NA	<2	<2	<2	<2	<2	<2	NA
Barium	ug/L	62	70	75	69	71	74	42	49	48	42	54	51
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	144	172	178	181	188	210	161	216	196	192	199	280
CBOD20	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3	NA
Chloride	mg/L	18.2	24.3	29.1	30	39.7	48.4	54.5	61.3	87.1	90.1	87.2	65.9
Chlorophyll_a	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.9	NA
Chromium	ug/L	<2	<2	<2	<2	NA	<2	<2	<2	<2	<2	<2	NA
COD	mg/L	<20	NA	<20	<20	NA	23	<20	NA	<20	<20	<20	NA
Conductivity	umhos/cm	1040	NA	1320	1340	1530	1530	1300	NA	1680	1720	1740	2230
Copper	ug/L	2.3	<2	<2	<2	3.5	2.9	4.3	2.8	9.6	8.6	8.3	5.9
Hardness, Total	mg/L	360	429	646	662	704	767	402	741	671	661	682	959
Iron	ug/L	376	225	359	321	233	425	1950	2990	453	1210	711	338
Lead	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Magnesium	mg/L	36	46	49	51	NA	59	39	49	44	44	45	NA
Manganese	ug/L	27	28	34	27	NA	69	33	60	39	61	25	NA
Nickel	ug/L	3.5	3.1	2.4	2.7	2.8	3.5	6.2	7.6	6.3	7.1	6.2	7.8
Nitrate+nitrite	mg/L	0.14	NA	0.2	0.1	<0.1	<0.1	3.97	NA	10.9	9.37	9.61	5.69
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.438	<0.02	<0.02	<0.02
Orthophosphate, dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.01	NA
Pheophytin_a	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	NA
Potassium	mg/L	3	3	3	3	4	4	5	6	8	8	8	8
Selenium	ug/L	<2	<2	<2	<2	NA	<2	<2	<2	<2	<2	<2	NA
Sodium	mg/L	29	43	53	54	78	81	66	94	109	118	115	155
Strontium	ug/L	1100	1450	1530	1580	NA	1850	1180	1520	1360	1350	1390	NA
Sulfate	mg/L	383	506	520	555	589	581	507	712	643	690	719	1040
TKN	mg/L	<0.2	NA	0.34	0.4	0.45	0.37	0.32	NA	1.04	0.77	0.85	0.58
Total Dissolved Solids	mg/L	776	964	1020	1080	1220	1190	976	1260	1210	1280	1310	1820
Total Phosphorus	mg/L	0.016	NA	0.015	0.01	0.01	0.02	0.261	NA	1.31	0.986	1.19	0.532
Total Suspended Solids	mg/L	9	6	8	<5	6	12	7	11	6	6	<5	<5
Zinc	ug/L	<10	<10	<10	<10	NA	12	<10	14	19	15	32	NA
Field Measurements													
Temperature	°C	24.15	20.8	19.93	19.48	17.22	11.29	25.55	22.75	22.07	22.15	NA	20.48
Conductivity	umhos/cm	895.8	1329.6	871	1323.2	1456.4	1387.3	1135.6	1701.1	1611.9	1680.7	NA	2145.9
Dissolved Oxygen	mg/L	7.24	8.05	7.73	9.42	9.24	10.87	7.23	7.43	6.57	9.3	NA	9.3
D.O. Saturation	%	86.4	90.3	85.2	102.9	96.5	99.6	88.6	86.7	75.5	107.2	NA	103.9
pH	S.U.	8.15	7.98	7.99	8.17	8.07	8.09	8.06	7.85	7.59	7.91	NA	7.98

Appendix Table A2. Continued.

Parameter	Units	Site Location: Deep Run at Deep Run Rd at RR Tressel River Mile: 0.25 Storet: 301083					Site Location: Glens Run at CR 4 ust. Patton Run River Mile: 1.90 Storet: 301080					
		10/18/2010					6/23/2010	7/7/2010	7/27/2010	8/9/2010	9/13/2010	10/18/2010
Acidity	mg/L	<5					<5	NA	<5	<5	<5	<5
Alkalinity	mg/L	100					197	NA	263	276	212	202
Aluminum	ug/L	234					840	<200	669	<200	<200	277
Ammonia	mg/L	<0.05					NA	NA	0.246	0.308	0.051	<0.05
Arsenic	ug/L	<2					<2	<2	2.1	<2	NA	<2
Barium	ug/L	40					98	91	87	68	84	88
Cadmium	ug/L	<0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	225					100	92	153	159	90	101
CBOD20	mg/L	3.9					NA	NA	NA	NA	NA	NA
Chloride	mg/L	106					34.2	52.5	127	149	70.1	79.3
Chromium	ug/L	<2					<2	<2	<2	<2	NA	<2
COD	mg/L	<20					NA	NA	<20	<20	NA	<20
Conductivity	umhos/cm	1840					695	NA	2430	2530	866	886
Copper	ug/L	10					3.3	2.3	9.8	7.9	2.8	3.3
Hardness, Total	mg/L	768					250	308	543	562	307	343
Iron	ug/L	837					1400	126	28600	14800	276	513
Lead	ug/L	<2					<2	<2	<2	<2	<2	<2
Magnesium	mg/L	50					17	19	39	40	NA	22
Manganese	ug/L	84					69	16	290	284	NA	84
Nickel	ug/L	8.3					3.6	2.1	12.8	10	<2	2.4
Nitrate+nitrite	mg/L	10.9					NA	NA	0.29	0.34	0.1	0.12
Nitrite	mg/L	<0.02					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Potassium	mg/L	9					2	3	5	5	3	3
Selenium	ug/L	<2					<2	<2	2.6	2.9	NA	<2
Sodium	mg/L	141					22	35	334	357	55	55
Strontium	ug/L	1460					528	638	1920	2000	NA	732
Sulfate	mg/L	667					106	116	876	914	111	116
TKN	mg/L	0.93					NA	NA	0.88	0.76	0.4	0.26
Total Dissolved Solids	mg/L	1320					452	466	1670	1770	552	534
Total Phosphorus	mg/L	1.2					NA	NA	0.04	0.016	0.046	0.043
Total Suspended Solids	mg/L	7					56	5	77	35	14	22
Zinc	ug/L	22					<10	<10	20	<10	NA	<10
Field Measurements												
Temperature	°C	14.94					21.01	27.4	24.18	21.45	19.65	12.74
Conductivity	µmhos/cm	1658					594.4	758.6	2297.5	2448.2	863.8	866.7
Dissolved Oxygen	mg/L	10.09					7.17	6.88	6.52	7.11	9.01	11.91
D.O. Saturation	%	100.5					80.6	87.2	78.2	81.1	98.7	112.6
pH	S.U.	7.9					8.28	8.24	7.52	7.5	8.12	8.38

Appendix Table A2. Continued.

		Site Location: Glens Run @ CR 4 (Glens Run Rd)											
		River Mile: 0.1 Storet: 300816											
Parameter	Units	5/24/2010	6/23/2010	7/7/2010	7/22/2010	7/27/2010	8/4/2010	8/9/2010	8/11/2010	9/13/2010	9/22/2010	9/28/2010	9/30/2010
Acidity	mg/L	<5	<5	NA	<5	<5	NA	<5	<5	<5	<5	<5	<5
Alkalinity	mg/L	236	200	NA	198	196	NA	208	180	195	189	221	223
Aluminum	ug/L	<200	331	<200	<200	<200	NA	<200	<200	<200	<200	<200	<200
Ammonia	mg/L	<0.05	<0.05	NA	<0.05	<0.05	NA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	ug/L	<2	<2	<2	<2	<2	NA	<2	<2	NA	<2	<2	<2
Barium	ug/L	61	70	61	62	67	NA	60	70	56	54	37	40
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	130	109	124	146	166	NA	166	166	213	214	159	171
CBOD20	mg/L	<3	NA	NA	4	NA	NA	NA	3	NA	<3	<3	NA
Chloride	mg/L	58.4	40.6	82.1	99.7	106	NA	118	129	190	168	147	141
Chlorophyll_a	ug/L	NA	NA	NA	NA	NA	5.6	NA	NA	NA	NA	NA	NA
Chromium	ug/L	<2	<2	<2	<2	<2	NA	<2	<2	NA	<2	<2	<2
COD	mg/L	<20	<20	NA	<20	<20	NA	<20	<20	NA	<20	<20	<20
Conductivity	umhos/cm	1240	925	NA	1980	2170	NA	2290	2460	3560	3170	2520	2690
Copper	ug/L	<2	2.7	3.1	2.7	5	NA	4.8	6.2	7.7	6.6	7.6	7.6
Hardness, Total	mg/L	325	272	310	365	587	NA	592	600	775	773	570	612
Iron	ug/L	300	1230	75	85	346	NA	83	463	162	103	270	81
Lead	ug/L	<2	<2	<2	<2	<2	NA	<2	<2	2.3	<2	<2	<2
Magnesium	mg/L	29	22	33	38	42	NA	43	45	NA	58	42	45
Manganese	ug/L	70	66	12	15	38	NA	20	41	NA	26	32	21
Nickel	ug/L	4.5	4.3	3.6	3-Jan	3.7	NA	3.5	3.6	4	5.4	4.2	4.4
Nitrate+nitrite	mg/L	0.24	0.57	NA	0.24	0.3	NA	0.2	0.17	0.56	0.16	0.27	0.22
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	NA	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Orthophosphate, dissolved	mg/L	<0.01	NA	NA	<0.01	NA	NA	NA	<0.01	NA	<0.01	<0.01	NA
Pheophytin_a	ug/L	NA	NA	NA	NA	NA	1.4	NA	NA	NA	NA	NA	NA
Potassium	mg/L	3	3	4	4	5	NA	5	6	7	7	6	6
Selenium	ug/L	<2	<2	<2	2	2.3	NA	2.2	2.2	NA	3.1	2.1	2.3
Sodium	mg/L	106	64	180	235	280	NA	295	342	538	509	371	392
Strontium	ug/L	1130	817	1350	1570	1780	NA	1830	1900	NA	2460	1910	1900
Sulfate	mg/L	354	232	556	690	844	NA	891	978	1390	1310	942	1040
TKN	mg/L	0.43	<0.2	NA	0.76	0.58	NA	0.62	1.09	0.65	0.36	0.61	0.56
Total Dissolved Solids	mg/L	850	616	1080	1340	1540	NA	1640	1740	2580	2320	1770	1930
Total Phosphorus	mg/L	<0.01	0.016	NA	<0.01	0.015	NA	<0.01	<0.01	<0.01	0.013	0.013	0.016
Total Suspended Solids	mg/L	<5	15	<5	<5	7	NA	<5	<5	5	<5	<5	<5
Zinc	ug/L	<10	<10	<10	<10	<10	NA	<10	11	NA	<10	<10	<10
Field Measurements													
Temperature	°C	17.9	21.49	28.91	25.85	24.35	21.98	21.98	NA	21.55	NA	NA	15.78
Conductivity	umhos/cm	1254.6	795.4	1636.7	1901.6	2070.6	2224.9	2224.9	NA	3347	NA	NA	2647.3
Dissolved Oxygen	mg/L	9.68	7.83	6.2	7.27	8.19	9.4	9.4	NA	9.65	NA	NA	8.66
D.O. Saturation	%	102.5	88.9	80.8	89.9	98.6	108.1	108.1	NA	110.5	NA	NA	88.1
pH	S.U.	8.1	8.38	8.13	8.25	8.18	8.22	8.22	NA	8.22	NA	NA	7.97

Appendix Table A2. Continued.

		Site Location: Glenns Run @ CR 4 (Glenns Run Rd)				
		River Mile: 0.1 Storet: 300816				
Parameter	Units	10/18/2010	11/22/2010	1/10/2011	2/16/2011	4/18/2011
Acidity	mg/L	<5	<5	<5	<5	<5
Alkalinity	mg/L	209	213	252	191	218
Aluminum	ug/L	<200	<200	<200	666	400
Ammonia	mg/L	<0.05	<0.05	0.165	0.116	<0.05
Arsenic	ug/L	<2	<2	<2	<2	<2
Barium	ug/L	40	36	51	60	62
Cadmium	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	mg/L	194	182	174	129	107
CBOD20	mg/L	NA	NA	NA	NA	3.4
Chloride	mg/L	168	140	82.6	56	23.2
Chromium	ug/L	<2	<2	<2	<2	<2
COD	mg/L	<20	<20	<20	<20	<20
Conductivity	umhos/cm	2990	2580	1630	1110	780
Copper	ug/L	9.7	4.9	3.5	3	2.2
Hardness, Total	mg/L	699	656	591	429	350
Iron	ug/L	229	106	1780	5340	1190
Lead	ug/L	<2	<2	<2	<2	<2
Magnesium	mg/L	52	49	38	26	20
Manganese	ug/L	36	44	196	96	58
Nickel	ug/L	5.2	5.7	8.9	6-Jan	5.3
Nitrate+nitrite	mg/L	0.19	0.28	0.77	0.73	0.76
Nitrite	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Orthophosphate, dissolved	mg/L	NA	NA	NA	NA	<0.01
Potassium	mg/L	6	5	3	2	2
Selenium	ug/L	3.1	2.1	<2	<2	<2
Sodium	mg/L	442	351	165	85	34
Strontium	ug/L	2180	2030	1390	946	717
Sulfate	mg/L	1160	991	566	315	169
TKN	mg/L	0.59	0.58	0.92	0.3	0.31
Total Dissolved Solids	mg/L	2110	1820	1170	758	504
Total Phosphorus	mg/L	<0.01	0.015	<0.01	0.05	<0.01
Total Suspended Solids	mg/L	9	<5	8	20	11
Zinc	ug/L	<10	<10	<10	<10	28
Field Measurements						
Temperature	°C	12.85	11.45	0.27	2.29	NA
Conductivity	umhos/cm	2681.8	2619.3	NA	1075.1	NA
Dissolved Oxygen	mg/L	11.6	12.86	18.27	14.97	NA
D.O. Saturation	%	110.7	118.8	126.5	109.4	NA
pH	S.U.	8.32	8.29	7.9	7.65	NA

Appendix Table 3. Datasonde® continuous recorder results

Appendix Table A3. Hourly measurements of dissolved oxygen, pH, temperature, and conductivity at stream locations in Short Creek watershed and direct Ohio River tributaries study area using Datasonde* continuous recorders, 2010.

SHORT CREEK AT ADENA @ CO. RD. 10						SHORT CREEK AT ADENA @ CO. RD. 10					
River Mile: 19.37 Storet: C03S07						River Mile: 19.37 Storet: C03S07					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 16:00	28.3	8.18	2344	133.1	10.1	9/21/10 15:00	20.79	8.19	2529	135.6	11.88
8/10/10 17:00	28.4	8.18	2349	126.9	9.61	9/21/10 16:00	21.25	8.25	2512	131.9	11.45
8/10/10 18:00	28.33	8.16	2350	121.4	9.2	9/21/10 17:00	21.24	8.23	2532	125.1	10.86
8/10/10 19:00	28.09	8.13	2356	112.4	8.55	9/21/10 18:00	21.03	8.2	2533	116.8	10.18
8/10/10 20:00	27.63	8.07	2356	101.2	7.77	9/21/10 19:00	20.75	8.15	2526	105.7	9.26
8/10/10 21:00	27.1	8.01	2372	93	7.21	9/21/10 20:00	20.33	8.09	2531	96.4	8.52
8/10/10 22:00	26.57	7.97	2380	89.1	6.97	9/21/10 21:00	19.94	8.05	2538	91.3	8.13
8/10/10 23:00	26.05	7.94	2384	87	6.87	9/21/10 22:00	19.58	8.01	2536	88.2	7.91
8/11/10 0:00	25.54	7.92	2392	86.6	6.9	9/21/10 23:00	19.26	7.98	2537	86.2	7.78
8/11/10 1:00	25.05	7.91	2397	85.3	6.86	9/22/10 0:00	18.92	7.96	2542	85.5	7.77
8/11/10 2:00	24.59	7.91	2402	86.7	7.03	9/22/10 1:00	18.58	7.95	2550	85.5	7.82
8/11/10 3:00	24.17	7.91	2406	87.3	7.13	9/22/10 2:00	18.25	7.94	2553	85.6	7.88
8/11/10 4:00	23.82	7.91	2399	87.7	7.21	9/22/10 3:00	17.95	7.93	2555	85.5	7.93
8/11/10 5:00	23.51	7.91	2401	88	7.28	9/22/10 4:00	17.67	7.93	2557	85.8	8
8/11/10 6:00	23.21	7.91	2401	88.1	7.33	9/22/10 5:00	17.42	7.93	2563	85.9	8.05
8/11/10 7:00	22.94	7.91	2400	88.6	7.41	9/22/10 6:00	17.18	7.93	2570	86.1	8.11
8/11/10 8:00	22.79	7.94	2397	92.7	7.77	9/22/10 7:00	16.96	7.93	2575	86.3	8.16
8/11/10 9:00	23	7.98	2394	99.8	8.33	9/22/10 8:00	16.82	7.94	2573	88.7	8.41
8/11/10 10:00	23.57	8.04	2394	108.3	8.95	9/22/10 9:00	17	7.99	2566	95.8	9.05
8/11/10 11:00	24.43	8.1	2386	115.6	9.4	9/22/10 10:00	17.23	8.03	2568	101.3	9.52
8/11/10 12:00	25.39	8.14	2390	123.4	9.86	9/22/10 11:00	18.01	8.12	2565	112.8	10.44
8/11/10 13:00	26.12	8.16	2377	126.3	9.96	9/22/10 12:00	19.22	8.18	2567	124.5	11.24
8/11/10 14:00	26.57	8.16	2375	124.8	9.76	9/22/10 13:00	20.19	8.22	2559	129.8	11.5
8/11/10 15:00	26.86	8.17	2369	123.8	9.63	9/22/10 14:00	21.59	8.25	2555	138.2	11.91
8/11/10 16:00	27.06	8.16	2368	122.6	9.5	9/22/10 15:00	22.46	8.27	2564	139.5	11.82
8/11/10 17:00	27.35	8.15	2364	119.6	9.23	9/22/10 16:00	21.98	8.23	2243	114.5	9.81
8/11/10 18:00	27.45	8.14	2368	115.6	8.9	9/22/10 17:00	21.98	8.21	2164	108.3	9.28
8/11/10 19:00	27.34	8.11	2376	109.2	8.42	9/22/10 18:00	21.61	8.18	2271	102.3	8.82
8/11/10 20:00	27.07	8.06	2382	100.4	7.78	9/22/10 19:00	21.28	8.12	2290	94.2	8.18
8/11/10 21:00	26.7	8.01	2391	93.5	7.29	9/22/10 20:00	20.8	8.02	2382	87	7.62
8/11/10 22:00	26.37	7.96	2389	89.5	7.03	9/22/10 21:00	20.55	7.97	2404	85	7.48
8/11/10 23:00	26.07	7.94	2432	87.6	6.91	9/22/10 22:00	20.46	7.96	2496	84.9	7.48
8/12/10 0:00	25.72	7.93	2452	87	6.91	9/22/10 23:00	20.31	7.94	2459	85	7.52
8/12/10 1:00	25.33	7.93	2427	87.4	6.99	9/23/10 0:00	20.07	7.95	2520	85.6	7.6
8/12/10 2:00	25.02	7.93	2411	87.5	7.04	9/23/10 1:00	19.8	7.95	2569	85.9	7.67
8/12/10 3:00	24.72	7.93	2410	87.6	7.09	9/23/10 2:00	19.58	7.95	2584	86.3	7.74
8/12/10 4:00	24.43	7.93	2406	87.9	7.15	9/23/10 3:00	19.42	7.95	2543	86.2	7.75
8/12/10 5:00	24.24	7.93	2407	88.3	7.21	9/23/10 4:00	19.25	7.94	2482	86	7.76
8/12/10 6:00	24.09	7.94	2401	88.4	7.24	9/23/10 5:00	19.11	7.93	2452	86.1	7.79
8/12/10 7:00	23.98	7.94	2399	88.9	7.29	9/23/10 6:00	18.98	7.93	2434	86.2	7.83
8/12/10 8:00	23.93	7.95	2398	91.2	7.49	9/23/10 7:00	18.82	7.92	2410	86.2	7.86
8/12/10 9:00	23.94	7.97	2400	94	7.72	9/23/10 8:00	18.72	7.93	2403	87.8	8.01
8/12/10 10:00	24.02	8	2393	97.4	7.98	9/23/10 9:00	18.74	7.96	2412	92.9	8.48
8/12/10 11:00	24.22	8.04	2404	104	8.49	9/23/10 10:00	19.03	8.02	2424	99.9	9.06
8/12/10 12:00	24.95	8.09	2417	114.1	9.19	9/23/10 11:00	19.81	8.09	2443	109.3	9.76
						9/23/10 12:00	20.86	8.16	2454	118.7	10.38
						9/23/10 13:00	21.99	8.22	2449	126.9	10.86
						9/23/10 14:00	23.03	8.27	2456	132.3	11.1
						9/23/10 15:00	23.65	8.28	2457	132.2	10.96

Appendix Table A3. Continued.

Short Creek @ CR 7 Dillonvale Ust Long Run						Short Creek @ CR 7 Dillonvale Ust Long Run					
River Mile: 12.68 Storet: 301059						River Mile: 12.68 Storet: 301059					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 16:00	27.71	8.13	2079	129.8	9.95	9/21/10 15:00	17.49	8.26	2235	123.2	11.53
8/10/10 17:00	28.33	8.12	2081	129.4	9.82	9/21/10 16:00	18.91	8.29	2229	129	11.73
8/10/10 18:00	28.3	8.1	2085	120.1	9.11	9/21/10 17:00	20.5	8.3	2222	134	11.8
8/10/10 19:00	28.06	8.07	2091	111.3	8.48	9/21/10 18:00	21.49	8.28	2219	134	11.58
8/10/10 20:00	27.64	8.03	2098	101.6	7.8	9/21/10 19:00	21.38	8.22	2217	119.1	10.31
8/10/10 21:00	27.18	7.99	2103	93.9	7.27	9/21/10 20:00	20.94	8.15	2217	104	9.08
8/10/10 22:00	26.73	7.97	2102	89.7	7	9/21/10 21:00	20.45	8.09	2221	95.3	8.4
8/10/10 23:00	26.3	7.95	2102	87.5	6.88	9/21/10 22:00	19.96	8.06	2224	90.6	8.07
8/11/10 0:00	25.88	7.95	2102	87	6.89	9/21/10 23:00	19.54	8.04	2228	88.7	7.97
8/11/10 1:00	25.53	7.94	2103	86.8	6.92	9/22/10 0:00	19.2	8.03	2230	87.4	7.9
8/11/10 2:00	25.17	7.93	2100	86.4	6.94	9/22/10 1:00	18.9	8.02	2231	87.1	7.93
8/11/10 3:00	24.79	7.94	2097	87	7.04	9/22/10 2:00	18.63	8.02	2232	87	7.95
8/11/10 4:00	24.48	7.93	2093	87.3	7.1	9/22/10 3:00	18.37	8.02	2233	86.7	7.97
8/11/10 5:00	24.17	7.93	2087	87.5	7.15	9/22/10 4:00	18.13	8.02	2229	87	8.04
8/11/10 6:00	23.88	7.93	2085	87.6	7.2	9/22/10 5:00	17.9	8.02	2228	87.2	8.09
8/11/10 7:00	23.64	7.92	2082	86.8	7.18	9/22/10 6:00	17.7	8.01	2227	87	8.11
8/11/10 8:00	23.45	7.93	2081	89	7.38	9/22/10 7:00	17.51	8.02	2227	87.2	8.16
8/11/10 9:00	23.42	7.95	2076	93.3	7.74	9/22/10 8:00	17.32	8.02	2224	88.1	8.27
8/11/10 10:00	23.54	7.98	2074	99.2	8.21	9/22/10 9:00	17.29	8.04	2221	92.3	8.68
8/11/10 11:00	23.76	8.01	2075	104	8.57	9/22/10 10:00	17.37	8.08	2219	98	9.2
8/11/10 12:00	24.2	8.04	2075	109.3	8.94	9/22/10 11:00	17.62	8.11	2220	104.9	9.79
8/11/10 13:00	24.91	8.07	2072	116.5	9.4	9/22/10 12:00	17.98	8.16	2224	112.3	10.41
8/11/10 14:00	25.75	8.08	2072	120.8	9.6	9/22/10 13:00	18.61	8.2	2223	121	11.07
8/11/10 15:00	26.58	8.08	2072	122.7	9.6	9/22/10 14:00	19.29	8.24	2216	127.6	11.52
8/11/10 16:00	27.08	8.07	2073	121	9.39	9/22/10 15:00	20.05	8.25	2212	131.6	11.7
8/11/10 17:00	27.39	8.07	2074	120.5	9.3	9/22/10 16:00	20.8	8.24	2168	124.8	10.93
8/11/10 18:00	27.5	8.06	2076	117.5	9.05	9/22/10 17:00	21.42	8.2	2105	116.3	10.06
8/11/10 19:00	27.35	8.03	2080	108.8	8.4	9/22/10 18:00	21.67	8.2	2068	115.7	9.97
8/11/10 20:00	27.07	7.99	2080	99.7	7.74	9/22/10 19:00	21.54	8.15	2053	105.2	9.09
8/11/10 21:00	26.7	7.96	2084	93.1	7.27	9/22/10 20:00	21.26	8.09	2057	95.4	8.29
8/11/10 22:00	26.37	7.94	2087	89.2	7.01	9/22/10 21:00	21.05	8.05	2091	90.7	7.91
8/11/10 23:00	26.11	7.92	2085	87.3	6.9	9/22/10 22:00	20.8	8.02	2074	87.8	7.7
8/12/10 0:00	25.87	7.91	2086	86.3	6.84	9/22/10 23:00	20.56	8	2018	86.6	7.63
8/12/10 1:00	25.62	7.9	2083	84.8	6.76	9/23/10 0:00	20.44	8	2045	86.9	7.67
8/12/10 2:00	25.35	7.91	2085	85	6.8	9/23/10 1:00	20.39	7.98	2084	87.4	7.72
8/12/10 3:00	25.08	7.9	2082	83.5	6.72	9/23/10 2:00	20.3	7.98	2101	88.2	7.8
8/12/10 4:00	24.79	7.9	2080	85	6.88	9/23/10 3:00	20.16	7.98	2115	88.1	7.81
8/12/10 5:00	24.57	7.9	2072	83.6	6.79	9/23/10 4:00	20.06	7.98	2113	88.1	7.84
8/12/10 6:00	24.4	7.9	2071	84.5	6.88	9/23/10 5:00	19.96	7.96	2078	87.8	7.82
8/12/10 7:00	24.26	7.9	2068	84.6	6.91	9/23/10 6:00	19.85	7.94	2033	87.1	7.78
8/12/10 8:00	24.2	7.9	2074	85	6.95	9/23/10 7:00	19.7	7.92	2009	87.2	7.81
8/12/10 9:00	24.2	7.9	2077	86	7.03	9/23/10 8:00	19.53	7.95	2014	88	7.91
8/12/10 10:00	24.23	7.93	2083	90.4	7.38	9/23/10 9:00	19.42	7.97	2050	90.7	8.17
8/12/10 11:00	24.3	7.95	2085	93.8	7.65	9/23/10 10:00	19.35	7.99	2081	94	8.47

Appendix Table A3. Continued.

Site Location: Short Ck DST Dillonvale WWTP						Site Location: Short Ck DST Adena WWTP					
River Mile: 8.84 Storet: C03W07						River Mile: 18.84 Storet: C03S04					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 15:00	30.15	8.05	2091	136.9	10.07	9/21/10 17:00	21.68	8.19	2480	139	11.96
8/10/10 16:00	30.32	8.05	2080	133.4	9.77	9/21/10 18:00	21.75	8.19	2480	126.4	10.86
8/10/10 17:00	30.51	8.04	2081	130	9.5	9/21/10 19:00	21.38	8.13	2460	110.3	9.55
8/10/10 18:00	30.14	8.02	2078	125.3	9.21	9/21/10 20:00	20.82	8.06	2480	97.5	8.54
8/10/10 19:00	29.52	7.99	2079	117.3	8.72	9/21/10 21:00	20.25	7.98	2480	88.8	7.86
8/10/10 20:00	28.73	7.93	2080	103.5	7.8	9/21/10 22:00	19.78	7.94	2480	84.7	7.56
8/10/10 21:00	27.73	7.86	2081	90.5	6.94	9/21/10 23:00	19.35	7.91	2490	83	7.48
8/10/10 22:00	26.83	7.81	2081	83.7	6.53	9/22/10 0:00	18.97	7.89	2500	82	7.45
8/10/10 23:00	26.12	7.79	2081	82.3	6.5	9/22/10 1:00	18.64	7.87	2490	81.2	7.42
8/11/10 0:00	25.56	7.78	2082	82	6.54	9/22/10 2:00	18.34	7.87	2510	81.6	7.51
8/11/10 1:00	25.08	7.78	2085	82.2	6.61	9/22/10 3:00	18.05	7.86	2510	81.9	7.57
8/11/10 2:00	24.7	7.78	2086	82.7	6.7	9/22/10 4:00	17.77	7.86	2510	82.4	7.66
8/11/10 3:00	24.4	7.79	2088	83.2	6.77	9/22/10 5:00	17.5	7.86	2520	82.9	7.76
8/11/10 4:00	24.18	7.79	2092	83.3	6.81	9/22/10 6:00	17.25	7.85	2510	82.7	7.78
8/11/10 5:00	23.99	7.79	2097	83.3	6.84	9/22/10 7:00	17.01	7.86	2530	83.6	7.9
8/11/10 6:00	23.79	7.79	2103	83.4	6.87	9/22/10 8:00	16.84	7.87	2520	84.9	8.06
8/11/10 7:00	23.56	7.8	2108	84.2	6.97	9/22/10 9:00	16.98	7.94	2530	95.8	9.06
8/11/10 8:00	23.45	7.83	2107	88.4	7.33	9/22/10 10:00	17.38	8.02	2520	105.8	9.92
8/11/10 9:00	23.69	7.89	2111	97.8	8.08	9/22/10 11:00	18.08	8.11	2530	121.5	11.23
8/11/10 10:00	24.42	7.97	2115	108.8	8.86	9/22/10 12:00	19.22	8.21	2510	138.1	12.47
8/11/10 11:00	25.66	8.02	2116	116.8	9.3	9/22/10 13:00	20.47	8.26	2500	149.1	13.13
8/11/10 12:00	27.18	8.05	2113	128.3	9.94	9/22/10 14:00	21.66	8.3	2510	156.1	13.44
8/11/10 13:00	28.49	8.07	2113	133.2	10.08	9/22/10 15:00	22.5	8.31	2510	159.3	13.5
8/11/10 14:00	28.87	8.05	2111	125.5	9.43	9/22/10 16:00	22.28	8.22	2420	128	10.9
8/11/10 15:00	28.6	8.05	2109	126.7	9.57	9/22/10 17:00	22.12	8.19	2210	114.7	9.8
8/11/10 16:00	28.56	8.05	2103	127.6	9.64	9/22/10 18:00	22.27	8.12	2020	102.8	8.76
8/11/10 17:00	28.98	8.04	2098	129.3	9.7	9/22/10 19:00	21.85	8.06	2140	94.7	8.13
8/11/10 18:00	29.21	8.04	2093	124.9	9.33	9/22/10 20:00	21.28	8.01	2260	87.2	7.57
8/11/10 19:00	28.81	8	2091	113.6	8.54	9/22/10 21:00	20.84	7.96	2330	83.5	7.31
8/11/10 20:00	28.07	7.93	2089	99.4	7.58	9/22/10 22:00	20.49	7.9	2370	81.7	7.2
8/11/10 21:00	27.29	7.87	2089	87.4	6.75	9/22/10 23:00	20.35	7.9	2430	82.2	7.26
8/11/10 22:00	26.68	7.83	2090	84	6.56	9/23/10 0:00	20.25	7.89	2440	82.5	7.3
8/11/10 23:00	26.21	7.81	2091	82.1	6.47	9/23/10 1:00	20.05	7.89	2460	82.8	7.36
8/12/10 0:00	25.8	7.81	2093	81.8	6.49	9/23/10 2:00	19.8	7.9	2510	83.3	7.44
8/12/10 1:00	25.42	7.81	2096	82.1	6.57	9/23/10 3:00	19.57	7.9	2550	83.9	7.53
8/12/10 2:00	25.08	7.81	2097	82	6.6	9/23/10 4:00	19.38	7.9	2540	83.9	7.55
8/12/10 3:00	24.82	7.81	2100	82.1	6.64	9/23/10 5:00	19.25	7.9	2500	84	7.59
8/12/10 4:00	24.59	7.81	2102	82.4	6.69	9/23/10 6:00	19.1	7.89	2450	83.9	7.6
8/12/10 5:00	24.42	7.81	2103	82.6	6.72	9/23/10 7:00	18.92	7.89	2440	84	7.64
8/12/10 6:00	24.32	7.81	2109	83.1	6.78	9/23/10 8:00	18.81	7.89	2410	85.2	7.76
8/12/10 7:00	24.23	7.81	2111	83.4	6.81	9/23/10 9:00	18.84	7.93	2390	91.8	8.36
8/12/10 8:00	24.18	7.82	2112	85.8	7.02	9/23/10 10:00	19.16	7.99	2380	101.2	9.16
8/12/10 9:00	24.26	7.88	2117	90.9	7.43	9/23/10 11:00	20.01	8.08	2380	114.2	10.16
8/12/10 10:00	24.39	7.92	2123	95.7	7.8	9/23/10 12:00	21.11	8.16	2400	127	11.05
						9/23/10 13:00	22.27	8.24	2410	138.5	11.78
						9/23/10 14:00	23.14	8.27	2420	141.4	11.84
						9/23/10 15:00	23.63	8.27	2420	137.3	11.39

Appendix Table A3. Continued.

SHORT CREEK NEAR AT USGS GAGE @ ST. RT. 150						SHORT CREEK NEAR AT USGS GAGE @ ST. RT. 150					
River Mile: 4.96 Storet: 609240						River Mile: 4.96 Storet: 609240					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 14:00	25.78	7.97	1846	118.2	9.39	9/21/10 13:00	17.62	7.92	1981	111.7	10.4
8/10/10 15:00	26.52	8.02	1846	120.9	9.48	9/21/10 14:00	18.54	7.97	1983	116.9	10.68
8/10/10 16:00	27.13	8.04	1845	121.5	9.42	9/21/10 15:00	19.54	8.01	1984	122	10.93
8/10/10 17:00	27.57	8.05	1846	120.1	9.24	9/21/10 16:00	20.4	8.04	1984	125.2	11.02
8/10/10 18:00	27.8	8.04	1845	115	8.81	9/21/10 17:00	20.61	8.05	1981	123.8	10.86
8/10/10 19:00	27.97	8	1841	110.7	8.46	9/21/10 18:00	20.43	8.06	1978	119.1	10.48
8/10/10 20:00	27.96	7.99	1839	104.2	7.96	9/21/10 19:00	20.19	8.05	1976	112.2	9.92
8/10/10 21:00	27.77	7.95	1836	97.3	7.46	9/21/10 20:00	20.01	8.02	1974	104.7	9.29
8/10/10 22:00	27.61	7.92	1833	93.4	7.18	9/21/10 21:00	19.89	7.99	1969	98.9	8.8
8/10/10 23:00	27.44	7.9	1832	90.7	7	9/21/10 22:00	19.8	7.95	1970	95	8.46
8/11/10 0:00	27.2	7.88	1835	89.2	6.91	9/21/10 23:00	19.72	7.93	1972	92.4	8.25
8/11/10 1:00	26.89	7.86	1837	88.4	6.89	9/22/10 0:00	19.63	7.91	1973	90.4	8.09
8/11/10 2:00	26.51	7.85	1838	87.9	6.89	9/22/10 1:00	19.56	7.9	1977	89.4	8.01
8/11/10 3:00	26.12	7.82	1843	87.7	6.93	9/22/10 2:00	19.5	7.89	1977	88.3	7.91
8/11/10 4:00	25.69	7.84	1843	87.8	6.99	9/22/10 3:00	19.45	7.88	1978	87.6	7.86
8/11/10 5:00	25.26	7.82	1845	88	7.06	9/22/10 4:00	19.38	7.86	1980	87.1	7.83
8/11/10 6:00	24.82	7.84	1845	88.2	7.13	9/22/10 5:00	19.25	7.86	1983	87	7.83
8/11/10 7:00	24.4	7.84	1846	88.6	7.22	9/22/10 6:00	19.07	7.85	1988	86.7	7.84
8/11/10 8:00	24.06	7.84	1847	90	7.38	9/22/10 7:00	18.83	7.85	1990	86.8	7.89
8/11/10 9:00	23.87	7.86	1848	93.4	7.69	9/22/10 8:00	18.59	7.85	1993	87.8	8.02
8/11/10 10:00	23.98	7.9	1847	98.6	8.1	9/22/10 9:00	18.49	7.88	1996	91.8	8.4
8/11/10 11:00	24.34	7.93	1846	103.4	8.44	9/22/10 10:00	18.56	7.91	1997	96	8.77
8/11/10 12:00	25.01	7.97	1846	108.8	8.77	9/22/10 11:00	18.84	7.95	2000	103.2	9.38
8/11/10 13:00	25.68	7.97	1848	113	9	9/22/10 12:00	19.26	8	1999	109.8	9.89
8/11/10 14:00	26.03	8	1847	114.5	9.06	9/22/10 13:00	20.06	8.05	1999	118.4	10.49
8/11/10 15:00	26.29	8.02	1849	115.7	9.11	9/22/10 14:00	20.92	8.08	1997	124.5	10.85
8/11/10 16:00	26.75	8.03	1850	117.1	9.15	9/22/10 15:00	21.54	8.09	1997	126.5	10.89
8/11/10 17:00	27.23	8.02	1849	117.1	9.07	9/22/10 16:00	21.46	8.07	1931	116.7	10.06
8/11/10 18:00	27.56	8	1844	114.1	8.78	9/22/10 17:00	21.37	8.08	1908	115.8	10.01
8/11/10 19:00	27.68	7.99	1847	108.5	8.34	9/22/10 18:00	21.27	8.01	1902	113	9.79
8/11/10 20:00	27.62	7.97	1849	102.1	7.85	9/22/10 19:00	20.98	7.74	1897	105	9.14
8/11/10 21:00	27.49	7.94	1846	96.2	7.42	9/22/10 20:00	20.99	7.84	1904	100.5	8.75
8/11/10 22:00	27.36	7.91	1845	92.8	7.17	9/22/10 21:00	21.13	7.89	1896	95.5	8.29
8/11/10 23:00	27.23	7.89	1847	90.4	7	9/22/10 22:00	21.13	7.85	1884	91.5	7.95
8/12/10 0:00	27.03	7.87	1848	89	6.92	9/22/10 23:00	21.13	7.8	1892	89.3	7.75
8/12/10 1:00	26.76	7.86	1849	88.2	6.88	9/23/10 0:00	21.15	7.77	1900	87.8	7.62
8/12/10 2:00	26.42	7.85	1848	87.7	6.89	9/23/10 1:00	21.13	7.76	1873	86.6	7.52
8/12/10 3:00	26.06	7.84	1851	87.3	6.9	9/23/10 2:00	21.02	7.77	1824	85.6	7.45
8/12/10 4:00	25.7	7.83	1852	87.2	6.94	9/23/10 3:00	20.87	7.76	1778	84.9	7.41
8/12/10 5:00	25.37	7.83	1853	87.3	6.99	9/23/10 4:00	20.66	7.76	1733	84.2	7.38
8/12/10 6:00	25.07	7.83	1853	87.5	7.05	9/23/10 5:00	20.44	7.75	1713	83.9	7.39
8/12/10 7:00	24.79	7.83	1854	87.8	7.11	9/23/10 6:00	20.2	7.75	1752	84.2	7.45
8/12/10 8:00	24.54	7.83	1854	88.5	7.19	9/23/10 7:00	19.95	7.77	1823	85.3	7.59
8/12/10 9:00	24.38	7.84	1853	90.6	7.38	9/23/10 8:00	19.73	7.8	1872	87.1	7.78
8/12/10 10:00	24.31	7.86	1853	93.4	7.63	9/23/10 9:00	19.62	7.83	1897	89.9	8.04
						9/23/10 10:00	19.69	7.87	1926	95	8.49

Appendix Table A3. Continued.

Middle Fork Short Ck @ CR 15 (Foss Bottom Rd)						Middle Fork Short Ck @ CR 15 (Foss Bottom Rd)					
River Mile: 5.35 Storet: C03S09						River Mile: 5.35 Storet: C03S09					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 12:00	24.67	8.03	2230	119.9	9.71	9/21/10 14:00	19.44	8	2424	120.9	10.87
8/10/10 13:00	25.6	8.13	2215	135.7	10.81	9/21/10 15:00	20.9	8.13	2410	133.6	11.68
8/10/10 14:00	26.64	8.23	2192	152.1	11.89	9/21/10 16:00	22.03	8.17	2384	136.9	11.71
8/10/10 15:00	27.35	8.27	2161	154.6	11.94	9/21/10 17:00	22.38	8.11	2363	124.6	10.59
8/10/10 16:00	27.95	8.3	2133	154.3	11.78	9/21/10 18:00	22.13	7.99	2363	104.5	8.92
8/10/10 17:00	28.21	8.3	2085	150.6	11.45	9/21/10 19:00	21.8	7.83	2371	83.8	7.2
8/10/10 18:00	28.02	8.19	1923	128.6	9.81	9/21/10 20:00	21.44	7.67	2360	67	5.8
8/10/10 19:00	27.78	8.07	1922	108.6	8.32	9/21/10 21:00	21.02	7.55	2341	56.2	4.9
8/10/10 20:00	27.43	7.89	1941	84.3	6.5	9/21/10 22:00	20.6	7.49	2335	50.7	4.46
8/10/10 21:00	26.91	7.71	1965	64.4	5.02	9/21/10 23:00	20.2	7.45	2335	48.4	4.29
8/10/10 22:00	26.42	7.62	1987	56.1	4.4	9/22/10 0:00	19.84	7.43	2345	48.2	4.3
8/10/10 23:00	25.94	7.57	2012	52.6	4.17	9/22/10 1:00	19.5	7.44	2371	50	4.49
8/11/10 0:00	25.45	7.54	2029	51.2	4.09	9/22/10 2:00	19.16	7.44	2384	51.6	4.67
8/11/10 1:00	25	7.53	2052	51.3	4.13	9/22/10 3:00	18.84	7.44	2384	52.3	4.76
8/11/10 2:00	24.6	7.53	2088	53.1	4.31	9/22/10 4:00	18.52	7.44	2381	53	4.86
8/11/10 3:00	24.22	7.54	2109	54.8	4.48	9/22/10 5:00	18.22	7.45	2385	54.6	5.03
8/11/10 4:00	23.9	7.55	2127	56.2	4.62	9/22/10 6:00	17.96	7.46	2401	56.6	5.25
8/11/10 5:00	23.62	7.55	2140	57.2	4.73	9/22/10 7:00	17.7	7.48	2416	58.7	5.47
8/11/10 6:00	23.28	7.56	2153	58.3	4.85	9/22/10 8:00	17.57	7.51	2434	63	5.88
8/11/10 7:00	23.03	7.57	2166	60.1	5.02	9/22/10 9:00	17.74	7.59	2447	73.6	6.86
8/11/10 8:00	22.96	7.63	2181	67.8	5.67	9/22/10 10:00	18.09	7.69	2459	86.3	7.97
8/11/10 9:00	23.28	7.76	2194	86.2	7.17	9/22/10 11:00	18.63	7.83	2463	100.2	9.16
8/11/10 10:00	23.73	7.88	2201	101.3	8.35	9/22/10 12:00	19.69	7.99	2461	119	10.65
8/11/10 11:00	24.23	7.96	2203	111.3	9.09	9/22/10 13:00	20.66	8.07	2420	127.5	11.2
8/11/10 12:00	25.11	8.09	2203	128.2	10.3	9/22/10 14:00	21.7	8.13	2378	135.9	11.7
8/11/10 13:00	26	8.21	2189	145.9	11.54	9/22/10 15:00	22.74	8.18	2370	138.5	11.68
8/11/10 14:00	26.34	8.22	2153	142.9	11.23	9/22/10 16:00	21.85	7.98	2210	100.5	8.63
8/11/10 15:00	26.68	8.23	2110	142.7	11.15	9/22/10 17:00	22.14	7.91	2139	98.8	8.43
8/11/10 16:00	27.15	8.24	2080	144.7	11.21	9/22/10 18:00	22.03	7.73	2155	80.7	6.91
8/11/10 17:00	27.5	8.22	2059	137.9	10.62	9/22/10 19:00	21.58	7.59	2101	65.9	5.69
8/11/10 18:00	27.47	8.13	2045	122.6	9.45	9/22/10 20:00	21.39	7.51	2122	58.9	5.11
8/11/10 19:00	27.32	8.01	2050	103	7.96	9/22/10 21:00	21.28	7.47	2150	55.5	4.82
8/11/10 20:00	27.1	7.86	2064	83.5	6.48	9/22/10 22:00	21.04	7.46	2180	54	4.71
8/11/10 21:00	26.71	7.7	2078	64.9	5.06	9/22/10 23:00	20.84	7.47	2264	54.5	4.77
8/11/10 22:00	26.41	7.61	2081	56.8	4.46	9/23/10 0:00	20.61	7.46	2255	52.5	4.62
8/11/10 23:00	26.18	7.56	2085	53.2	4.19	9/23/10 1:00	20.29	7.43	2231	49.6	4.39
8/12/10 0:00	25.87	7.54	2091	51.4	4.08	9/23/10 2:00	20.03	7.42	2243	48.7	4.33
8/12/10 1:00	25.51	7.53	2098	50.7	4.05	9/23/10 3:00	19.81	7.41	2264	47.5	4.25
8/12/10 2:00	25.24	7.53	2111	51.5	4.13	9/23/10 4:00	19.65	7.41	2306	48.2	4.32
8/12/10 3:00	24.91	7.54	2121	52.5	4.24	9/23/10 5:00	19.55	7.42	2332	49	4.4
8/12/10 4:00	24.61	7.55	2130	54	4.38	9/23/10 6:00	19.44	7.42	2351	51.3	4.62
8/12/10 5:00	24.45	7.55	2134	54.7	4.45	9/23/10 7:00	19.25	7.43	2349	54.3	4.91
8/12/10 6:00	24.34	7.56	2135	55.8	4.55	9/23/10 8:00	19.13	7.46	2346	58.1	5.26
8/12/10 7:00	24.28	7.57	2146	56.9	4.64	9/23/10 9:00	19.14	7.51	2342	65.5	5.93
8/12/10 8:00	24.27	7.6	2161	61	4.98	9/23/10 10:00	19.4	7.56	2339	72.7	6.54
8/12/10 9:00	24.33	7.66	2169	69.4	5.66	9/23/10 11:00	20.05	7.64	2331	83.8	7.45
8/12/10 10:00	24.39	7.72	2178	76.2	6.21	9/23/10 12:00	20.85	7.72	2319	93.6	8.19
8/12/10 11:00	24.68	7.83	2180	91.8	7.44	9/23/10 13:00	21.75	7.81	2319	103.3	8.88
8/12/10 12:00	25.11	7.94	2174	105.6	8.48	9/23/10 14:00	22.82	7.91	2295	111.4	9.39
8/12/10 13:00	26.16	8.08	2163	124	9.77	9/23/10 15:00	23.73	7.98	2275	115.9	9.6
8/12/10 14:00	27.46	8.19	2145	141.1	10.87	9/23/10 16:00	23.99	7.97	2273	111.2	9.17
8/12/10 15:00	27.8	8.2	2114	137.3	10.51						

Appendix Table A3. Continued.

Sally Buffalo Ck just ust Cadiz WWTP						Sally Buffalo Ck just ust Cadiz WWTP					
River Mile: 0.17 Storet: 301058						River Mile: 0.17 Storet: 301058					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 12:00	27	8.03	2400	106.1	8.24	9/21/10 12:00	19.47	8.07	2526	104	9.35
8/10/10 13:00	27.76	8.04	2400	107.5	8.23	9/21/10 13:00	20.62	8.13	2530	105.6	9.28
8/10/10 14:00	28.59	8.06	2390	110.5	8.34	9/21/10 14:00	21.63	8.14	2534	106.3	9.16
8/10/10 15:00	29.04	8.05	2380	109.2	8.18	9/21/10 15:00	22.39	8.14	2535	105.2	8.93
8/10/10 16:00	29.56	8.05	2390	108.7	8.06	9/21/10 16:00	23.04	8.13	2539	103.1	8.65
8/10/10 17:00	29.85	8.04	2380	107.3	7.92	9/21/10 17:00	23.34	8.12	2543	100.6	8.39
8/10/10 18:00	29.68	8.01	2380	101.8	7.54	9/21/10 18:00	23.27	8.09	2545	97.2	8.11
8/10/10 19:00	29.27	8	2390	97.8	7.29	9/21/10 19:00	22.9	8.07	2545	93.5	7.86
8/10/10 20:00	28.67	7.96	2390	91.9	6.93	9/21/10 20:00	22.29	8.03	2545	90.5	7.7
8/10/10 21:00	27.84	7.93	2390	87.7	6.7	9/21/10 21:00	21.65	8.01	2544	89.4	7.7
8/10/10 22:00	27.11	7.91	2390	87.1	6.75	9/21/10 22:00	21.07	8	2543	89.3	7.78
8/10/10 23:00	26.5	7.9	2400	87	6.81	9/21/10 23:00	20.52	8	2543	89.7	7.9
8/11/10 0:00	25.99	7.89	2400	87.6	6.92	9/22/10 0:00	20.07	8	2540	90.1	8
8/11/10 1:00	25.58	7.89	2410	87.6	6.98	9/22/10 1:00	19.77	8	2535	90.2	8.06
8/11/10 2:00	25.26	7.89	2410	87.8	7.03	9/22/10 2:00	19.51	8	2534	90.2	8.1
8/11/10 3:00	25.02	7.89	2410	88	7.08	9/22/10 3:00	19.3	8	2533	90.3	8.14
8/11/10 4:00	24.84	7.89	2400	88	7.11	9/22/10 4:00	19.15	8	2531	90.3	8.16
8/11/10 5:00	24.72	7.88	2400	88	7.12	9/22/10 5:00	19.01	8	2533	90.1	8.17
8/11/10 6:00	24.51	7.88	2410	88	7.15	9/22/10 6:00	18.89	8	2529	90.2	8.21
8/11/10 7:00	24.33	7.88	2400	88.1	7.18	9/22/10 7:00	18.76	8	2524	90.3	8.23
8/11/10 8:00	24.33	7.89	2410	89.7	7.31	9/22/10 8:00	18.75	8	2524	91.2	8.32
8/11/10 9:00	24.78	7.94	2410	94.2	7.62	9/22/10 9:00	19.06	8.03	2523	94.3	8.54
8/11/10 10:00	25.37	7.98	2400	99.1	7.92	9/22/10 10:00	19.62	8.07	2519	99.2	8.89
8/11/10 11:00	26.19	8.01	2400	103.5	8.15	9/22/10 11:00	20.44	8.12	2519	104.4	9.2
8/11/10 12:00	27.25	8.03	2400	107.3	8.29	9/22/10 12:00	21.46	8.14	2527	108.1	9.35
8/11/10 13:00	27.97	8.03	2390	108.9	8.31	9/22/10 13:00	22.2	8.16	2527	109.3	9.31
8/11/10 14:00	28.36	8.03	2390	107.3	8.13	9/22/10 14:00	23.23	8.16	2530	110.5	9.23
8/11/10 15:00	28.78	8.03	2380	107.6	8.09	9/22/10 15:00	23.75	8.15	2531	108.9	9.01
8/11/10 16:00	28.93	8.03	2380	105.8	7.94	9/22/10 16:00	22.77	8.09	2347	96	8.09
8/11/10 17:00	29.16	8.01	2380	104.5	7.81	9/22/10 17:00	23.11	8.06	2322	93.4	7.83
8/11/10 18:00	29.06	7.99	2380	100.5	7.52	9/22/10 18:00	22.49	8.02	2285	92.5	7.84
8/11/10 19:00	28.78	7.98	2390	96.8	7.28	9/22/10 19:00	22.34	8.03	2452	91.5	7.78
8/11/10 20:00	28.41	7.95	2380	92.2	6.98	9/22/10 20:00	21.8	7.99	2379	88.8	7.62
8/11/10 21:00	27.89	7.91	2390	88.1	6.73	9/22/10 21:00	21.46	7.97	2388	88.5	7.65
8/11/10 22:00	27.44	7.89	2390	86.7	6.68	9/22/10 22:00	21.28	7.97	2421	88.8	7.71
8/11/10 23:00	27.13	7.88	2390	86.5	6.69	9/22/10 23:00	21.22	7.97	2439	89.2	7.74
8/12/10 0:00	26.83	7.9	2410	86.7	6.75	9/23/10 0:00	21.16	7.97	2457	89.6	7.79
8/12/10 1:00	26.49	7.92	2410	86.9	6.8	9/23/10 1:00	21.02	7.96	2467	89.7	7.82
8/12/10 2:00	26.32	7.92	2410	87	6.84	9/23/10 2:00	20.83	7.96	2461	89.8	7.85
8/12/10 3:00	26	7.92	2410	87.1	6.88	9/23/10 3:00	20.57	7.96	2450	90	7.92
8/12/10 4:00	25.64	7.92	2410	87.1	6.93	9/23/10 4:00	20.37	7.96	2438	90.3	7.97
8/12/10 5:00	25.51	7.92	2410	87.5	6.98	9/23/10 5:00	20.31	7.96	2422	90.3	7.99
8/12/10 6:00	25.49	7.92	2400	87.3	6.97	9/23/10 6:00	20.29	7.97	2419	90.4	8
8/12/10 7:00	25.53	7.92	2390	87.4	6.97	9/23/10 7:00	20.18	7.96	2419	90.5	8.02
8/12/10 8:00	25.59	7.92	2390	88	7.01	9/23/10 8:00	20.1	7.97	2421	91.2	8.1
8/12/10 9:00	25.67	7.94	2390	90.4	7.19	9/23/10 9:00	20.22	8	2429	94.3	8.35
8/12/10 10:00	25.76	7.96	2390	92.5	7.34	9/23/10 10:00	20.53	8.03	2436	97.1	8.55
8/12/10 11:00	26	7.98	2390	96.1	7.6	9/23/10 11:00	21.17	8.07	2441	100.3	8.72
8/12/10 12:00	26.76	8.02	2390	103	8.03	9/23/10 12:00	21.93	8.11	2449	102.9	8.82
8/12/10 13:00	27.49	8.03	2380	106.6	8.2	9/23/10 13:00	22.7	8.13	2455	104.5	8.82
8/12/10 14:00	28.55	8.04	2370	110	8.31	9/23/10 14:00	23.51	8.13	2462	105.4	8.76
						9/23/10 15:00	23.96	8.13	2475	103	8.49
						9/23/10 16:00	24.43	8.12	2480	101.8	8.32

Appendix Table A3. Continued.

Site Location: Liming Ck @ TR 76 (Jackson Rd)						Site Location: Liming Ck @ TR 76 (Jackson Rd)					
River Mile: 0.15 Storet: 301063						River Mile: 0.15 Storet: 301063					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 12:00	22.92	7.6	1702	68	5.71	9/21/10 13:00	16.44	7.55	1875	74.6	7.13
8/10/10 13:00	24.23	7.65	1688	83.2	6.81	9/21/10 14:00	18.33	7.59	1879	85.7	7.87
8/10/10 14:00	25.58	7.75	1679	102.9	8.21	9/21/10 15:00	19.19	7.64	1884	88.1	7.95
8/10/10 15:00	26.58	7.82	1658	113	8.85	9/21/10 16:00	20.3	7.66	1889	92.7	8.18
8/10/10 16:00	26.88	7.78	1665	111.4	8.69	9/21/10 17:00	20.92	7.7	1890	93.7	8.17
8/10/10 17:00	27.55	7.82	1682	116.1	8.94	9/21/10 18:00	21.23	7.69	1891	88	7.63
8/10/10 18:00	27.62	7.8	1704	108.7	8.36	9/21/10 19:00	21.03	7.68	1890	84.1	7.32
8/10/10 19:00	27.48	7.76	1725	97.2	7.49	9/21/10 20:00	20.49	7.65	1893	78.4	6.89
8/10/10 20:00	27.07	7.72	1738	83.9	6.52	9/21/10 21:00	19.82	7.62	1888	72.5	6.46
8/10/10 21:00	26.5	7.64	1747	71.7	5.62	9/21/10 22:00	19.21	7.59	1886	69.2	6.24
8/10/10 22:00	25.96	7.6	1752	62.4	4.94	9/21/10 23:00	18.74	7.55	1887	62.8	5.72
8/10/10 23:00	25.45	7.55	1751	55.5	4.44	9/22/10 0:00	18.31	7.52	1885	58	5.33
8/11/10 0:00	24.96	7.53	1750	52.5	4.24	9/22/10 1:00	17.96	7.5	1885	54.9	5.08
8/11/10 1:00	24.51	7.52	1742	49.1	3.99	9/22/10 2:00	17.69	7.48	1886	51.8	4.82
8/11/10 2:00	24.08	7.5	1735	48.6	3.98	9/22/10 3:00	17.47	7.47	1889	50.8	4.75
8/11/10 3:00	23.73	7.48	1733	46.4	3.83	9/22/10 4:00	17.19	7.48	1891	50.9	4.78
8/11/10 4:00	23.44	7.45	1730	44.9	3.72	9/22/10 5:00	16.93	7.47	1892	50.4	4.76
8/11/10 5:00	23.19	7.43	1727	42	3.5	9/22/10 6:00	16.68	7.47	1892	49.7	4.72
8/11/10 6:00	22.89	7.41	1724	41.1	3.45	9/22/10 7:00	16.45	7.47	1892	50.7	4.84
8/11/10 7:00	22.59	7.4	1721	39.9	3.37	9/22/10 8:00	16.29	7.47	1891	50.2	4.81
8/11/10 8:00	22.39	7.4	1722	41.8	3.54	9/22/10 9:00	16.41	7.47	1892	51.6	4.93
8/11/10 9:00	22.59	7.45	1723	47.5	4.01	9/22/10 10:00	16.66	7.48	1890	53.5	5.09
8/11/10 10:00	22.95	7.54	1728	55.8	4.67	9/22/10 11:00	17.06	7.5	1891	58.3	5.5
8/11/10 11:00	23.25	7.58	1732	62.6	5.22	9/22/10 12:00	17.81	7.53	1897	62.9	5.84
8/11/10 12:00	23.85	7.7	1734	76.7	6.32	9/22/10 13:00	18.66	7.55	1895	71.3	6.5
8/11/10 13:00	24.99	7.86	1735	95.5	7.7	9/22/10 14:00	20.71	7.6	1896	83.4	7.3
8/11/10 14:00	25.44	7.89	1738	100.5	8.04	9/22/10 15:00	21.55	7.69	1897	85.1	7.33
8/11/10 15:00	25.94	7.92	1738	107.1	8.49	9/22/10 16:00	20.46	7.67	1699	82.3	7.25
8/11/10 16:00	26.26	7.91	1740	110.9	8.74	9/22/10 17:00	21.27	7.67	1756	82.3	7.13
8/11/10 17:00	26.61	7.86	1737	106.2	8.32	9/22/10 18:00	21.26	7.64	1746	77.2	6.69
8/11/10 18:00	26.84	7.8	1741	103.8	8.09	9/22/10 19:00	20.88	7.59	1766	71.1	6.21
8/11/10 19:00	26.84	7.73	1751	95.3	7.43	9/22/10 20:00	20.51	7.56	1766	67.2	5.91
8/11/10 20:00	26.55	7.64	1762	83.4	6.54	9/22/10 21:00	20.14	7.54	1774	63.3	5.61
8/11/10 21:00	26.13	7.57	1772	71.3	5.63	9/22/10 22:00	19.84	7.51	1781	60.2	5.36
8/11/10 22:00	25.79	7.61	1773	62.8	4.99	9/22/10 23:00	19.59	7.48	1788	57.7	5.17
8/11/10 23:00	25.52	7.58	1781	58.1	4.64	9/23/10 0:00	19.38	7.47	1792	55.7	5.01
8/12/10 0:00	25.28	7.56	1784	56.2	4.51	9/23/10 1:00	19.11	7.45	1793	54.1	4.9
8/12/10 1:00	25	7.56	1783	53.7	4.33	9/23/10 2:00	18.85	7.44	1794	52.6	4.78
8/12/10 2:00	24.78	7.56	1783	51.9	4.2	9/23/10 3:00	18.53	7.47	1790	56.7	5.19
8/12/10 3:00	24.46	7.53	1779	50.8	4.14	9/23/10 4:00	18.34	7.47	1796	58.3	5.36
8/12/10 4:00	24.16	7.5	1777	48.5	3.97	9/23/10 5:00	18.2	7.51	1804	59.1	5.44
8/12/10 5:00	23.96	7.49	1775	45.1	3.71	9/23/10 6:00	18.1	7.51	1807	59.1	5.45
8/12/10 6:00	23.85	7.48	1770	44.3	3.65	9/23/10 7:00	17.95	7.49	1818	58.4	5.41
8/12/10 7:00	23.76	7.46	1766	43.5	3.59	9/23/10 8:00	17.8	7.49	1818	58.1	5.4
8/12/10 8:00	23.74	7.46	1766	44.8	3.7	9/23/10 9:00	17.75	7.5	1821	59.4	5.52
8/12/10 9:00	23.8	7.46	1765	47.4	3.91	9/23/10 10:00	17.79	7.5	1820	59.9	5.56
8/12/10 10:00	23.85	7.47	1763	49.6	4.09	9/23/10 11:00	18.03	7.51	1817	61.2	5.65
8/12/10 11:00	24.05	7.53	1765	56.3	4.62	9/23/10 12:00	18.85	7.53	1816	64.8	5.89
8/12/10 12:00	24.47	7.62	1762	72.1	5.87	9/23/10 13:00	20.24	7.56	1812	72.8	6.43
8/12/10 13:00	25.41	7.7	1762	87.8	7.02	9/23/10 14:00	21.74	7.59	1802	78.7	6.76
						9/23/10 15:00	22.2	7.64	1801	81.7	6.95
						9/23/10 16:00	23.11	7.65	1794	84.6	7.07

Appendix Table A3. Continued.

North Fork Short Ck @ Nagy Ln from CR 10						North Fork Short Ck @ Nagy Ln from CR 10					
River Mile: 0.09 Storet: 301055						River Mile: 0.09 Storet: 301055					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 17:00	28.15	7.98	1763	105.5	8.04	9/21/10 15:00	20.9	7.92	1844	111.2	9.74
8/10/10 18:00	28.09	7.97	1765	102.4	7.81	9/21/10 16:00	21.2	7.97	1855	110.2	9.59
8/10/10 19:00	27.89	7.96	1767	99.1	7.59	9/21/10 17:00	21.15	7.97	1856	107.1	9.33
8/10/10 20:00	27.44	7.92	1769	93.6	7.22	9/21/10 18:00	20.84	7.95	1856	102.7	9
8/10/10 21:00	26.76	7.9	1772	90.1	7.04	9/21/10 19:00	20.34	7.92	1855	96.2	8.52
8/10/10 22:00	26.17	7.89	1775	89.4	7.06	9/21/10 20:00	19.91	7.9	1856	92.1	8.23
8/10/10 23:00	25.62	7.88	1778	89.4	7.13	9/21/10 21:00	19.69	7.88	1858	90.2	8.09
8/11/10 0:00	25.09	7.88	1780	89.4	7.2	9/21/10 22:00	19.53	7.87	1857	89.5	8.06
8/11/10 1:00	24.56	7.89	1781	89.9	7.31	9/21/10 23:00	19.35	7.87	1857	89.4	8.07
8/11/10 2:00	24.06	7.89	1782	90.8	7.45	9/22/10 0:00	19.13	7.87	1859	89.4	8.11
8/11/10 3:00	23.62	7.89	1783	90.8	7.51	9/22/10 1:00	18.88	7.87	1860	89.7	8.17
8/11/10 4:00	23.26	7.89	1783	91.2	7.6	9/22/10 2:00	18.6	7.87	1859	90	8.25
8/11/10 5:00	22.98	7.89	1781	91.1	7.63	9/22/10 3:00	18.31	7.87	1862	90	8.3
8/11/10 6:00	22.66	7.89	1781	91.2	7.69	9/22/10 4:00	17.99	7.87	1862	89.8	8.34
8/11/10 7:00	22.41	7.9	1779	92	7.79	9/22/10 5:00	17.67	7.86	1863	90.1	8.42
8/11/10 8:00	22.32	7.92	1778	94.9	8.04	9/22/10 6:00	17.36	7.86	1863	90.5	8.51
8/11/10 9:00	22.67	7.95	1777	99.8	8.41	9/22/10 7:00	17.06	7.87	1862	90.7	8.58
8/11/10 10:00	23.54	7.98	1775	104.8	8.68	9/22/10 8:00	16.87	7.88	1861	92.3	8.77
8/11/10 11:00	24.65	7.99	1774	108.8	8.83	9/22/10 9:00	17.07	7.9	1859	96.1	9.09
8/11/10 12:00	25.93	8	1772	111.4	8.83	9/22/10 10:00	17.43	7.91	1859	99.3	9.32
8/11/10 13:00	26.6	7.99	1770	110.8	8.68	9/22/10 11:00	18.25	7.93	1858	103.9	9.59
8/11/10 14:00	26.56	7.98	1768	107.2	8.4	9/22/10 12:00	19.96	7.95	1860	110.9	9.89
8/11/10 15:00	26.54	7.98	1766	106.8	8.38	9/22/10 13:00	20.93	7.97	1860	113	9.89
8/11/10 16:00	26.75	7.97	1768	106.3	8.3	9/22/10 14:00	22	7.97	1859	113.9	9.76
8/11/10 17:00	27.17	7.98	1764	107.4	8.33	9/22/10 15:00	22.84	7.99	1855	114.4	9.65
8/11/10 18:00	27.21	7.96	1762	102.6	7.95	9/22/10 16:00	21.61	7.96	1667	100.6	8.7
8/11/10 19:00	27.11	7.92	1762	99.2	7.7	9/22/10 17:00	21.64	7.94	1660	99.8	8.62
8/11/10 20:00	26.8	7.91	1766	94.5	7.37	9/22/10 18:00	21.45	7.92	1685	96.3	8.35
8/11/10 21:00	26.38	7.86	1767	88.9	6.99	9/22/10 19:00	21.12	7.88	1728	91.1	7.95
8/11/10 22:00	26	7.86	1767	88.7	7.03	9/22/10 20:00	20.96	7.85	1761	88	7.7
8/11/10 23:00	25.66	7.85	1768	88.6	7.06	9/22/10 21:00	20.81	7.83	1748	86.4	7.58
8/12/10 0:00	25.31	7.87	1770	89.9	7.21	9/22/10 22:00	20.67	7.82	1759	86.1	7.57
8/12/10 1:00	24.93	7.88	1771	90.3	7.29	9/22/10 23:00	20.57	7.82	1771	87.3	7.69
8/12/10 2:00	24.61	7.89	1773	90.5	7.35	9/23/10 0:00	20.37	7.83	1770	87.5	7.75
8/12/10 3:00	24.22	7.89	1773	91.1	7.45	9/23/10 1:00	20.06	7.82	1754	87.7	7.81
8/12/10 4:00	23.9	7.89	1775	91	7.49	9/23/10 2:00	19.77	7.83	1743	88.4	7.92
8/12/10 5:00	23.72	7.89	1776	91	7.51	9/23/10 3:00	19.48	7.83	1753	88.8	8
8/12/10 6:00	23.61	7.89	1777	91.1	7.54	9/23/10 4:00	19.19	7.84	1778	89.1	8.08
8/12/10 7:00	23.53	7.89	1775	91.3	7.57	9/23/10 5:00	18.96	7.85	1801	89.8	8.18
8/12/10 8:00	23.51	7.9	1775	93	7.71	9/23/10 6:00	18.77	7.85	1816	90	8.22
8/12/10 9:00	23.58	7.92	1774	95.2	7.88	9/23/10 7:00	18.54	7.86	1824	90.2	8.28
8/12/10 10:00	23.72	7.93	1769	97.6	8.06	9/23/10 8:00	18.44	7.86	1829	91	8.37
8/12/10 11:00	23.98	7.94	1767	101.3	8.32	9/23/10 9:00	18.49	7.89	1830	94.6	8.69
8/12/10 12:00	25.02	7.96	1764	107.8	8.69	9/23/10 10:00	18.96	7.94	1830	99	9.01
						9/23/10 11:00	20.11	7.99	1831	105.1	9.35
						9/23/10 12:00	21.29	8	1828	109.3	9.5
						9/23/10 13:00	22.27	7.99	1827	111.9	9.54
						9/23/10 14:00	23.09	8	1825	113.2	9.51
						9/23/10 15:00	23.67	8	1822	111.5	9.26

Appendix Table A3. Continued.

Site Location: Piney Fork @ SR 150						Site Location: Piney Fork @ SR 150					
River Mile: 0.35 Storet: C03K02						River Mile: 0.35 Storet: C03K02					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 14:00	25.74	8.12	1257	116.3	9.27	9/21/10 13:00	17.86	8.09	1335	111.8	10.42
8/10/10 15:00	26.4	8.12	1257	117.9	9.28	9/21/10 14:00	19.31	8.12	1334	114	10.32
8/10/10 16:00	26.59	8.12	1255	112.9	8.86	9/21/10 15:00	20.39	8.12	1334	113.7	10.07
8/10/10 17:00	26.68	8.11	1254	108.9	8.53	9/21/10 16:00	21.04	8.12	1334	111.3	9.73
8/10/10 18:00	26.52	8.09	1255	104.2	8.18	9/21/10 17:00	21.1	8.1	1333	107.4	9.38
8/10/10 19:00	26.31	8.08	1255	100.8	7.94	9/21/10 18:00	20.78	8.08	1333	100.6	8.84
8/10/10 20:00	25.91	8.05	1260	96.1	7.63	9/21/10 19:00	20.31	8.05	1333	94.6	8.39
8/10/10 21:00	25.36	8.03	1262	93.1	7.47	9/21/10 20:00	19.88	8.01	1333	90.7	8.11
8/10/10 22:00	24.82	8.03	1261	92.5	7.49	9/21/10 21:00	19.52	8	1333	89.3	8.05
8/10/10 23:00	24.34	7.99	1263	89.7	7.33	9/21/10 22:00	19.2	8	1334	88.7	8.05
8/11/10 0:00	23.93	8	1265	91.1	7.51	9/21/10 23:00	18.83	7.99	1335	88.3	8.07
8/11/10 1:00	23.53	8.02	1266	92.1	7.64	9/22/10 0:00	18.45	7.99	1336	89	8.2
8/11/10 2:00	23.16	8.02	1266	92.3	7.72	9/22/10 1:00	18.06	7.99	1337	89.3	8.29
8/11/10 3:00	22.81	8.02	1267	92.6	7.79	9/22/10 2:00	17.7	7.99	1337	89.7	8.38
8/11/10 4:00	22.48	8.02	1267	92.7	7.85	9/22/10 3:00	17.39	7.99	1337	89.7	8.44
8/11/10 5:00	22.2	8.02	1268	93	7.92	9/22/10 4:00	17.12	7.99	1338	89.9	8.51
8/11/10 6:00	21.94	8.02	1270	93.1	7.96	9/22/10 5:00	16.88	8	1337	90.2	8.58
8/11/10 7:00	21.71	8.02	1272	93.3	8.02	9/22/10 6:00	16.67	8	1337	90.4	8.64
8/11/10 8:00	21.56	8.02	1273	94.4	8.14	9/22/10 7:00	16.46	8.01	1338	90.8	8.72
8/11/10 9:00	21.67	8.05	1273	99.8	8.58	9/22/10 8:00	16.3	7.99	1338	90.2	8.68
8/11/10 10:00	22.13	8.08	1272	104.5	8.91	9/22/10 9:00	16.46	8.02	1338	94.9	9.11
8/11/10 11:00	22.95	8.1	1271	108.3	9.09	9/22/10 10:00	16.71	8.05	1338	97.3	9.29
8/11/10 12:00	23.94	8.11	1267	111	9.14	9/22/10 11:00	17.3	8.08	1337	103.7	9.78
8/11/10 13:00	24.61	8.1	1265	109.4	8.9	9/22/10 12:00	18.77	8.12	1336	111.4	10.19
8/11/10 14:00	25.03	8.08	1264	110	8.88	9/22/10 13:00	19.73	8.13	1335	114.4	10.27
8/11/10 15:00	25.35	8.08	1262	111.5	8.95	9/22/10 14:00	21.02	8.13	1334	117.7	10.3
8/11/10 16:00	25.52	8.08	1259	108.2	8.65	9/22/10 15:00	21.78	8.13	1333	114.6	9.88
8/11/10 17:00	25.77	8.07	1257	108.2	8.62	9/22/10 16:00	21.06	8.11	1063	99.8	8.73
8/11/10 18:00	25.88	8.06	1256	104.5	8.31	9/22/10 17:00	21.31	8.03	823	91.5	7.98
8/11/10 19:00	25.79	8.03	1257	100.1	7.97	9/22/10 18:00	21.18	8.03	1041	91.1	7.96
8/11/10 20:00	25.51	8.03	1258	95.4	7.63	9/22/10 19:00	20.62	8.02	1155	89.3	7.88
8/11/10 21:00	25.13	7.99	1260	91.5	7.37	9/22/10 20:00	20.27	8	1178	88.5	7.86
8/11/10 22:00	24.76	7.99	1262	91.6	7.43	9/22/10 21:00	20.01	7.97	1190	86.5	7.73
8/11/10 23:00	24.43	7.98	1265	91.4	7.46	9/22/10 22:00	19.77	7.96	1193	87.1	7.81
8/12/10 0:00	24.19	7.99	1266	91.8	7.53	9/22/10 23:00	19.59	7.95	1217	86.9	7.82
8/12/10 1:00	23.88	8	1267	91.8	7.57	9/23/10 0:00	19.41	7.96	1230	87.9	7.94
8/12/10 2:00	23.62	7.99	1268	91.8	7.61	9/23/10 1:00	19.24	7.96	1239	88.5	8.02
8/12/10 3:00	23.34	7.99	1268	91.8	7.65	9/23/10 2:00	19.13	7.97	1254	88.4	8.03
8/12/10 4:00	23.08	8	1268	92.2	7.72	9/23/10 3:00	19.02	7.97	1270	88.6	8.07
8/12/10 5:00	22.89	8	1268	92.6	7.78	9/23/10 4:00	18.91	7.98	1278	88.1	8.04
8/12/10 6:00	22.73	7.99	1269	92.6	7.81	9/23/10 5:00	18.78	7.99	1285	89	8.14
8/12/10 7:00	22.61	7.99	1269	92.4	7.81	9/23/10 6:00	18.65	8	1294	86.8	7.97
8/12/10 8:00	22.53	7.99	1269	93.4	7.9	9/23/10 7:00	18.5	8	1304	89.4	8.23
8/12/10 9:00	22.54	8	1269	95	8.04	9/23/10 8:00	18.41	8.01	1310	90.4	8.34
8/12/10 10:00	22.6	8.01	1269	96.9	8.19	9/23/10 9:00	18.41	8.02	1313	93.4	8.61

Appendix Table A3. Continued.

Site Location: Little Short Ck @ TR 113							Site Location: Little Short Ck @ TR 113						
River Mile: 0.08 Storet: 300815							River Mile: 0.08 Storet: 300815						
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.		Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l		M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	
8/10/10 13:00	23.44	7.65	1470	94.4	7.85		9/21/10 15:00	19.65	7.66	1644	85.5	7.67	
8/10/10 14:00	24.39	7.61	1469	97	7.92		9/21/10 16:00	20.21	7.66	1651	87.6	7.78	
8/10/10 15:00	25.09	7.62	1472	97.7	7.87		9/21/10 17:00	20.46	7.64	1651	84.6	7.48	
8/10/10 16:00	25.44	7.62	1471	96.7	7.74		9/21/10 18:00	20.45	7.63	1650	82.5	7.29	
8/10/10 17:00	25.63	7.6	1471	95.2	7.59		9/21/10 19:00	19.96	7.59	1644	76.9	6.87	
8/10/10 18:00	25.45	7.57	1470	91.6	7.33		9/21/10 20:00	19.35	7.58	1644	75.1	6.79	
8/10/10 19:00	25.08	7.51	1469	87	7.01		9/21/10 21:00	18.88	7.56	1641	71.4	6.52	
8/10/10 20:00	24.77	7.48	1471	84	6.81		9/21/10 22:00	18.58	7.56	1638	72.3	6.63	
8/10/10 21:00	24.48	7.48	1470	80.6	6.57		9/21/10 23:00	18.35	7.55	1637	71.6	6.6	
8/10/10 22:00	24.23	7.47	1469	78.2	6.4		9/22/10 0:00	18.15	7.55	1635	71.3	6.6	
8/10/10 23:00	23.96	7.48	1472	77.8	6.4		9/22/10 1:00	17.99	7.54	1631	70.6	6.56	
8/11/10 0:00	23.61	7.48	1471	77.3	6.41		9/22/10 2:00	17.82	7.54	1631	69.6	6.48	
8/11/10 1:00	23.28	7.48	1471	76.9	6.41		9/22/10 3:00	17.68	7.54	1631	69	6.45	
8/11/10 2:00	22.95	7.48	1475	77	6.46		9/22/10 4:00	17.55	7.54	1630	70.2	6.58	
8/11/10 3:00	22.7	7.48	1475	77.2	6.5		9/22/10 5:00	17.43	7.54	1629	70.3	6.6	
8/11/10 4:00	22.47	7.48	1475	77	6.52		9/22/10 6:00	17.31	7.54	1628	70	6.59	
8/11/10 5:00	22.28	7.48	1476	77	6.54		9/22/10 7:00	17.2	7.53	1626	69.2	6.53	
8/11/10 6:00	22.09	7.48	1453	77.1	6.57		9/22/10 8:00	17.2	7.54	1626	70.3	6.64	
8/11/10 7:00	21.95	7.48	1474	76.9	6.57		9/22/10 9:00	17.35	7.57	1628	74.3	6.99	
8/11/10 8:00	21.89	7.49	1475	78.3	6.7		9/22/10 10:00	17.69	7.57	1626	76.2	7.12	
8/11/10 9:00	21.96	7.51	1480	81	6.92		9/22/10 11:00	18.33	7.61	1631	81.7	7.54	
8/11/10 10:00	22.16	7.53	1481	83.9	7.14		9/22/10 12:00	19.08	7.61	1635	84	7.63	
8/11/10 11:00	22.49	7.55	1481	86.4	7.31		9/22/10 13:00	19.6	7.65	1638	86.5	7.78	
8/11/10 12:00	22.99	7.57	1482	89.4	7.49		9/22/10 14:00	20.2	7.64	1642	85.5	7.59	
8/11/10 13:00	23.76	7.58	1482	92.5	7.64		9/22/10 15:00	20.68	7.66	1645	88.6	7.8	
8/11/10 14:00	24.31	7.58	1482	93.5	7.65		9/22/10 16:00	20.78	7.61	1535	81.6	7.17	
8/11/10 15:00	24.55	7.59	1483	93.5	7.6		9/22/10 17:00	20.52	7.59	1576	79.5	7.02	
8/11/10 16:00	24.83	7.59	1431	93.1	7.54		9/22/10 18:00	20.34	7.57	1601	76.9	6.81	
8/11/10 17:00	25.06	7.58	1433	92.4	7.45		9/22/10 19:00	20.08	7.57	1614	75.8	6.75	
8/11/10 18:00	25.17	7.56	1433	90.3	7.26		9/22/10 20:00	19.75	7.55	1618	72	6.45	
8/11/10 19:00	24.97	7.53	1469	85.4	6.9		9/22/10 21:00	19.57	7.55	1622	70.6	6.35	
8/11/10 20:00	24.69	7.5	1476	81.4	6.61		9/22/10 22:00	19.44	7.54	1624	70	6.31	
8/11/10 21:00	24.36	7.49	1482	78.4	6.4		9/22/10 23:00	19.37	7.54	1627	70.2	6.34	
8/11/10 22:00	24.14	7.48	1480	77.3	6.34		9/23/10 0:00	19.2	7.53	1628	68.8	6.23	
8/11/10 23:00	23.94	7.47	1481	76.2	6.27		9/23/10 1:00	19.14	7.54	1629	69.2	6.28	
8/12/10 0:00	23.75	7.47	1480	75.2	6.22		9/23/10 2:00	19	7.54	1629	69.1	6.29	
8/12/10 1:00	23.53	7.47	1480	74.9	6.21		9/23/10 3:00	18.9	7.54	1631	69.4	6.33	
8/12/10 2:00	23.26	7.47	1480	75	6.25		9/23/10 4:00	18.76	7.52	1635	66.9	6.12	
8/12/10 3:00	23.05	7.47	1481	74.5	6.24		9/23/10 5:00	18.7	7.51	1637	65.8	6.02	
8/12/10 4:00	22.83	7.47	1480	74.7	6.28		9/23/10 6:00	18.65	7.54	1639	69.5	6.36	
8/12/10 5:00	22.68	7.47	1480	74.7	6.3		9/23/10 7:00	18.51	7.54	1641	69.5	6.38	
8/12/10 6:00	22.56	7.47	1481	74.6	6.3		9/23/10 8:00	18.46	7.54	1647	70.3	6.47	
8/12/10 7:00	22.46	7.47	1482	75.2	6.36		9/23/10 9:00	18.53	7.56	1647	73	6.71	
8/12/10 8:00	22.41	7.47	1483	75.8	6.42		9/23/10 10:00	18.84	7.58	1651	76.1	6.95	
8/12/10 9:00	22.41	7.48	1482	77.1	6.53		9/23/10 11:00	19.47	7.61	1653	80	7.21	
8/12/10 10:00	22.49	7.51	1484	80.1	6.78								
8/12/10 11:00	22.54	7.51	1486	81.1	6.86								
8/12/10 12:00	22.93	7.55	1486	85.2	7.15								
8/12/10 13:00	23.48	7.57	1486	87.7	7.28								
8/12/10 14:00	24.24	7.59	1488	90.4	7.4								

Appendix Table A3. Continued.

Deep Run at DST Yorkville WWTP						Deep Run at DST Yorkville WWTP					
River Mile: 0.25 Storet: 301083						River Mile: 0.25 Storet: 301083					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.	Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l	M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 18:00	26.12	7.68	1725	99.8	7.89	9/21/10 12:00	19.84	7.71	1767	101.3	9.02
8/10/10 19:00	25.75	7.63	1686	97.6	7.77	9/21/10 13:00	20.75	7.67	1753	102.9	9.01
8/10/10 20:00	25.23	7.57	1690	91.8	7.37	9/21/10 14:00	21.52	7.69	1765	104.1	8.98
8/10/10 21:00	24.77	7.55	1684	89.2	7.23	9/21/10 15:00	22.07	7.7	1783	104.6	8.92
8/10/10 22:00	24.41	7.54	1659	89.2	7.28	9/21/10 16:00	22.21	7.68	1719	102.3	8.7
8/10/10 23:00	24.09	7.55	1709	89.4	7.33	9/21/10 17:00	21.9	7.65	1761	98.1	8.4
8/11/10 0:00	23.84	7.54	1658	89.2	7.35	9/21/10 18:00	21.45	7.61	1809	94.6	8.17
8/11/10 1:00	23.55	7.56	1684	89.4	7.41	9/21/10 19:00	20.96	7.56	1789	90.7	7.91
8/11/10 2:00	23.27	7.56	1712	89.6	7.46	9/21/10 20:00	20.72	7.52	1713	88.6	7.76
8/11/10 3:00	23.02	7.57	1780	90.3	7.56	9/21/10 21:00	20.52	7.5	1700	88.5	7.78
8/11/10 4:00	22.84	7.57	1795	90.7	7.61	9/21/10 22:00	20.42	7.5	1667	88.2	7.77
8/11/10 5:00	22.67	7.58	1821	90.7	7.64	9/21/10 23:00	20.16	7.5	1730	87.7	7.77
8/11/10 6:00	22.56	7.57	1796	90.6	7.65	9/22/10 0:00	20	7.5	1713	88.1	7.83
8/11/10 7:00	22.6	7.54	1691	90.4	7.63	9/22/10 1:00	19.56	7.5	1842	88.3	7.91
8/11/10 8:00	22.72	7.57	1695	93.1	7.84	9/22/10 2:00	19.22	7.5	1872	88.9	8.02
8/11/10 9:00	23.06	7.64	1711	97.9	8.18	9/22/10 3:00	18.74	7.48	1993	89.1	8.11
8/11/10 10:00	23.83	7.7	1650	103.1	8.5	9/22/10 4:00	18.48	7.47	2002	89.2	8.16
8/11/10 11:00	24.7	7.74	1653	106.6	8.64	9/22/10 5:00	18.24	7.46	2054	89.7	8.24
8/11/10 12:00	25.59	7.82	1644	109.8	8.76	9/22/10 6:00	18.19	7.45	2001	89.8	8.27
8/11/10 13:00	25.64	7.74	1675	101	8.05	9/22/10 7:00	18.35	7.44	1910	89.9	8.25
8/11/10 14:00	25.77	7.73	1632	99.7	7.93	9/22/10 8:00	18.84	7.44	1779	92.4	8.4
8/11/10 15:00	25.92	7.79	1684	107.5	8.52	9/22/10 9:00	19.54	7.48	1739	98	8.78
8/11/10 16:00	25.79	7.77	1639	104.6	8.32	9/22/10 10:00	19.94	7.52	1760	97.7	8.68
8/11/10 17:00	25.93	7.74	1687	99.5	7.89	9/22/10 11:00	20.47	7.59	1818	103.4	9.09
8/11/10 18:00	25.81	7.71	1662	99.8	7.93	9/22/10 12:00	21.25	7.61	1796	104.7	9.07
8/11/10 19:00	25.51	7.64	1646	94.5	7.55	9/22/10 13:00	22.13	7.66	1791	108.2	9.22
8/11/10 20:00	25.19	7.59	1673	90.6	7.28	9/22/10 14:00	22.79	7.69	1811	107.4	9.03
8/11/10 21:00	24.84	7.56	1648	88	7.12	9/22/10 15:00	23.08	7.68	1763	106.3	8.9
8/11/10 22:00	24.62	7.55	1627	87.8	7.13	9/22/10 16:00	22.34	7.57	1764	92.6	7.86
8/11/10 23:00	24.5	7.54	1633	87.8	7.15	9/22/10 17:00	22.26	7.58	1737	101.5	8.63
8/12/10 0:00	24.38	7.54	1645	88	7.18	9/22/10 18:00	21.96	7.55	1767	95.3	8.15
8/12/10 1:00	24.1	7.57	1714	88.4	7.25	9/22/10 19:00	21.65	7.52	1773	89.9	7.73
8/12/10 2:00	23.84	7.57	1769	89	7.33	9/22/10 20:00	21.31	7.49	1830	88	7.62
8/12/10 3:00	23.66	7.58	1784	89.3	7.38	9/22/10 21:00	21.24	7.47	1755	88.1	7.64
8/12/10 4:00	23.45	7.56	1764	88.7	7.36	9/22/10 22:00	21.1	7.46	1771	88.5	7.69
8/12/10 5:00	23.39	7.57	1785	89.8	7.46	9/22/10 23:00	20.99	7.46	1797	88.4	7.7
8/12/10 6:00	23.31	7.56	1761	89.1	7.41	9/23/10 0:00	20.84	7.46	1794	88.4	7.72
8/12/10 7:00	23.27	7.56	1785	90	7.49	9/23/10 1:00	20.48	7.45	1885	88.5	7.78
8/12/10 8:00	23.38	7.55	1725	91.2	7.58	9/23/10 2:00	20.15	7.44	1923	88.7	7.85
8/12/10 9:00	23.47	7.57	1730	93.3	7.74	9/23/10 3:00	19.87	7.43	1997	88.9	7.91
8/12/10 10:00	23.64	7.61	1696	95.5	7.9	9/23/10 4:00	19.64	7.42	2008	88.9	7.94
8/12/10 11:00	23.74	7.63	1691	95.4	7.88	9/23/10 5:00	19.62	7.42	1968	89	7.96
8/12/10 12:00	24.55	7.73	1705	107.1	8.72	9/23/10 6:00	19.62	7.42	1963	89.9	8.04
8/12/10 13:00	25.09	7.77	1668	105	8.46	9/23/10 7:00	19.48	7.4	1949	89.8	8.05
8/12/10 14:00	25.72	7.78	1654	104.5	8.32	9/23/10 8:00	19.83	7.4	1868	91.5	8.15
8/12/10 15:00	26.03	7.8	1672	106.7	8.44	9/23/10 9:00	20.14	7.44	1842	95.4	8.45
						9/23/10 10:00	20.63	7.49	1836	98.1	8.61
						9/23/10 11:00	21.31	7.54	1779	100.5	8.7
						9/23/10 12:00	23.4	7.57	1784	102.3	8.5
						9/23/10 13:00	25.95	7.58	1775	103.5	8.21

Appendix Table A3. Continued.

Site Location: Glens Run @ CR 4 (Glens Run Rd)					
River Mile: 0.1 Storet: 300816					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
8/10/10 12:00	25.36	6.96	2658	85.3	6.82
8/10/10 13:00	26.66	6.91	2703	82.5	6.44
8/10/10 14:00	27.9	6.95	2649	81.9	6.25
8/10/10 15:00	28.84	6.96	2673	81	6.08
8/10/10 16:00	28.99	6.98	2656	80.7	6.05
8/10/10 17:00	28.99	6.91	2679	76.6	5.74
8/10/10 18:00	28.26	6.96	2705	78.6	5.96
8/10/10 19:00	27.65	6.95	2736	77.6	5.95
8/10/10 20:00	26.86	6.91	2778	75.5	5.87
8/10/10 21:00	26.02	6.93	2797	76	5.99
8/10/10 22:00	25.29	6.83	2808	69.3	5.54
8/10/10 23:00	24.62	6.81	2838	68.7	5.56
8/11/10 0:00	24.08	6.83	2821	69.7	5.69
8/11/10 1:00	23.58	6.82	2835	69.3	5.72
8/11/10 2:00	23.14	6.87	2839	73	6.07
8/11/10 3:00	22.75	6.86	2849	72.9	6.11
8/11/10 4:00	22.41	6.87	2849	74.1	6.25
8/11/10 5:00	22.18	6.89	2864	75.4	6.39
8/11/10 6:00	21.9	6.94	2815	77.9	6.64
8/11/10 7:00	21.76	6.83	2877	69.2	5.91
8/11/10 8:00	21.76	6.85	2867	71.8	6.13
8/11/10 9:00	21.94	6.88	2840	75.3	6.41
8/11/10 10:00	22.6	6.83	2874	70	5.88
8/11/10 11:00	23.98	6.87	2811	75.7	6.2
8/11/10 12:00	25.4	6.87	2853	77.4	6.17
8/11/10 13:00	26.95	6.85	2935	73	5.66
8/11/10 14:00	27.44	6.87	2868	68.5	5.27
8/11/10 15:00	27.9	6.85	2848	69.4	5.3
8/11/10 16:00	27.5	6.83	2882	68.3	5.24
8/11/10 17:00	27.46	6.91	2851	72.1	5.54
8/11/10 18:00	27.3	6.92	2848	73.1	5.64
8/11/10 19:00	26.81	6.92	2896	73	5.68
8/11/10 20:00	26.33	6.92	2927	71.7	5.62
8/11/10 21:00	25.75	6.92	2899	72.1	5.72
8/11/10 22:00	25.25	6.93	2863	72.8	5.82
8/11/10 23:00	24.86	6.8	2896	62.4	5.03
8/12/10 0:00	24.54	6.85	2829	66.5	5.39
8/12/10 1:00	24.11	6.78	2890	63.5	5.18
8/12/10 2:00	23.73	6.89	2797	69.5	5.72
8/12/10 3:00	23.4	6.91	2764	70.9	5.87
8/12/10 4:00	23.15	6.92	2752	70.7	5.88
8/12/10 5:00	22.97	6.96	2728	73	6.1
8/12/10 6:00	22.84	6.92	2762	70.9	5.93
8/12/10 7:00	22.74	6.89	2772	67.6	5.67
8/12/10 8:00	22.69	6.86	2823	66.2	5.56
8/12/10 9:00	22.76	6.89	2803	68.5	5.74
8/12/10 10:00	22.9	6.92	2809	71	5.93
8/12/10 11:00	23	6.87	2842	68	5.67
8/12/10 12:00	23.7	6.85	2870	66.9	5.51
8/12/10 13:00	25.58	6.86	2863	62.3	4.95
8/12/10 14:00	27.22	6.88	2833	66.2	5.11

Site Location: Glens Run @ CR 4 (Glens Run Rd)					
River Mile: 0.1 Storet: 300816					
Date/Time	Temp.	pH	Spec.Cond	D.O	D.O.
M/DD/YEAR TIME	°C	SU	mS/cm	% Sat.	mg/l
9/21/10 12:00	18.19	6.75	3680	87.9	8.08
9/21/10 13:00	20.09	6.77	3700	88.4	7.82
9/21/10 14:00	21.07	6.61	3870	78.4	6.79
9/21/10 15:00	22.07	6.76	3720	83.3	7.09
9/21/10 16:00	22.17	6.63	3930	71.7	6.08
9/21/10 17:00	22.32	6.7	3870	71.2	6.03
9/21/10 18:00	22.25	6.63	3920	66.8	5.66
9/21/10 19:00	21.78	6.64	3890	66.2	5.66
9/21/10 20:00	20.97	6.59	3910	63.7	5.54
9/21/10 21:00	20.3	6.68	3810	72.9	6.42
9/21/10 22:00	19.7	6.6	3810	68.6	6.11
9/21/10 23:00	19.19	6.62	3820	70.7	6.36
9/22/10 0:00	18.74	6.62	3800	70.4	6.4
9/22/10 1:00	18.32	6.57	3850	68.4	6.26
9/22/10 2:00	17.93	6.61	3830	70.8	6.54
9/22/10 3:00	17.6	6.62	3840	71.2	6.62
9/22/10 4:00	17.28	6.66	3820	75.4	7.05
9/22/10 5:00	16.99	6.64	3840	73	6.87
9/22/10 6:00	16.75	6.66	3820	74.4	7.04
9/22/10 7:00	16.51	NA	3840	NA	NA
9/22/10 8:00	16.39	NA	4310	NA	NA
9/22/10 9:00	16.48	NA	4220	NA	NA
9/22/10 10:00	17.01	NA	4090	NA	NA
9/22/10 11:00	17.98	NA	4010	NA	NA
9/22/10 12:00	20.42	NA	3930	NA	NA
9/22/10 13:00	22.02	NA	4080	NA	NA
9/22/10 14:00	22.77	NA	4020	NA	NA
9/22/10 15:00	22.97	NA	4150	NA	NA
9/22/10 16:00	22.91	NA	4110	NA	NA
9/22/10 17:00	22.72	NA	4100	NA	NA
9/22/10 18:00	22.39	NA	4100	NA	NA
9/22/10 19:00	22.02	NA	4100	NA	NA
9/22/10 20:00	21.32	NA	4070	NA	NA
9/22/10 21:00	20.87	NA	4120	NA	NA
9/22/10 22:00	20.44	NA	4100	NA	NA
9/22/10 23:00	20.12	NA	4070	NA	NA
9/23/10 0:00	19.83	NA	4090	NA	NA
9/23/10 1:00	19.51	NA	4060	NA	NA
9/23/10 2:00	19.18	NA	4040	NA	NA
9/23/10 3:00	18.92	NA	4020	NA	NA
9/23/10 4:00	18.65	NA	4010	NA	NA
9/23/10 5:00	18.48	NA	4000	NA	NA
9/23/10 6:00	18.35	NA	4000	NA	NA
9/23/10 7:00	18.06	NA	3980	NA	NA
9/23/10 8:00	17.88	NA	4360	NA	NA
9/23/10 9:00	18.07	NA	4320	NA	NA

Appendix Table A4. E. coli data collected from Short Creek, 2010

Appendix Table A4. E. coli data for locations sampled in Short Creek Watershed and direct Ohio River tributaries from May 25 thru October 19, 2010. All values in colony forming units (cfu) per 100m; of sample water.

Storet No.	Location	5/25/2010	6/14/2010	6/24/2010	7/8/2010	7/22/2010	7/28/2010	8/10/2010	9/14/2010	9/28/2010	9/30/2010	10/19/2010
C03S07	Short Creek in Adena at CO. RD. 10		350	2700	490	370	980	430	340	570	350	360
C03W07	Short Creek dst., Dillonvale WWTP			1100	160		800	270	70			210
609240	Short Creek Creek at USGS Gage at ST. RT. 150	120	970	580	150	190	220	200	490	180	130	160
301053	South Fork Short Creek at TR 83 (Greaves Rd)			200	140		150	170	80			130
C03S08	Middle Fork Short Creek in Adena at CO. RD. 41			2700	420		270	480	200			250
C03S10	CadizWWTP outfall 001 to Sally Buffalo Creek											540
301055	North Fork Short Creek at Nagy Lane - Adena			560	480		520	640	400			270
300815	Little Short Creek at Mt. Pleasant Road (TR 113)	30	240	410	180		110	60	90	370	80	460
C03K02	Piney Fork at Dillonvale at ST. RT. 150			660	220		480	320	200			2300
301072	Salt Run adj TR 157 (church bridge crossing)			260	300		180	170	150			490
301070	Rush Run adj CR 17 (Rush Run Road)			530	560		280	4000	370			670
300816	Glenns Run at CR4 (Glenns Run Road)	130	750	2100	20		390	720	190	610	160	180

Appendix Table A5. NPDES Effluent Summary Results

Appendix Table A5. NPDES effluent results summary.

Cadiz Wastewater Treatment Plant - 0PB00009 - Outfall 001										
Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Weekly	Monthly
Total Suspended Solids (mg/l)									18	12
Summer Overall	2006-2012	236	9	0	6	25.25	75	8.8093		
Winter Overall	2006-2012	170	8	0	11.5	27.55	52	12.506		
Annual Overall	2006-2012	710	25	0	8	28	75	10.858		
Total Suspended Solids (kg/day)									41	27
Summer Overall	2006-2012	236	9	0	11.102	54.216	101.004	17.089		
Winter Overall	2006-2012	170	8	0	25.523	67.652	89.57278	28.166		
Annual Overall	2006-2012	710	25	0	17.189	68.16	163.5211	23.771		
Nitrogen, Ammonia (NH3) (mg/l)									6	4
Summer Overall	2006-2012	238	3	0	3.625	8.6805	16.6	3.8258		
Winter Overall	2006-2012	170	0	0.04	3.37	10.165	16.7	3.7613		
Annual Overall	2006-2012	712	4	0	3.56	10.645	27	4.0407		
Nitrogen, Ammonia (NH3) (kg/day)									14	9.1
Summer Overall	2006-2012	238	3	0	6.0491	16.216	23.06526	6.5844		
Winter Overall	2006-2012	170	0	0.1608019	7.2136	18.76	55.16925	7.7691		
Annual Overall	2006-2012	712	4	0	6.6899	18.515	63.69814	7.6126		
CBOD 5 day (mg/l)									15	10
Summer Overall	2006-2012	237	60	0	7	24.2	50	8.9114		
Winter Overall	2006-2012	170	23	0	10	30	41	12.129		
Annual Overall	2006-2012	711	157	0	8	29	108	10.06		
CBOD 5 day (kg/day)									34	23
Summer Overall	2006-2012	237	60	0	13.908	47.128	111.7082	16.538		
Winter Overall	2006-2012	170	23	0	23.29	54.777	107.5848	25.155		
Annual Overall	2006-2012	711	157	0	16.821	53.719	127.5836	19.8		
Nitrite Plus Nitrate, Total (mg/l)										
Summer Overall	2006-2012	28	1	0	4.05	11.37	12.58	5.0014		
Winter Overall	2006-2012	20	1	0	2.51	5.6025	5.65	2.6405		
Annual Overall	2006-2012	83	6	0	3.4	9.54	12.58	3.7073		
Nitrite Plus Nitrate, Total (kg/day)										
Summer Overall	2006-2012	28	1	0	9.273	16.938	20.13014	9.2396		
Winter Overall	2006-2012	20	1	0	5.8537	11.81	16.2143	6.1294		
Annual Overall	2006-2012	83	6	0	7.038	17.141	20.13014	7.4339		
Water Temperature (C)										
Summer Overall	2006-2012	587	0	15.6	21.1	30.3	32.4	22.786		
Winter Overall	2006-2012	396	0	5.7	10.5	18.125	20.3	11.841		
Annual Overall	2006-2012	1727	0	5.7	16	29.27	32.4	16.74		
Dissolved Oxygen (mg/l)										5
Summer Overall	2006-2012	587	0	5.9	8.5	9.251	10.79	8.2946		
Winter Overall	2006-2012	396	0	6.6	10.515	11.425	11.7	10.348		
Annual Overall	2006-2012	1727	0	5.9	9.42	11.2	12.3	9.4027		

Appendix Table A5 cont.

Cadiz Wastewater Treatment Plant - OPB00009 - Outfall 001										
Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Min
pH (S.U.)									9	6.5
Summer Overall	2006-2012	587	0	6.45	7	7.147	7.31	6.9501		
Winter Overall	2006-2012	396	0	6.56	7.2	7.5225	7.85	7.1787		
Annual Overall	2006-2012	1727	0	6.4	7.04	7.4	9.69	7.05		
Oil and Grease, Hexane Extr Method (mg/l)										
Annual Overall	2006-2012	84	43	0	0	9.935	98.5	3.906		
Chlorine, Total Residual (mg/l)									0.5	
Summer Overall	2006-2012	566	63	0	0.02	0.03	0.03	0.015845		
Smithfield Wastewater Treatment Plant - OPA00053 - Outfall 001										
Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Weekly	Monthly
Total Suspended Solids (mg/l)									45	30
Summer Overall	2006-2012	224	0	2	14	43.7	62	18.005		
Winter Overall	2006-2012	160	0	1	10	46	58	15.825		
Annual Overall	2006-2012	680	0	1	11	46	92	16.409		
Total Suspended Solids (kg/day)									18.8	12.5
Summer Overall	2006-2012	224	0	0.24981	6.4042	100.7	159.8784	23.175		
Winter Overall	2006-2012	160	0	0.2271	2.3278	94.156	138.3039	20.02		
Annual Overall	2006-2012	669	0	0.2271	3.8607	99.197	159.8784	19.74		
CBOD 5 day (mg/l)									40	25
Summer Overall	2006-2012	225	0	1	8.2	14.8	16.6	8.5484		
Winter Overall	2006-2012	160	0	1	8.15	17.81	21	9.4881		
Annual Overall	2006-2012	682	0	1	7.8	17	22.2	8.6985		
CBOD 5 day (kg/day)									16.7	10.4
Summer Overall	2006-2012	225	0	0.1540495	3.3066	36.518	53.2171	10.464		
Winter Overall	2006-2012	160	0	0.1033305	1.9065	44.5	59.68945	10.288		
Annual Overall	2006-2012	671	0	0.1033305	2.5768	39.512	60.4843	9.7202		
Nitrogen, Ammonia (NH3) (mg/l)									Max	13
Summer Overall	2006-2012	53	3	0	3.34	21.144	28.9	7.136		
Winter Overall	2006-2012	29	0	1.4	22.6	35.18	48.9	21.349		
Annual Overall	2006-2012	141	3	0	12	32.8	48.9	13.681		
Nitrogen, Ammonia (NH3) (kg/day)									Max	5.4
Summer Overall	2006-2012	53	3	0	1.9758	34.786	46.6312	7.1612		
Winter Overall	2006-2012	29	0	0.217259	6.7222	75.671	86.01034	17.359		
Annual Overall	2006-2012	139	3	0	4.2104	51.953	86.01034	11.849		
Dissolved Oxygen (mg/l)										
Summer Overall	2006-2012	569	0	2.4	6.6	9.72	19.8	7.1005		
Winter Overall	2006-2012	375	0	1.03	9.2	13.5	15.3	8.6227		
Annual Overall	2006-2012	1663	0	1.03	8	13.09	19.8	7.8779		
Chlorine, Total Residual (mg/l)									0.019	
Summer Overall	2006-2012	578	0	0	0.011	0.1515	1.02	0.038824		
Fecal Coliform (#/100 ml)										
Summer Overall	2006-2012	97	6	0	560	10000	10000	1876.2		

Appendix Table A5 cont.

Smithfield Wastewater Treatment Plant - OPA00053 - Outfall 001

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Min
pH (S.U.)										
Annual Overall	2006-2012	1663	0	4.4	7.2	8.5	11.3	7.3798	9	6.5
Mercury, Total (Low Level) (ng/l)										
Annual Overall	2011-2011	2	0	0.73	0.9	1.053	1.07	0.9		
Flow Rate (MGD)										
Summer Overall	2006-2012	807	0	0.011	0.088	0.77	0.99	0.26704		
Winter Overall	2006-2012	571	0	0.0105	0.072	0.72	0.98	0.19329		
Annual Overall	2006-2012	2386	0	0.0102	0.082	0.76	3.083	0.22739		

Hopedale Wastewater Treatment Plant - OPB00018 - Outfall 001

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Weekly	Monthly
Total Suspended Solids (mg/l)										
Summer Overall	2006-2012	236	9	0	6	25.25	75	8.8093	18	12
Winter Overall	2006-2012	170	8	0	11.5	27.55	52	12.506		
Annual Overall	2006-2012	710	25	0	8	28	75	10.858		
Total Suspended Solids (kg/day)										
Summer Overall	2006-2012	236	9	0	11.102	54.216	101.004	17.089	8.52	5.68
Winter Overall	2006-2012	170	8	0	25.523	67.652	89.57278	28.166		
Annual Overall	2006-2012	710	25	0	17.189	68.16	163.5211	23.771		
CBOD 5 day (mg/l)										
Summer Overall	2006-2012	237	60	0	7	24.2	50	8.9114	15	10
Winter Overall	2006-2012	170	23	0	10	30	41	12.129		
Annual Overall	2006-2012	711	157	0	8	29	108	10.06		
CBOD 5 day (kg/day)										
Summer Overall	2006-2012	237	60	0	13.908	47.128	111.7082	16.538	7.1	4.74
Winter Overall	2006-2012	170	23	0	23.29	54.777	107.5848	25.155		
Annual Overall	2006-2012	711	157	0	16.821	53.719	127.5836	19.8		
Nitrogen, Ammonia (NH3) (mg/l)										
Summer Overall	2006-2012	238	3	0	3.625	8.6805	16.6	3.8258	3	2
Winter Overall	2006-2012	170	0	0.04	3.37	10.165	16.7	3.7613		
Annual Overall	2006-2012	712	4	0	3.56	10.645	27	4.0407		
Nitrogen, Ammonia (NH3) (kg/day)										
Summer Overall	2006-2012	238	3	0	6.0491	16.216	23.06526	6.5844	1.42	0.947
Winter Overall	2006-2012	170	0	0.1608019	7.2136	18.76	55.16925	7.7691		
Annual Overall	2006-2012	712	4	0	6.6899	18.515	63.69814	7.6126		
Nitrite Plus Nitrate, Total (mg/l)										
Summer Overall	2006-2012	28	1	0	4.05	11.37	12.58	5.0014		
Winter Overall	2006-2012	20	1	0	2.51	5.6025	5.65	2.6405		
Annual Overall	2006-2012	83	6	0	3.4	9.54	12.58	3.7073		
Dissolved Oxygen (mg/l)										
Summer Overall	2006-2012	587	0	5.9	8.5	9.251	10.79	8.2946	5	
Winter Overall	2006-2012	396	0	6.6	10.515	11.425	11.7	10.348		
Annual Overall	2006-2012	1727	0	5.9	9.42	11.2	12.3	9.4027		

Appendix Table A5 cont.

Hopedale Wastewater Treatment Plant - 0PB00018 - Outfall 001

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Min
Fecal Coliform (#/100 ml)										
Summer Overall	2006-2012	91	44	0	50	300	1700	71.099		
Chlorine, Total Residual (mg/l)									0.019	
Summer Overall	2006-2012	602	0	0	0.01	0.01	0.013	0.005784		
pH (S.U.)										
Annual Overall	2006-2012	1081	0	7	7.2	7.2	7.5	7.1867		
Mercury, Total (Low Level) (ng/l)										
Annual Overall	2009-2012	4	2	0	0.1	0.2935	0.31	0.1275		
Mercury, Total Recoverable (ug/l)										
Annual Overall	2006-2009	7	1	0	0.2	0.2	0.2	0.17143		
Flow Rate (MGD)										
Summer Overall	2006-2012	854	0	0.041	0.065	0.077	0.085	0.065183		
Winter Overall	2006-2012	601	0	0.048	0.068	0.077	0.13	0.066418		
Annual Overall	2006-2012	2557	0	0.039	0.067	0.078	0.2	0.066479		

Adena Sewage Treatment Plant - 0PB00056 - Outfall 001

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Weekly	Monthly
Total Suspended Solids (mg/l)										
Summer Overall	2006-2012	243	28	0	6	35.9	120	11.206	45	30
Winter Overall	2006-2012	169	15	0	11	86.8	426	24.71		
Annual Overall	2006-2012	722	78	0	8	50	426	15.539		
Total Suspended Solids (kg/day)									21.8	14.5
Summer Overall	2006-2012	242	28	0	3.1056	24.145	67.6758	6.153		
Winter Overall	2006-2012	162	14	0	7.0571	106.76	436.9631	26.354		
Annual Overall	2006-2012	711	76	0	4.4512	47.479	436.9631	12.666		
CBOD 5 day (mg/l)										
Summer Overall	2006-2012	243	113	0	3	9	24	2.9712	40	25
Winter Overall	2006-2012	168	29	0	6	27.65	120	9.619		
Annual Overall	2006-2012	721	237	0	4	16	120	5.2968		
CBOD 5 day (kg/day)									19.4	12.2
Summer Overall	2006-2012	242	112	0	1.1298	5.9072	12.869	1.682		
Winter Overall	2006-2012	161	28	0	4.5988	35.723	123.0882	9.6043		
Annual Overall	2006-2012	710	233	0	1.9966	18.173	123.0882	4.4924		
Nitrogen, Ammonia (NH3) (mg/l)										
Summer Overall	2006-2012	63	25	0	0.1	6.3	16.5	1.0127		
Annual Overall	2006-2012	91	40	0	0.1	5.4	16.5	0.84835		
Nitrogen, Ammonia (NH3) (kg/day)										
Summer Overall	2006-2012	63	25	0	0.05299	4.2949	5.486736	0.52317		
Annual Overall	2006-2012	91	40	0	0.046934	3.8395	5.92731	0.48656		
Nitrogen Kjeldahl, Total (mg/l)										
Annual Overall	2012-2012	1	0	4.7	4.7	4.7	4.7	4.7		

Appendix Table A5 cont.

Adena Sewage Treatment Plant - 0PB00056 - Outfall 001

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Min
Nitrite Plus Nitrate, Total (mg/l)										
Annual Overall	2012-2012	1	0	2.76	2.76	2.76	2.76	2.76		
Phosphorus, Total (P) (mg/l)										
Annual Overall	2012-2012	1	0	0.64	0.64	0.64	0.64	0.64		
Oil and Grease, Freon Extr-Grav Meth (mg/l)										
Annual Overall	2006-2012	24	14	0	0	2.395	2.5	0.725		
pH (S.U.)										
Annual Overall	2006-2012	1791	0	5.8	7	7.4	7.8	7.0091	9	6.5
Chlorine, Total Residual (mg/l)										
Summer Overall	2006-2012	615	215	0	0	0.01	0.03	0.001333	0.019	
Fecal Coliform (#/100 ml)										
Summer Overall	2006-2012	108	77	0	0	532.5	5600	133.33		
Flow Rate (MGD)										
Summer Overall	2006-2012	853	0	0.007	0.13	0.254	0.932	0.14403		
Winter Overall	2006-2012	583	0	0.048	0.194	0.4559	0.793	0.22178		
Annual Overall	2006-2012	2521	0	0.007	0.145	0.406	104	0.22217		

Dillonvale Wastewater Treatment Plant - 0PQ00007 - Outfall 001

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Weekly	Monthly
Total Suspended Solids (mg/l)										
Summer Overall	2006-2012	235	0	1	4	10	14	4.4638	45	30
Winter Overall	2006-2012	170	0	1	3	7	18	3.6471		
Annual Overall	2006-2012	708	0	1	3	8	18	3.9251		
Total Suspended Solids (kg/day)										
Summer Overall	2006-2012	235	0	0.246025	1.4194	4.2241	10.20058	1.8216	57.9	38.6
Winter Overall	2006-2012	170	0	0.321725	1.6616	7.1366	19.21266	2.545		
Annual Overall	2006-2012	708	0	0.23467	1.4875	6.1003	22.07412	2.2035		
CBOD 5 day (mg/l)										
Summer Overall	2006-2012	235	0	2	4	11	14	4.7255	40	25
Winter Overall	2006-2012	170	0	1	2.75	5.55	13	2.9471		
Annual Overall	2006-2012	711	0	1	3	8	14	3.709		
CBOD 5 day (kg/day)										
Summer Overall	2006-2012	235	0	0.50719	1.4421	4.5545	8.292935	1.9119	51.5	32.2
Winter Overall	2006-2012	170	0	0.49962	1.2983	7.173	18.70169	2.2519		
Annual Overall	2006-2012	711	0	0.208175	1.408	5.6624	25.2838	2.0709		
Nitrogen, Ammonia (NH3) (mg/l)										
Summer Overall	2006-2012	235	0	0.172	1.27	2.152	2.9	1.3089		
Winter Overall	2006-2012	170	0	0.05	1.265	2.294	2.96	1.2754		
Annual Overall	2006-2012	711	0	0.05	1.26	2.195	2.96	1.2795		
Nitrogen, Ammonia (NH3) (kg/day)										
Summer Overall	2006-2012	235	0	0.0553367	0.44296	1.2821	2.661158	0.53894		
Winter Overall	2006-2012	170	0	0.0213853	0.59523	2.8508	8.165381	0.90588		
Annual Overall	2006-2012	711	0	0.0141938	0.49735	2.2404	8.165381	0.75576		

Appendix Table A5 cont.

Dillonvale Wastewater Treatment Plant - 0PQ0007 - Outfall 001

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Min
Nitrite Plus Nitrate, Total (mg/l)										
Summer Overall	2006-2012	27	0	10.8	30	44.84	47.6	30.741		
Winter Overall	2006-2012	20	0	9.7	19.9	37.74	40.4	21.195		
Annual Overall	2006-2012	81	0	6.3	26.6	43.2	47.6	25.937		
Phosphorus, Total (P) (mg/l)										
Summer Overall	2012-2012	1	0	3.46	3.46	3.46	3.46	3.46		
Annual Overall	2012-2012	2	0	3.46	3.85	4.201	4.24	3.85		
Dissolved Oxygen (mg/l)										
Summer Overall	2006-2012	597	0	4.21	5.94	6.722	7.65	5.8408		
Winter Overall	2006-2012	421	0	4.95	7.6	9.51	10.57	7.6634		
Annual Overall	2006-2012	1788	0	3.89	6.4	8.9865	11.22	6.6387		
Chlorine, Total Residual (mg/l)										
Summer Overall	2006-2012	597	7	0	0.02	0.03	0.03	0.019095		
Mercury, Total (Hg) (ug/l)										
Annual Overall	2006-2012	13	12	0	0	1.404	3.51	0.27		

Buckeye Local School District Wastewater Treatment Plant - 0PT00023 - Outfall 001

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Weekly	Monthly
Total Suspended Solids (mg/l)										
Summer Overall	2006-2012	28	0	2	4	8	9	4.7143	18	12
Winter Overall	2006-2012	23	0	2	6	9.781	11	5.7057		
Annual Overall	2006-2012	87	0	2	5	8	11	4.9107		
Total Suspended Solids (kg/day)										
Summer Overall	2006-2012	28	0	0.0056775	0.022521	0.10759	0.260408	0.04226	1.02	0.68
Winter Overall	2006-2012	23	0	0.00757	0.10674	0.20554	0.23467	0.10541		
Annual Overall	2006-2012	87	0	0.0056775	0.069644	0.19568	0.260408	0.080922		
Nitrogen, Ammonia (NH3) (mg/l)										
Summer Overall	2006-2012	28	0	0.186	0.502	0.8375	0.92	0.52543	1.5	1
Winter Overall	2006-2012	20	0	0.364	1.073	2.934	7	1.5001	4.5	3
Annual Overall	2006-2012	84	0	0.186	0.721	1.8865	7	0.88023		
Nitrogen, Ammonia (NH3) (kg/day)										
Summer Overall	2006-2012	28	0	0.0004252	0.002222	0.017736	0.02897	0.005083	0.09	0.06
Winter Overall	2006-2012	20	0	0.0013777	0.018369	0.068587	0.15897	0.028814	0.26	0.17
Annual Overall	2006-2012	84	0	0.0004252	0.011022	0.036484	0.15897	0.01561		
CBOD 5 day (mg/l)										
Summer Overall	2006-2012	28	0	2.5	3.45	8	9	4.1179	15	10
Winter Overall	2006-2012	20	0	1.22	4.45	9	9	4.9785		
Annual Overall	2006-2012	84	0	1.22	4	8	9	4.4246		
CBOD 5 day (kg/day)										
Summer Overall	2006-2012	28	0	0.0039743	0.022332	0.11332	0.227857	0.040905	0.85	0.57
Winter Overall	2006-2012	20	0	0.0094625	0.07835	0.20473	0.211203	0.087193		
Annual Overall	2006-2012	84	0	0.0039743	0.064818	0.1764	0.238455	0.072775		

Appendix Table A5 cont.

Buckeye Local School District Wastewater Treatment Plant - OPT00023 - Outfall 001

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Min
Dissolved Oxygen (mg/l)										6
Summer Overall	2006-2012	112	0	6.11	6.84	7.41	7.47	6.7663		
Winter Overall	2006-2012	75	0	6.84	7.65	8.734	9.87	7.7253		
Annual Overall	2006-2012	331	0	6.11	7.03	8.24	9.87	7.132		
Chlorine, Total Residual (mg/l)										0.038
Summer Overall	2006-2012	57	0	0.01	0.02	0.03	0.3	0.025965		

Yorkville Sewage Treatment Plant - OPB00052 - Outfall 001

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit		
					50th	95th			Weekly	Monthly	
Total Suspended Solids (mg/l)										45	30
Summer Overall	2006-2012	224	75	0	2	6	11	1.9732			
Winter Overall	2006-2012	160	52	0	2	6	12	1.9438			
Annual Overall	2006-2012	672	222	0	2	8	94	2.5476			
Total Suspended Solids (kg/day)										72.3	48.2
Summer Overall	2006-2012	224	75	0	1.3248	5.0702	28.766	1.8725			
Winter Overall	2006-2012	160	52	0	1.2434	5.1217	30.28	1.9339			
Annual Overall	2006-2012	664	222	0	1.3626	7.81	126.3584	2.5473			
Nitrogen, Ammonia (NH3) (mg/l)											
Summer Overall	2006-2012	224	160	0	0	0.385	2.9	0.099107			
Winter Overall	2006-2012	161	119	0	0	0.7	3.9	0.1236			
Annual Overall	2006-2012	673	469	0	0	0.3	12.1	0.12883			
Nitrogen, Ammonia (NH3) (kg/day)											
Summer Overall	2006-2012	224	160	0	0	0.3951	2.370924	0.098361			
Winter Overall	2006-2012	161	119	0	0	1.0121	4.60256	0.15118			
Annual Overall	2006-2012	665	469	0	0	0.3947	9.892476	0.13355			
CBOD 5 day (mg/l)										40	25
Summer Overall	2006-2012	224	157	0	0	5	31	1.1975			
Winter Overall	2006-2012	160	89	0	0	6.05	12	1.7988			
Annual Overall	2006-2012	671	430	0	0	6	43	1.5808			
CBOD 5 day (kg/day)										64.3	40.2
Summer Overall	2006-2012	224	157	0	0	4.9826	23.23233	1.1868			
Winter Overall	2006-2012	160	89	0	0	6.9216	16.82433	1.7681			
Annual Overall	2006-2012	663	425	0	0	6.5518	107.6908	1.8263			
Nitrogen Kjeldahl, Total (mg/l)											
Summer Overall	2009-2012	16	11	0	0	1.375	1.6	0.3875			
Winter Overall	2009-2012	9	5	0	0	1.16	1.2	0.5			
Annual Overall	2009-2012	44	27	0	0	1.317	1.6	0.46864			
Nitrogen Kjeldahl, Total (kg/day)											
Summer Overall	2009-2012	16	11	0	0	0.84718	0.890611	0.2478			
Winter Overall	2009-2012	9	5	0	0	0.84436	0.974259	0.3155			
Annual Overall	2009-2012	44	27	0	0	0.97131	1.598784	0.32			

Appendix Table A5 cont.

Yorkville Sewage Treatment Plant - 0PB00052 - Outfall 001										
Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Min
Nitrite Plus Nitrate, Total (mg/l)										
Summer Overall	2006-2012	28	0	0.82	20.9	27.72	28.4	19.99		
Winter Overall	2006-2012	20	0	11.8	16.9	27.71	29.8	17.91		
Annual Overall	2006-2012	84	0	0.82	18.2	28.34	35.6	18.698		
Nitrite Plus Nitrate, Total (kg/day)										
Summer Overall	2006-2012	28	0	1.0521543	16.872	26.488	28.97796	17.11		
Winter Overall	2006-2012	20	0	8.632071	14.32	35.924	37.47983	17.946		
Annual Overall	2006-2012	83	0	1.0521543	15.594	28.903	42.58579	17.036		
Phosphorus, Total (P) (mg/l)										
Summer Overall	2009-2012	16	0	1.54	2.42	3.1625	3.56	2.4244		
Winter Overall	2009-2012	9	0	0.7	1.83	2.5	2.7	1.7256		
Annual Overall	2009-2012	44	0	0.7	2.135	3.015	3.56	2.03		
Phosphorus, Total (P) (kg/day)										
Summer Overall	2009-2012	16	0	0.9501107	1.6578	2.5313	4.136702	1.7365		
Winter Overall	2009-2012	9	0	0.619983	0.9905	2.6397	3.638142	1.2143		
Annual Overall	2009-2012	44	0	0.6029505	1.2881	2.1253	4.136702	1.4295		
Oil and Grease, Hexane Extr Method (mg/l)										
Annual Overall	2006-2012	84	66	0	0	2.27	5.1	0.40595		
Water Temperat 001;										
Annual Overall	2006-2012	1784	0	5.4	15.7	23.3	25	16.146		
Dissolved Oxygen (mg/l)										
Summer Overall	2006-2012	596	0	3.19	6.515	7.8275	10.1	6.5574		
Annual Overall	2006-2012	1784	0	3.19	6.93	9.2485	12	7.0346		
pH (S.U.)										
Summer Overall	2006-2012	596	0	6.98	7.4	7.73	7.89	7.4176	9	6.5
Annual Overall	2006-2012	1784	0	5.3	7.56	7.95	8.3	7.5575		
Copper, Total Recoverable (ug/l)										
Annual Overall	2006-2012	28	4	0	15.5	29.95	32	16.571		
Copper, Total Recoverable (kg/day)										
Annual Overall	2006-2012	28	4	0	0.014885	0.02888	0.030817	0.014758		
Flow Rate (MGD)										
Summer Overall	2006-2012	854	0	0.067	0.2095	0.385	0.914	0.24483		
Winter Overall	2006-2012	601	0	0.103	0.241	0.452	1.165	0.25663		
Annual Overall	2006-2012	2527	0	0.0164	0.222	0.4487	2.371	0.26724		
Chlorine, Total Residual (mg/l)										
Summer Overall	2006-2012	596	0	0	0.001	0.01	0.02	0.003211	0.038	
Mercury, Total (Low Level) (ng/l)										
Annual Overall	2009-2012	15	0	1.6	2.92	13.07	14.4	4.7913		

Appendix Table A5 cont.

Riddles Run Refuse Dispos/Coal Processing Plant; 0IL00146

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Monthly
Monitoring Station 001										
Iron, Total (Fe) (ug/l)										
Annual Overall	2008-2012	150	2	0	139	1600	9600	368.05	6000	3000
Iron, Total (Fe) (kg/day)										
Annual Overall	2008-2012	150	2	0	0.001421	0.53936	7.57	0.17227	14.8	7.39
Manganese, Total (Mn) (ug/l)										
Annual Overall	2008-2012	150	0	0.83	403.5	1887	3860	621.9	4000	2000
Manganese, Total (Mn) (kg/day)										
Annual Overall	2008-2012	150	0	2.827E-06	0.003776	0.4406	6.905657	0.16142	9.85	4.93
Total Suspended Solids (mg/l)										
Summer Overall	2008-2012	53	30	0	0	20	52	5.3019	70	35
Winter Overall	2008-2012	28	20	0	0	21.4	31	4		
Annual Overall	2008-2012	148	88	0	0	19.3	52	4.5878		
Total Suspended Solids (kg/day)										
Summer Overall	2008-2012	53	30	0	0	5.0416	19.03249	0.88828	173	86.3
Winter Overall	2008-2012	28	20	0	0	4.2357	19.21266	0.93915		
Annual Overall	2008-2012	148	88	0	0	10.878	37.33524	1.3989		
Thallium, Total Recoverable (ug/l)										
Annual Overall	2009-2012	41	22	0	0	1.4	1.9	0.33906	79	6.3
Thallium, Total Recoverable (kg/day)										
Annual Overall	2009-2012	41	22	0	0	4.03E-05	0.000173	1.11E-05	0.195	0.0156

Riddles Run Refuse Dispos/Coal Processing Plant; 0IL00146

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Monthly
Monitoring Station 001										
Residue, Total Dissolved (kg/day)										
Summer Overall	2008-2012	17	0	447	2480	3334	3550	2419.9		
Winter Overall	2008-2012	9	1	0	1180	2680	2980	1472.2		
Annual Overall	2008-2012	43	1	0	2000	3246	3550	2093.3		
Residue, Total Dissolved (kg/day)										
Summer Overall	2008-2012	17	0	0.338379	2.816	135.25	299.1967	40.641		
Winter Overall	2008-2012	9	1	0	15.397	446.13	704.4642	93.519		
Annual Overall	2008-2012	43	1	0	23.013	663.94	5732.496	199.99		
Nitrogen, Ammonia (NH3) (mg/l)										
Summer Overall	2008-2012	16	6	0	0.205	4.975	5.8	0.99838		
Winter Overall	2008-2012	9	2	0	0.413	0.6008	0.628	0.37444		
Annual Overall	2008-2012	42	11	0	0.395	2.8	5.8	0.75657		
Nitrogen, Ammonia (NH3) (kg/day)										
Summer Overall	2008-2012	16	6	0	0.000323	0.21002	0.265412	0.040945		
Winter Overall	2008-2012	9	2	0	0.004992	0.24555	0.398485	0.048422		
Annual Overall	2008-2012	42	11	0	0.003899	0.39183	4.138027	0.14477		

Appendix Table A5 cont.

Riddles Run Refuse Dispos/Coal Processing Plant; 01L00146

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Monthly
Chloride, Total (mg/l)										
Annual Overall	2008-2012	15	0	45.4	58.6	81.8	86	59.547		
Chloride, Total (kg/day)										
Annual Overall	2008-2012	15	0	0.0262301	1.2029	24.068	68.0191	5.7022		
Sulfate, (SO4) (mg/l)										
Annual Overall	2008-2012	15	0	53.2	1190	1967.5	2335	1182.1		
Monitoring Station 001										
Sulfate, (SO4) (kg/day)										
Annual Overall	2008-2012	15	0	0.4228602	20.153	407.98	1113.861	94.351		
Arsenic, Total Recoverable (ug/l)										
Annual Overall	2008-2012	15	2	0	0.8	4.05	6.5	1.3133		
Arsenic, Total Recoverable (kg/day)										
Annual Overall	2008-2012	15	2	0	1.27E-05	0.001282	0.003872	0.000286		
Selenium, Total Recoverable (ug/l)										
Annual Overall	2008-2012	15	0	0.9	9.7	20.6	22	10.2		
Selenium, Total Recoverable (kg/day)										
Annual Overall	2008-2012	15	0	6.813E-07	0.000125	0.005872	0.016521	0.001363		
Boron, Total Recoverable (ug/l)										
Annual Overall	2008-2012	15	0	530	1100	2650	2650	1443.4		
Boron, Total Recoverable (kg/day)										
Annual Overall	2008-2012	15	0	0.0007721	0.016877	0.55822	1.355219	0.11953		
Chromium, Hexavalent (Cr +6) (ug/l)										
Annual Overall	2008-2012	15	5	0	5	22.5	33	7.1333		
Chromium, Hexavalent (Cr +6) (kg/day)										
Annual Overall	2008-2012	15	5	0	3.97E-05	0.002849	0.006453	0.000627		
Nickel, Total Recoverable (ug/l)										
Annual Overall	2009-2012	14	0	15	56	177.5	210	80.857		
Nickel, Total Recoverable (kg/day)										
Annual Overall	2009-2012	14	0	7.57E-06	0.001321	0.011348	0.01936	0.002958		
Cadmium, Total Recoverable (ug/l)										
Annual Overall	2009-2012	14	3	0	3.5	20	20	7.05		
Cadmium, Total Recoverable (kg/day)										
Annual Overall	2009-2012	14	3	0	5.98E-05	0.000678	0.000693	0.000167		
Copper, Total Recoverable (ug/l)										
Annual Overall	2009-2012	14	4	0	4.5	26.65	39	8.2143		

Appendix Table A5 cont.

Riddles Run Refuse Dispos/Coal Processing Plant; 01L00146

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit		
					50th	95th			Max	Monthly	
Copper, Total Recoverable (kg/day)				Monitoring Station		001					
Annual Overall	2009-2012	14	4	0	1.02E-05	0.004011	0.009035	0.000872			
Flow Rate (MGD)				Monitoring Station		001					
Summer Overall	2008-2012	376	0	0.0001	0.0006	0.096475	1.2	0.026441			
Winter Overall	2008-2012	194	0	0.0001	0.0029	1.117	1.478	0.14012			
Annual Overall	2008-2012	1065	0	0.0001	0.0021	0.90688	1.478	0.079802			
Total Precipitation (Inches)				Monitoring Station		001					
Annual Overall	2008-2012	1252	0	0	0	0.63	2.45	0.11181			
pH (S.U.)				Monitoring Station		001				9.5	6
Annual Overall	2008-2012	1220	0	3.01	7.87	8.6	9.32	7.7685			
Mercury, Total (Low Level) (ng/l)				Monitoring Station		001					
Annual Overall	2009-2012	14	0	0.5	1.59	40.473	100	9.3443			
Total Precipitation (Inches)				Monitoring Station		002					
Annual Overall	2008-2012	1531	0	0	0	0.59	2.45	0.10241			
Total Suspended Solids (mg/l)				Monitoring Station		002				70	35
Summer Overall	2008-2012	58	22	0	4	13.6	40	5.1897			
Winter Overall	2008-2012	39	22	0	0	17.1	29	4.8154			
Annual Overall	2008-2012	172	87	0	0	14.8	40	4.4814			
Total Suspended Solids (kg/day)				Monitoring Station		002					
Summer Overall	2008-2012	58	22	0	0.00969	1.124	4.719895	0.24943			
Winter Overall	2008-2012	39	22	0	0	0.67335	1.516846	0.14416			
Annual Overall	2008-2012	172	87	0	0	0.90819	4.719895	0.17209			
Residue, Settleable (Volume) (mL/L)				Monitoring Station		002					
Summer Overall	2008-2012	58	48	0	0	0.1	0.5	0.024138			
Winter Overall	2008-2012	34	29	0	0	0.5	0.5	0.061765			
Annual Overall	2008-2012	168	142	0	0	0.1	0.5	0.029762			
Iron, Total (Fe) (ug/l)				Monitoring Station		002				6000	3000
Annual Overall	2008-2012	172	1	0	120	738.1	3700	239.15			
Iron, Total (Fe) (kg/day)				Monitoring Station		002					
Annual Overall	2008-2012	172	1	0	0.002404	0.039827	0.27252	0.010424			
Manganese, Total (Mn) (ug/l)				Monitoring Station		002				4000	2000
Annual Overall	2008-2012	171	0	0.03	125	872	5910	282.91			
Manganese, Total (Mn) (kg/day)				Monitoring Station		002					
Annual Overall	2008-2012	171	0	0	0.002419	0.027429	0.299772	0.009201			
pH (S.U.)				Monitoring Station		002					
Summer Overall	2008-2012	459	0	3.5	8.03	9	9.6	8.0212			
Winter Overall	2008-2012	274	0	6.5	7.9	8.627	8.9	7.8299			
Annual Overall	2008-2012	1274	0	3.5	7.92	8.9	9.6	7.9282			
Flow Rate (MGD)				Monitoring Station		002					
Summer Overall	2008-2012	357	2	0	0.007	0.0362	0.288	0.011832			
Winter Overall	2008-2012	238	0	0.00004	0.00294	0.03456	0.084	0.007721			
Annual Overall	2008-2012	1094	2	0	0.0054	0.0432	0.288	0.011614			

Appendix Table A5 cont.

DTE Dickerson LLC-Georgetown Prep Plant Area; 01L00149 - outfall 003

Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Monthly
Total Precipitation (Inches)										
Annual Overall	2010-2012	884	0	0	0	0.76	6.27	0.14523		
Total Suspended Solids (mg/l)										
Summer Overall	2010-2012	10	0	1	5	10.3	13	5.2	70	35
Winter Overall	2010-2012	6	0	1	10	20	22	9.8333		
Annual Overall	2010-2012	29	1	0	7	20.8	28	7.6552		
Total Suspended Solids (kg/day)										
Summer Overall	2010-2012	8	0	0.0002271	0.003388	0.22464	0.3028	0.051873		
Winter Overall	2010-2012	6	0	0.002271	0.065424	0.27309	0.291445	0.11025		
Annual Overall	2010-2012	25	1	0	0.018925	0.30053	41.49496	1.7214		
Residue, Settleable (Volume) (mL/L)										
Summer Overall	2010-2012	9	1	0	0.5	0.5	0.5	0.39444		
Winter Overall	2010-2012	4	0	0.5	0.5	0.5	0.5	0.5		
Annual Overall	2010-2012	24	3	0	0.5	0.5	0.5	0.41875		
Iron, Total (Fe) (ug/l)										
Annual Overall	2010-2012	29	0	30	460	846	970	455.52	7000	35000
Iron, Total (Fe) (kg/day)										
Annual Overall	2010-2012	25	0	8.327E-06	0.001363	0.025262	1.900032	0.080664		
Manganese, Total (Mn) (ug/l)										
Annual Overall	2010-2012	29	2	0	60	246	320	79.657	4000	2000
Manganese, Total (Mn) (kg/day)										
Annual Overall	2010-2012	25	2	0	0.000284	0.0035	0.065518	0.003144		
pH (S.U.)										
Summer Overall	2010-2012	10	0	7.3	7.865	8.134	8.17	7.784	9	6
Winter Overall	2010-2012	6	0	7.57	7.685	8.25	8.34	7.8133		
Annual Overall	2010-2012	29	0	7.2	7.79	8.138	8.34	7.7934		
Flow Rate (MGD)										
Summer Overall	2010-2012	10	0	0.00001	0.0009	0.0146	0.02	0.003414		
Winter Overall	2010-2012	6	0	0.0003	0.00225	0.016868	0.02057	0.005272		
Annual Overall	2010-2012	29	0	0.00001	0.00095	0.021188	0.577	0.023755		
Mercury, Total (Low Level) (ng/l)										
Annual Overall	2011-2012	2	0	1.24	3.09	4.755	4.94	3.09		

Appendix Table A5 cont.

Hopedale Mining - Cadiz Portal; 0IL00092										
Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Monthly
Monitoring Station 001;										
pH (S.U.)										
Annual Overall	2006-2012	219	0	4.9	8	8.7	9	7.9365	9	Min 6
Total Suspended Solids (mg/l)										
Annual Overall	2006-2012	146	38	0	1	3	21	1.1849	70	35
Total Suspended Solids (kg/day)										
Annual Overall	2006-2012	146	38	0	0.034254	0.96205	3.052224	0.1995		
Iron, Total (Fe) (ug/l)										
Annual Overall	2006-2012	146	25	0	30	327.5	1300	85.479	6000	3000
Iron, Total (Fe) (kg/day)										
Annual Overall	2006-2012	146	25	0	0.002453	0.12591	0.49205	0.021507		
Manganese, Total (Mn) (ug/l)										
Annual Overall	2006-2012	146	6	0	270	1385	2660	434.93	4000	2000
Manganese, Total (Mn) (kg/day)										
Annual Overall	2006-2012	146	6	0	0.036538	0.53642	1.573349	0.12141		
Flow Rate (MGD)										
Summer Overall	2006-2012	508	0	0.0001	0.0065	0.3425	1.732	0.087398		
Winter Overall	2006-2012	524	0	0.00081	0.1487	1.363	4	0.32716		
Annual Overall	2006-2012	1989	0	0.0001	0.084	1.363	4	0.27978		
Monitoring Station 002;										
pH (S.U.)										
Annual Overall	2006-2012	217	0	6.1	8	8.7	9	7.9072	9	Min 6
Total Suspended Solids (mg/l)										
Annual Overall	2006-2012	162	40	0	1	4	21	1.3395	70	35
Total Suspended Solids (kg/day)										
Annual Overall	2006-2012	162	40	0	0.10901	1.2896	8.073027	0.37906		
Iron, Total (Fe) (ug/l)										
Annual Overall	2006-2012	162	32	0	30	428	1590	87.099	6000	3000
Iron, Total (Fe) (kg/day)										
Annual Overall	2006-2012	162	32	0	0.00436	0.14038	0.91005	0.03061		
Manganese, Total (Mn) (ug/l)										
Annual Overall	2006-2012	162	8	0	305	1489	1960	456.46	4000	2000
Manganese, Total (Mn) (kg/day)										
Annual Overall	2006-2012	162	8	0	0.057229	0.54242	0.825054	0.14649		
Flow Rate (MGD)										
Summer Overall	2006-2012	808	0	0.0001	0.0323	0.3425	1.363	0.093613		
Winter Overall	2006-2012	527	0	0.0033	0.1487	1.363	4	0.31829		
Annual Overall	2006-2012	2384	0	0.0001	0.084	0.956	637	0.50471		

Appendix Table A5 cont.

Hopedale Mining - Cadiz Portal; 0IL00092										
Season	Year	# of Obs.	# Below Detection	Minimum	Percentile		Maximum	Mean	NPDES Limit	
					50th	95th			Max	Monthly
Monitoring Stati 006;										
pH (S.U.)										
Annual Overall	2006-2012	223	0	6.9	8	9	9	8.0337		min
Total Suspended Solids (mg/l)										
Annual Overall	2006-2012	166	10	0	2	36.25	104	7.3072	70	35
Total Suspended Solids (kg/day)										
Annual Overall	2006-2012	166	10	0	0.040878	8.1756	18.31334	1.0553		
Iron, Total (Fe) (ug/l)										
Annual Overall	2006-2012	166	6	0	115	935	1780	238.37	7000	3500
Iron, Total (Fe) (kg/day)										
Annual Overall	2006-2012	166	6	0	0.00363	0.13749	0.323754	0.026093		
Manganese, Total (Mn) (ug/l)										
Annual Overall	2006-2012	166	14	0	205	1350	4580	385.66	4000	2000
Manganese, Total (Mn) (kg/day)										
Annual Overall	2006-2012	166	14	0	0.006688	0.19785	0.349916	0.038678		
Flow Rate (MGD)										
Summer Overall	2006-2012	813	0	0.00001	0.0065	0.1487	0.637	0.037364		
Winter Overall	2006-2012	507	0	0.001	0.0194	0.31148	1.363	0.060403		
Annual Overall	2006-2012	2365	0	0.00001	0.01295	0.3425	2.635	0.067119		
Monitoring Stati 007;										
pH (S.U.)										
Annual Overall	2006-2012	110	0	7.12	8.1	8.8	9	8.1423	9	Min 6
Total Suspended Solids (mg/l)										
Annual Overall	2006-2012	110	14	0	1	5.55	21	2.1636	70	35
Total Suspended Solids (kg/day)										
Annual Overall	2006-2012	110	14	0	0.011355	0.56775	3.61846	0.12873		
Iron, Total (Fe) (ug/l)										
Annual Overall	2006-2012	110	6	0	65	276.5	1130	103.91	7000	3500
Iron, Total (Fe) (kg/day)										
Annual Overall	2006-2012	110	6	0	0.000628	0.031721	0.307948	0.009586		
Manganese, Total (Mn) (ug/l)										
Annual Overall	2006-2012	110	22	0	30	475.5	1350	89.182	4000	2000
Manganese, Total (Mn) (kg/day)										
Annual Overall	2006-2012	110	22	0	0.000227	0.027088	0.20439	0.008578		
Flow Rate (MGD)										
Summer Overall	2006-2012	266	0	0.0001	0.0323	0.637	0.956	0.10648		
Winter Overall	2006-2012	180	0	0.0001	0.0538	0.637	1.363	0.23685		
Annual Overall	2006-2012	942	0	0.0001	0.1487	2.0909	2.635	0.35685		

Appendix Table 6A. Sediment Sampling Results Short Creek, 2010

Appendix Table A6. Short Creek watershed and direct Ohio River tributaries sediment chemical sampling results, 2010 .

Parameter		Short Creek in Adena at CO. RD. 10	Short Creek at USGS Gage at ST. RT. 150	Little Short Creek at Mt. Pleasant Road (TR 113)	Glenns Run at CO. RD. 4 (Glenns Run Road)
		8/3/2010	8/3/2010	8/3/2010	8/4/2010
Ammonia	mg/kg	170	230	110	39
Total Phosphorus	mg/kg	375	308	777	686
Very fine silt (4-8u)	%	3.3	6.4	3.1	3.5
% Solids	%	23.4	26.3	42.4	45.7
Coarse clay (2-4u)	%	1.6	3.2	1.6	0
Sand and larger (>60u)	%	57	0	67	62
Coarse silt (30-60u)	%	4.9	50	3.1	3.5
Medium clay (1-2u)	%	1.6	3.2	0	1.8
Medium silt (15-30u)	%	21	9.6	14	19
Fine silt (8-15u)	%	6.6	22	6.3	7
Sodium	mg/kg	<8550	<7040	174	<4130
Strontium	mg/kg	629	377	147	456
Zinc	mg/kg	168	187	23.5	139
Lead	mg/kg	33	21.3	0.923	21.3
Cadmium	mg/kg	1.04	0.997	4.7	0.651
Fine clay (<1u)	%	3.3	4.8	15800	3.5
Aluminum	mg/kg	17300	14200	174	9190
Barium	mg/kg	177	144	57700	220
Calcium	mg/kg	143000	94100	56400	217000
Iron	mg/kg	48700	47300	5610	115000
Magnesium	mg/kg	14100	5880	1190	6220
Manganese	mg/kg	2840	1210	2000	1980
Potassium	mg/kg	<3420	<2820	<4370	<1650
Arsenic	mg/kg	15	13.2	16.6	16.2
Selenium	mg/kg	<3.42	<2.82	<1.75	<1.65
Chromium	mg/kg	280	15.7	16.2	13.3
Copper	mg/kg	36.8	30.9	23.5	37.4
Nickel	mg/kg	43.5	42.8	34.9	30.6

Appendix Table 7. Qualitative Habitat Evaluation Index scores and attributes

QHEI Attributes: Short Creek and Ohio River Tributaries 2010

River Mile	QHEI	Gradient (ft/mi)	WWH Attributes										MWH Attributes					MWH M.I./MWH Ratio	MWH H.I.+1/MWH+1 Ratio																																					
			Key QHEI Components										High Influence							Moderate Influence																																				
			Boulder/Cobble/Gravel Substrates Not Channelized or Recovered	Good/Excellent Development	Moderate/High Sinuosity	Extensive/Moderate Cover	Fast Current/Eddies	Low/Normal Embeddedness	Max Depth > 40cm	Low/Normal Riffle Embeddedness	WWH Attributes	Channelized/No Recovery	Silt/Muck Substrates	No Sinuosity	Sparse/No Cover	Max Depth < 40cm	High-influence Modified Attributes			Recovering Channel	Heavy/Moderate Silt Cover	Sand Substrates (Boat)	Fair/Poor Development	Low Sinuosity	Only 1 or 2 Cover Types	Intermittent/Poor Pools	No Fast Current	High/Moderate Embeddedness	High/Mod. Riffle Embeddedness	No Riffle	M.I. Modified Attributes																									
06-053-000			Glenns Run																																																					
Year: 2010																																																								
3.3	71.0	31.75	X	X	X	X	X	X	X	X	X	X	X	9			X													1															2	0.20	0.30									
2.9	66.5	80.00	X	X	X	X	X	X	X	X	X	X	X	9			X														1								X									1	0.20	0.20						
2.5	68.8	64.52	X	X	X	X	X	X	X	X	X	X	X	6																	0	X	X																			6	0.29	1.00		
0.1	58.3	62.96	X											5			X	X													2								X	X												2	0.50	0.67		
06-058-000			Deep Run																																																					
Year: 2010																																																								
2.4	50.8	111.11	X	X	X	X	X	X	X	X	X	X	X	5			X	X													2								X	X											5	0.50	1.17			
0.3	47.0	68.97	X	X	X	X	X	X	X	X	X	X	X	2			X	X														2	X	X						X	X													7	1.33	2.67
06-060-000			Rush Run																																																					
Year: 2010																																																								
2.8	64.5	44.44	X	X	X	X	X	X	X	X	X	X	X	6																	0								X													4	0.14	0.71		
0.7	77.3	47.62	X	X	X	X	X	X	X	X	X	X	X	8																		0								X														3	0.11	0.44
06-062-000			Salt Run																																																					
Year: 2010																																																								
0.4	40.5	100.00	X											1	X		X	X													3								X													7	2.00	4.00		
06-600-000			Short Creek																																																					
Year: 2010																																																								
18.8	75.0	15.38	X	X	X	X	X	X	X	X	X	X	X	9																	0																					0	0.10	0.10		
12.7	77.5	14.39	X	X	X	X	X	X	X	X	X	X	X	8																		0								X														2	0.11	0.44
11.4	79.3	11.70	X	X	X	X	X	X	X	X	X	X	X	7																		0								X	X													5	0.13	0.88
8.7	54.0	5.67	X											2			X														1	X	X						X	X												7	1.00	3.00		
5.8	90.3	6.51	X	X	X	X	X	X	X	X	X	X	X	9																		0								X														1	0.10	0.20
4.1	88.5	16.95	X	X	X	X	X	X	X	X	X	X	X	9																		0								X														1	0.10	0.20
3.6	83.5	16.95	X	X	X	X	X	X	X	X	X	X	X	9																		0																						0	0.10	0.10
06-602-000			Little Short Creek																																																					
Year: 2010																																																								
5.0	85.8	25.97	X	X	X	X	X	X	X	X	X	X	X	9																	0																					1	0.10	0.20		
3.5	52.8	50.00	X	X	X	X	X	X	X	X	X	X	X	4			X															1	X	X						X	X	X	X										8	0.60	1.80	
0.1	78.0	40.82	X	X	X	X	X	X	X	X	X	X	X	8																		0																						2	0.11	0.33

Appendix Table 8. Fish species and abundance for each sampling location

Species List

River Code: 06-053 River Mile: 2.90 Time Fished: 3340 sec Dist Fished: 0.15 km	Stream: Glenns Run Location: upst. Treadway Run Drainage: 6.2 sq mi Basin: Central Ohio River Tribs No of Passes: 1	Sample Date: 2010 Date Range: 09/30/2010 Sampler Type: E
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Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
White Sucker	W	O	S	T	9	18.00	0.87			
Western Blacknose Dace	N	G	S	T	465	930.00	44.88			
Creek Chub	N	G	N	T	123	246.00	11.87			
Central Stoneroller	N	H	N		439	878.00	42.37			
<i>Mile Total</i>					1,036	2,072.00				
<i>Number of Species</i>					4					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-053	Stream: Glenns Run	Sample Date: 2010
River Mile: 0.10	Location: Co. Rd. 4	Date Range: 09/30/2010
Time Fished: 3642 sec	Drainage: 10.7 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Gizzard Shad		O	M		30	60.00	4.74			
Northern Hog Sucker	R	I	S	M	4	8.00	0.63			
White Sucker	W	O	S	T	3	6.00	0.47			
River Chub	N	I	N	I	1	2.00	0.16			
Western Blacknose Dace	N	G	S	T	140	280.00	22.12			
Longnose Dace [S]	N	I	S	R	3	6.00	0.47			
Creek Chub	N	G	N	T	17	34.00	2.69			
Silver Shiner	N	I	S	I	4	8.00	0.63			
Rosyface Shiner	N	I	S	I	38	76.00	6.00			
Spotfin Shiner	N	I	M		6	12.00	0.95			
Sand Shiner	N	I	M	M	1	2.00	0.16			
Bluntnose Minnow	N	O	C	T	3	6.00	0.47			
Central Stoneroller	N	H	N		258	516.00	40.76			
Smallmouth Bass	F	C	C	M	4	8.00	0.63			
Bluegill Sunfish	S	I	C	P	4	8.00	0.63			
Greenside Darter	D	I	S	M	3	6.00	0.47			
Rainbow Darter	D	I	S	M	114	228.00	18.01			
<i>Mile Total</i>					633	1,266.00				
<i>Number of Species</i>					17					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-058 River Mile: 2.40 Time Fished: 1477 sec Dist Fished: 0.12 km	Stream: Deep Run Location: adj. Deep Run Rd. Drainage: 2.5 sq mi Basin: Central Ohio River Tribs No of Passes: 1	Sample Date: 2010 Date Range: 09/30/2010 Sampler Type: E
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Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Western Blacknose Dace	N	G	S	T	135	337.50	57.45			
Creek Chub	N	G	N	T	100	250.00	42.55			
<i>Mile Total</i>					235	587.50				
<i>Number of Species</i>					2					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-058	Stream: Deep Run	Sample Date: 2010
River Mile: 0.30	Location: RR bridge near mouth	Date Range: 09/30/2010
Time Fished: 1883 sec	Drainage: 4.1 sq mi	
Dist Fished: 0.12 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Western Blacknose Dace	N	G	S	T	250	625.00	64.77			
Creek Chub	N	G	N	T	96	240.00	24.87			
Rosyface Shiner	N	I	S	I	1	2.50	0.26			
Sand Shiner	N	I	M	M	28	70.00	7.25			
Bluntnose Minnow	N	O	C	T	3	7.50	0.78			
Central Stoneroller	N	H	N		1	2.50	0.26			
Rainbow Darter	D	I	S	M	7	17.50	1.81			
<i>Mile Total</i>					386	965.00				
<i>Number of Species</i>					7					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-060 River Mile: 2.80 Time Fished: 1500 sec Dist Fished: 0.14 km	Stream: Rush Run Location: adj. Rush Run Rd. Drainage: 8.4 sq mi Basin: Central Ohio River Tribs No of Passes: 1	Sample Date: 2010 Date Range: 09/03/2010 Sampler Type: E
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Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	40	85.71	3.61	1.15	6.33	13.46
White Sucker	W	O	S	T	63	135.00	5.69	1.91	10.46	14.13
Western Blacknose Dace	N	G	S	T	169	362.14	15.25	0.86	4.73	2.38
Creek Chub	N	G	N	T	535	1,146.43	48.29	10.86	59.57	9.47
Fathead Minnow	N	O	C	T	21	45.00	1.90	0.19	1.06	4.29
Central Stoneroller	N	H	N		239	512.14	21.57	2.78	15.22	5.42
Green Sunfish	S	I	C	T	41	87.86	3.70	0.48	2.64	5.49
<i>Mile Total</i>					1,108	2,374.29		18.24		
<i>Number of Species</i>					7					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-060	Stream: Rush Run	Sample Date: 2010
River Mile: 0.70	Location: Co. Rd. 17	Date Range: 09/01/2010
Time Fished: 3080 sec	Drainage: 12.0 sq mi	
Dist Fished: 0.20 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Gizzard Shad		O	M	82	123.00	6.00			
Golden Redhorse	R	I	S M	9	13.50	0.66			
Northern Hog Sucker	R	I	S M	35	52.50	2.56			
White Sucker	W	O	S T	44	66.00	3.22			
River Chub	N	I	N I	37	55.50	2.71			
Western Blacknose Dace	N	G	S T	35	52.50	2.56			
Longnose Dace [S]	N	I	S R	4	6.00	0.29			
Creek Chub	N	G	N T	66	99.00	4.83			
Emerald Shiner	N	I	M	4	6.00	0.29			
Silver Shiner	N	I	S I	7	10.50	0.51			
Rosyface Shiner	N	I	S I	53	79.50	3.88			
Striped Shiner	N	I	S	169	253.50	12.36			
Spotfin Shiner	N	I	M	18	27.00	1.32			
Sand Shiner	N	I	M M	17	25.50	1.24			
Bluntnose Minnow	N	O	C T	133	199.50	9.73			
Central Stoneroller	N	H	N	403	604.50	29.48			
Smallmouth Bass	F	C	C M	4	6.00	0.29			
Green Sunfish	S	I	C T	7	10.50	0.51			
Bluegill Sunfish	S	I	C P	6	9.00	0.44			
Greenside Darter	D	I	S M	3	4.50	0.22			
Banded Darter	D	I	S I	2	3.00	0.15			
Rainbow Darter	D	I	S M	48	72.00	3.51			
Freshwater Drum			M P	2	3.00	0.15			
Mottled Sculpin		I	C	179	268.50	13.09			
<i>Mile Total</i>				1,367	2,050.50				
<i>Number of Species</i>				24					
<i>Number of Hybrids</i>				0					

Species List

River Code: 06-062	Stream: Salt Run	Sample Date: 2010
River Mile: 0.40	Location: adj. Twp. Rd. 157	Date Range: 09/15/2010
Time Fished: 1800 sec	Drainage: 4.0 sq mi	
Dist Fished: 0.14 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Western Blacknose Dace	N	G	S	T	361	773.57	86.78			
Creek Chub	N	G	N	T	4	8.57	0.96			
Central Stoneroller	N	H	N		20	42.86	4.81			
Rainbow Darter	D	I	S	M	25	53.57	6.01			
Mottled Sculpin		I	C		6	12.86	1.44			
<i>Mile Total</i>					416	891.43				
<i>Number of Species</i>					5					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-600	Stream: Short Creek	Sample Date: 2010
River Mile: 18.20	Location: dst. Adena WWTP	Date Range: 08/09/2010
Time Fished: 5400 sec	Drainage: 65.4 sq mi	Thru: 09/08/2010
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S M	263	197.25	11.84	14.50	32.71	73.49
White Sucker	W	O	S T	87	65.25	3.92	3.08	6.94	47.13
Common Carp	G	O	M T	1	0.75	0.05	1.13	2.54	1,500.00
Western Blacknose Dace	N	G	S T	21	15.75	0.95	0.05	0.12	3.33
Creek Chub	N	G	N T	152	114.00	6.84	0.67	1.51	5.85
Silver Shiner	N	I	S I	3	2.25	0.14	0.02	0.04	8.33
Rosyface Shiner	N	I	S I	1	0.75	0.05	0.00	0.01	4.00
Striped Shiner	N	I	S	6	4.50	0.27	0.10	0.22	21.67
Sand Shiner	N	I	M M	77	57.75	3.47	0.17	0.38	2.90
Central Stoneroller	N	H	N	902	676.50	40.59	2.40	5.41	3.54
Yellow Bullhead		I	C T	7	5.25	0.32	0.94	2.13	179.71
Smallmouth Bass	F	C	C M	22	16.50	0.99	3.76	8.49	227.89
Largemouth Bass	F	C	C	9	6.75	0.41	0.12	0.27	17.78
Green Sunfish	S	I	C T	3	2.25	0.14	0.07	0.15	30.00
Bluegill Sunfish	S	I	C P	18	13.50	0.81	0.36	0.81	26.67
Green Sf X Bluegill Sf				1	0.75	0.05	0.07	0.15	90.00
Johnny Darter	D	I	C	2	1.50	0.09	0.00	0.00	1.00
Greenside Darter	D	I	S M	192	144.00	8.64	0.47	1.05	3.24
Banded Darter	D	I	S I	179	134.25	8.06	0.20	0.45	1.49
Rainbow Darter	D	I	S M	261	195.75	11.75	0.32	0.73	1.65
Fantail Darter	D	I	C	1	0.75	0.05	0.00	0.00	2.00
Freshwater Drum			M P	14	10.50	0.63	15.90	35.89	1,514.29
<i>Mile Total</i>				2,222	1,666.50		44.31		
<i>Number of Species</i>				21					
<i>Number of Hybrids</i>				1					

Species List

River Code: 06-600	Stream: Short Creek	Sample Date: 2010
River Mile: 12.70	Location: Co. Rd. 7	Date Range: 08/09/2010
Time Fished: 5100 sec	Drainage: 76.2 sq mi	Thru: 09/09/2010
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Quillback	C	O	M	1	0.75	0.15	0.71	1.50	950.00
Golden Redhorse	R	I	S M	16	12.00	2.40	3.15	6.61	262.06
Northern Hog Sucker	R	I	S M	165	123.75	24.77	4.43	9.32	35.81
White Sucker	W	O	S T	28	21.00	4.20	4.82	10.13	229.46
Common Carp	G	O	M T	8	6.00	1.20	10.88	22.86	1,812.50
River Chub	N	I	N I	1	0.75	0.15	0.00	0.01	3.00
Creek Chub	N	G	N T	11	8.25	1.65	0.05	0.11	6.36
Silver Shiner	N	I	S I	1	0.75	0.15	0.00	0.01	4.00
Rosyface Shiner	N	I	S I	10	7.50	1.50	0.03	0.05	3.30
Striped Shiner	N	I	S	11	8.25	1.65	0.24	0.51	29.55
Sand Shiner	N	I	M M	106	79.50	15.92	0.17	0.36	2.12
Mimic Shiner	N	I	M I	78	58.50	11.71	0.14	0.28	2.31
Silverjaw Minnow	N	I	M	3	2.25	0.45	0.01	0.02	3.33
Bluntnose Minnow	N	O	C T	1	0.75	0.15	0.00	0.00	2.00
Central Stoneroller	N	H	N	26	19.50	3.90	0.08	0.18	4.33
Channel Catfish	F		C	11	8.25	1.65	11.44	24.05	1,386.36
Stonecat Madtom		I	C I	1	0.75	0.15	0.00	0.01	3.00
Brook Silverside		I	M M	1	0.75	0.15	0.00	0.01	3.00
Rock Bass	S	C	C	11	8.25	1.65	0.66	1.40	80.45
Smallmouth Bass	F	C	C M	10	7.50	1.50	1.92	4.04	256.00
Largemouth Bass	F	C	C	7	5.25	1.05	0.08	0.16	14.29
Warmouth Sunfish	S	C	C	1	0.75	0.15	0.02	0.04	25.00
Green Sunfish	S	I	C T	1	0.75	0.15	0.02	0.03	20.00
Bluegill Sunfish	S	I	C P	32	24.00	4.80	0.68	1.43	28.44
Redear Sunfish	E	I	C	1	0.75	0.15	0.02	0.03	20.00
Pumpkinseed Sunfish	S	I	C P	12	9.00	1.80	0.09	0.19	10.00
Green Sf X Bluegill Sf				2	1.50	0.30	0.14	0.30	95.00
Sauger	F	P	S	1	0.75	0.15	0.17	0.36	225.00
Greenside Darter	D	I	S M	11	8.25	1.65	0.02	0.05	2.73
Banded Darter	D	I	S I	55	41.25	8.26	0.06	0.12	1.38
Rainbow Darter	D	I	S M	37	27.75	5.56	0.05	0.09	1.62
Freshwater Drum			M P	6	4.50	0.90	7.50	15.77	1,666.67
<i>Mile Total</i>				666	499.50		47.56		
<i>Number of Species</i>				31					
<i>Number of Hybrids</i>				1					

Species List

River Code: 06-600 River Mile: 11.40 Time Fished: 3300 sec Dist Fished: 0.20 km	Stream: Short Creek Location: Drainage: 84.0 sq mi Basin: Central Ohio River Tribs No of Passes: 1	Sample Date: 2010 Date Range: 08/18/2010 Sampler Type: E
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Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	20	30.00	31.25	0.69	63.01	23.00
Creek Chub	N	G	N	T	4	6.00	6.25	0.01	1.10	2.00
Striped Shiner	N	I	S		6	9.00	9.38	0.20	18.08	22.00
Sand Shiner	N	I	M	M	8	12.00	12.50	0.02	1.92	1.75
Bluntnose Minnow	N	O	C	T	1	1.50	1.56	0.01	0.55	4.00
Central Stoneroller	N	H	N		8	12.00	12.50	0.12	10.96	10.00
Stonecat Madtom		I	C	I	1	1.50	1.56	0.01	1.10	8.00
Logperch	D	I	S	M	1	1.50	1.56	0.01	0.82	6.00
Rainbow Darter	D	I	S	M	15	22.50	23.44	0.03	2.47	1.20
<i>Mile Total</i>					64	96.00		1.10		
<i>Number of Species</i>					9					
<i>Number of Hybrids</i>					0					

River Code: 06-600	Stream: Short Creek	Sample Date: 2010
River Mile: 8.70	Location: dst. Dillonvale WWTP	Date Range: 08/09/2010
Time Fished: 6600 sec	Drainage: 87.0 sq mi	Thru: 09/09/2010
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Quillback	C	O	M	7	5.25	1.62	3.75	3.98	714.29
Black Redhorse	R	I	S I	4	3.00	0.93	1.31	1.39	437.50
Golden Redhorse	R	I	S M	28	21.00	6.48	11.78	12.50	560.71
Northern Hog Sucker	R	I	S M	140	105.00	32.41	14.83	15.74	141.21
White Sucker	W	O	S T	18	13.50	4.17	2.85	3.03	211.39
Common Carp	G	O	M T	18	13.50	4.17	21.23	22.54	1,572.22
Sand Shiner	N	I	M M	12	9.00	2.78	0.02	0.02	2.08
Channel Catfish	F		C	17	12.75	3.94	14.89	15.81	1,167.65
Flathead Catfish	F	P	C	1	0.75	0.23	1.20	1.27	1,600.00
Eastern Banded Killifish	E	I	M T	1	0.75	0.23	0.00	0.00	5.00
Rock Bass	S	C	C	24	18.00	5.56	1.58	1.68	87.92
Smallmouth Bass	F	C	C M	19	14.25	4.40	3.50	3.71	245.26
Largemouth Bass	F	C	C	10	7.50	2.31	0.06	0.07	8.50
Warmouth Sunfish	S	C	C	1	0.75	0.23	0.03	0.04	45.00
Green Sunfish	S	I	C T	1	0.75	0.23	0.03	0.03	40.00
Bluegill Sunfish	S	I	C P	28	21.00	6.48	0.68	0.72	32.50
Redear Sunfish	E	I	C	2	1.50	0.46	0.05	0.05	30.00
Pumpkinseed Sunfish	S	I	C P	10	7.50	2.31	0.15	0.16	19.50
Sauger	F	P	S	5	3.75	1.16	1.80	1.91	480.00
Logperch	D	I	S M	1	0.75	0.23	0.02	0.02	20.00
Greenside Darter	D	I	S M	28	21.00	6.48	0.06	0.07	2.97
Banded Darter	D	I	S I	29	21.75	6.71	0.03	0.03	1.47
Rainbow Darter	D	I	S M	10	7.50	2.31	0.03	0.03	3.30
Sauger X Walleye	E	P		1	0.75	0.23	0.22	0.23	290.00
Freshwater Drum			M P	17	12.75	3.94	14.10	14.97	1,105.88
<i>Mile Total</i>				432	324.00		94.18		
<i>Number of Species</i>				24					
<i>Number of Hybrids</i>				1					

Species List

River Code: 06-600	Stream: Short Creek	Sample Date: 2010
River Mile: 5.80	Location:	Date Range: 08/08/2010
Time Fished: 2700 sec	Drainage: 121.0 sq mi	
Dist Fished: 0.20 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S	M	5	7.50	6.25	3.18	19.05	424.00
Northern Hog Sucker	R	I	S	M	11	16.50	13.75	0.21	1.26	12.73
Common Carp	G	O	M	T	2	3.00	2.50	3.75	22.47	1,250.00
Silver Shiner	N	I	S	I	1	1.50	1.25	0.01	0.07	8.00
Rosyface Shiner	N	I	S	I	1	1.50	1.25	0.01	0.04	4.00
Bluntnose Minnow	N	O	C	T	1	1.50	1.25	0.00	0.01	1.00
Channel Catfish	F		C		2	3.00	2.50	3.20	19.14	1,065.00
Yellow Bullhead		I	C	T	1	1.50	1.25	0.06	0.36	40.00
Rock Bass	S	C	C		4	6.00	5.00	0.61	3.62	100.75
Smallmouth Bass	F	C	C	M	1	1.50	1.25	0.00	0.01	1.00
Green Sunfish	S	I	C	T	2	3.00	2.50	0.04	0.22	12.00
Bluegill Sunfish	S	I	C	P	5	7.50	6.25	0.05	0.29	6.40
Pumpkinseed Sunfish	S	I	C	P	1	1.50	1.25	0.01	0.04	4.00
Johnny Darter	D	I	C		1	1.50	1.25	0.00	0.01	1.00
Greenside Darter	D	I	S	M	14	21.00	17.50	0.04	0.23	1.79
Rainbow Darter	D	I	S	M	22	33.00	27.50	0.03	0.20	1.00
Sauger X Walleye	E	P			3	4.50	3.75	1.29	7.73	286.67
Freshwater Drum			M	P	3	4.50	3.75	4.22	25.28	937.67
<i>Mile Total</i>					80	120.00		16.69		
<i>Number of Species</i>					17					
<i>Number of Hybrids</i>					1					

Species List

River Code: 06-600	Stream: Short Creek	Sample Date: 2010
River Mile: 4.10	Location: 0.9 mi. dst. St. Rt. 150	Date Range: 08/10/2010
Time Fished: 5700 sec	Drainage: 124.0 sq mi	Thru: 09/14/2010
Dist Fished: 0.40 km	Basin: Central Ohio River Tribs No of Passes: 2	Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S M	14	10.50	0.96	0.12	0.61	11.79
Northern Hog Sucker	R	I	S M	216	162.00	14.88	3.77	18.37	23.24
White Sucker	W	O	S T	4	3.00	0.28	0.02	0.07	5.00
River Chub	N	I	N I	35	26.25	2.41	0.39	1.88	14.68
Western Blacknose Dace	N	G	S T	1	0.75	0.07	0.00	0.01	4.00
Creek Chub	N	G	N T	4	3.00	0.28	0.03	0.15	10.00
Emerald Shiner	N	I	M	9	6.75	0.62	0.02	0.12	3.56
Silver Shiner	N	I	S I	2	1.50	0.14	0.00	0.02	2.50
Rosyface Shiner	N	I	S I	83	62.25	5.72	0.14	0.70	2.29
Striped Shiner	N	I	S	6	4.50	0.41	0.10	0.48	21.67
Spotfin Shiner	N	I	M	6	4.50	0.41	0.03	0.14	6.33
Sand Shiner	N	I	M M	80	60.00	5.51	0.11	0.56	1.90
Mimic Shiner	N	I	M I	31	23.25	2.13	0.05	0.22	1.94
Bluntnose Minnow	N	O	C T	27	20.25	1.86	0.08	0.40	4.07
Central Stoneroller	N	H	N	121	90.75	8.33	0.73	3.57	8.06
Channel Catfish	F		C	5	3.75	0.34	3.64	17.75	970.00
Flathead Catfish	F	P	C	3	2.25	0.21	0.53	2.59	236.00
Stonecat Madtom		I	C I	3	2.25	0.21	0.05	0.22	20.00
Rock Bass	S	C	C	6	4.50	0.41	0.23	1.12	50.83
Smallmouth Bass	F	C	C M	20	15.00	1.38	9.06	44.20	603.75
Largemouth Bass	F	C	C	2	1.50	0.14	0.03	0.17	22.50
Green Sunfish	S	I	C T	6	4.50	0.41	0.08	0.40	18.33
Bluegill Sunfish	S	I	C P	7	5.25	0.48	0.02	0.11	4.29
Logperch	D	I	S M	14	10.50	0.96	0.14	0.66	12.86
Greenside Darter	D	I	S M	189	141.75	13.02	0.48	2.35	3.39
Banded Darter	D	I	S I	209	156.75	14.39	0.20	0.97	1.26
Variegate Darter	D	I	S I	1	0.75	0.07	0.00	0.02	6.00
Bluebreast Darter [T]	D	I	S R	2	1.50	0.14	0.01	0.03	3.50
Rainbow Darter	D	I	S M	335	251.25	23.07	0.38	1.86	1.52
Fantail Darter	D	I	C	1	0.75	0.07	0.00	0.01	3.00
Mottled Sculpin		I	C	10	7.50	0.69	0.06	0.27	7.30
<i>Mile Total</i>				1,452	1,089.00		20.49		
<i>Number of Species</i>				31					
<i>Number of Hybrids</i>				0					

Species List

River Code: 06-600	Stream: Short Creek	Sample Date: 2010
River Mile: 3.60	Location:	Date Range: 08/18/2010
Time Fished: 2700 sec	Drainage: 125.0 sq mi	
Dist Fished: 0.20 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	19	28.50	13.77	0.95	68.02	33.42
White Sucker	W	O	S	T	1	1.50	0.72	0.00	0.14	1.00
Rosyface Shiner	N	I	S	I	8	12.00	5.80	0.02	1.28	1.50
Sand Shiner	N	I	M	M	11	16.50	7.97	0.02	1.64	1.36
Mimic Shiner	N	I	M	I	12	18.00	8.70	0.02	1.43	1.08
Bluntnose Minnow	N	O	C	T	1	1.50	0.72	0.00	0.14	1.00
Central Stoneroller	N	H	N		7	10.50	5.07	0.02	1.28	1.71
Rock Bass	S	C	C		2	3.00	1.45	0.01	0.86	4.00
Smallmouth Bass	F	C	C	M	3	4.50	2.17	0.17	11.92	37.00
Largemouth Bass	F	C	C		1	1.50	0.72	0.04	2.71	25.00
Green Sunfish	S	I	C	T	1	1.50	0.72	0.00	0.21	2.00
Logperch	D	I	S	M	1	1.50	0.72	0.02	1.07	10.00
Greenside Darter	D	I	S	M	28	42.00	20.29	0.08	5.35	1.79
Rainbow Darter	D	I	S	M	39	58.50	28.26	0.05	3.85	0.92
Fantail Darter	D	I	C		2	3.00	1.45	0.00	0.21	1.00
Mottled Sculpin		I	C		2	3.00	1.45	0.00	0.14	0.50
<i>Mile Total</i>					138	207.00		1.40		
<i>Number of Species</i>					16					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-602 River Mile: 5.00 Time Fished: 1800 sec Dist Fished: 0.15 km	Stream: Little Short Creek Location: Twp. Rd. 472 Drainage: 11.0 sq mi Basin: Central Ohio River Tribs No of Passes: 1	Sample Date: 2010 Date Range: 09/01/2010 Sampler Type: E
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Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S	M	1	2.00	0.05			
White Sucker	W	O	S	T	230	460.00	11.39			
Western Blacknose Dace	N	G	S	T	676	1,352.00	33.48			
Creek Chub	N	G	N	T	149	298.00	7.38			
South. Redbelly Dace	N	H	S		1	2.00	0.05			
Fathead Minnow	N	O	C	T	4	8.00	0.20			
Bluntnose Minnow	N	O	C	T	217	434.00	10.75			
Central Stoneroller	N	H	N		632	1,264.00	31.30			
Largemouth Bass	F	C	C		3	6.00	0.15			
Green Sunfish	S	I	C	T	2	4.00	0.10			
Fantail Darter	D	I	C		104	208.00	5.15			
<i>Mile Total</i>					2,019	4,038.00				
<i>Number of Species</i>					11					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-602 River Mile: 3.50 Time Fished: 3000 sec Dist Fished: 0.20 km	Stream: Little Short Creek Location: dst. AMD area Drainage: 14.0 sq mi Basin: Central Ohio River Tribs No of Passes: 1	Sample Date: 2010 Date Range: 08/19/2010 Sampler Type: E
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Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
White Sucker	W	O	S	T	14	21.00	3.52	0.20	8.12	9.29
Western Blacknose Dace	N	G	S	T	200	300.00	50.25	0.36	15.07	1.21
Creek Chub	N	G	N	T	177	265.50	44.47	1.83	76.02	6.88
South. Redbelly Dace	N	H	S		5	7.50	1.26	0.02	0.75	2.40
Bluntnose Minnow	N	O	C	T	2	3.00	0.50	0.00	0.08	0.50
<i>Mile Total</i>					398	597.00		2.40		
<i>Number of Species</i>					5					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-602	Stream: Little Short Creek	Sample Date: 2010
River Mile: 0.10	Location: Mt. Pleasant Rd.	Date Range: 09/01/2010
Time Fished: 1800 sec	Drainage: 17.6 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	61	122.00	8.46			
White Sucker	W	O	S	T	20	40.00	2.77			
Western Blacknose Dace	N	G	S	T	25	50.00	3.47			
Longnose Dace [S]	N	I	S	R	1	2.00	0.14			
Creek Chub	N	G	N	T	29	58.00	4.02			
Rosyface Shiner	N	I	S	I	1	2.00	0.14			
Striped Shiner	N	I	S		49	98.00	6.80			
Spotfin Shiner	N	I	M		1	2.00	0.14			
Sand Shiner	N	I	M	M	10	20.00	1.39			
Bluntnose Minnow	N	O	C	T	61	122.00	8.46			
Central Stoneroller	N	H	N		377	754.00	52.29			
Rock Bass	S	C	C		1	2.00	0.14			
Smallmouth Bass	F	C	C	M	1	2.00	0.14			
Largemouth Bass	F	C	C		4	8.00	0.55			
Green Sunfish	S	I	C	T	2	4.00	0.28			
Johnny Darter	D	I	C		3	6.00	0.42			
Greenside Darter	D	I	S	M	9	18.00	1.25			
Banded Darter	D	I	S	I	3	6.00	0.42			
Rainbow Darter	D	I	S	M	2	4.00	0.28			
Orangethroat Darter	D	I	S		42	84.00	5.83			
Fantail Darter	D	I	C		1	2.00	0.14			
Mottled Sculpin		I	C		18	36.00	2.50			
<i>Mile Total</i>					721	1,442.00				
<i>Number of Species</i>					22					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-604	Stream: Coal Run	Sample Date: 2010
River Mile: 0.20	Location: St. Rt. 647/Twp. Rd. 475	Date Range: 09/07/2010
Time Fished: 1800 sec	Drainage: 2.0 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
White Sucker	W	O	S	T	66	132.00	5.06			
Western Blacknose Dace	N	G	S	T	427	854.00	32.75			
Creek Chub	N	G	N	T	123	246.00	9.43			
South. Redbelly Dace	N	H	S		2	4.00	0.15			
Bluntnose Minnow	N	O	C	T	309	618.00	23.70			
Central Stoneroller	N	H	N		331	662.00	25.38			
Fantail Darter	D	I	C		46	92.00	3.53			
<i>Mile Total</i>					1,304	2,608.00				
<i>Number of Species</i>					7					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-606	Stream: Dry Fork	Sample Date: 2010
River Mile: 0.20	Location: near mouth, adj. Dry Fork Rd.	Date Range: 09/01/2010
Time Fished: 1800 sec	Drainage: 8.5 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	12	24.00	3.59			
White Sucker	W	O	S	T	23	46.00	6.89			
Western Blacknose Dace	N	G	S	T	91	182.00	27.25			
Creek Chub	N	G	N	T	62	124.00	18.56			
Central Stoneroller	N	H	N		73	146.00	21.86			
Channel Catfish	F		C		1	2.00	0.30			
Largemouth Bass	F	C	C		2	4.00	0.60			
Green Sunfish	S	I	C	T	1	2.00	0.30			
Bluegill Sunfish	S	I	C	P	1	2.00	0.30			
Johnny Darter	D	I	C		12	24.00	3.59			
Greenside Darter	D	I	S	M	2	4.00	0.60			
Rainbow Darter	D	I	S	M	28	56.00	8.38			
Orangethroat Darter	D	I	S		1	2.00	0.30			
Fantail Darter	D	I	C		25	50.00	7.49			
<i>Mile Total</i>					334	668.00				
<i>Number of Species</i>					14					
<i>Number of Hybrids</i>					0					

River Code: 06-607	Stream: Long Run	Sample Date: 2010
River Mile: 0.30	Location: Co. Rd. 7	Date Range: 09/01/2010
Time Fished: 1800 sec	Drainage: 6.5 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S	M	1	2.00	0.13			
Northern Hog Sucker	R	I	S	M	47	94.00	5.98			
White Sucker	W	O	S	T	89	178.00	11.32			
Western Blacknose Dace	N	G	S	T	302	604.00	38.42			
Creek Chub	N	G	N	T	153	306.00	19.47			
Striped Shiner	N	I	S		1	2.00	0.13			
Central Stoneroller	N	H	N		20	40.00	2.54			
Redear Sunfish	E	I	C		1	2.00	0.13			
Johnny Darter	D	I	C		16	32.00	2.04			
Greenside Darter	D	I	S	M	53	106.00	6.74			
Rainbow Darter	D	I	S	M	97	194.00	12.34			
Orangethroat Darter	D	I	S		6	12.00	0.76			
<i>Mile Total</i>					786	1,572.00				
<i>Number of Species</i>					12					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-610	Stream: Piney Fork	Sample Date: 2010
River Mile: 10.50	Location: Twp. Rd. 192	Date Range: 08/31/2010
Time Fished: 1800 sec	Drainage: 7.6 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	3	6.00	0.21			
White Sucker	W	O	S	T	23	46.00	1.63			
Western Blacknose Dace	N	G	S	T	219	438.00	15.54			
Creek Chub	N	G	N	T	79	158.00	5.61			
Central Stoneroller	N	H	N		615	1,230.00	43.65			
Johnny Darter	D	I	C		275	550.00	19.52			
Greenside Darter	D	I	S	M	43	86.00	3.05			
Orangethroat Darter	D	I	S		147	294.00	10.43			
Fantail Darter	D	I	C		5	10.00	0.35			
<i>Mile Total</i>					1,409	2,818.00				
<i>Number of Species</i>					9					
<i>Number of Hybrids</i>					0					

River Code: 06-610	Stream: Piney Fork	Sample Date: 2010
River Mile: 0.40	Location: St. Rt. 150	Date Range: 09/01/2010
Time Fished: 1800 sec	Drainage: 22.4 sq mi	
Dist Fished: 0.20 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Gizzard Shad		O	M	1	1.50	0.14	0.03	0.40	20.00
Northern Hog Sucker	R	I	S M	74	111.00	10.41	0.82	10.75	7.35
White Sucker	W	O	S T	60	90.00	8.44	0.67	8.88	7.48
Western Blacknose Dace	N	G	S T	4	6.00	0.56	0.01	0.12	1.50
Creek Chub	N	G	N T	50	75.00	7.03	1.83	24.10	24.40
Striped Shiner	N	I	S	47	70.50	6.61	0.71	9.29	10.00
Sand Shiner	N	I	M M	1	1.50	0.14	0.00	0.04	2.00
Silverjaw Minnow	N	I	M	2	3.00	0.28	0.00	0.03	0.50
Bluntnose Minnow	N	O	C T	11	16.50	1.55	0.08	1.07	4.91
Central Stoneroller	N	H	N	235	352.50	33.05	2.72	35.80	7.71
Rock Bass	S	C	C	1	1.50	0.14	0.05	0.66	33.00
Smallmouth Bass	F	C	C M	1	1.50	0.14	0.02	0.20	10.00
Largemouth Bass	F	C	C	3	4.50	0.42	0.08	1.07	18.00
Green Sunfish	S	I	C T	2	3.00	0.28	0.06	0.79	20.00
Bluegill Sunfish	S	I	C P	2	3.00	0.28	0.04	0.50	12.50
Johnny Darter	D	I	C	2	3.00	0.28	0.01	0.07	1.50
Greenside Darter	D	I	S M	55	82.50	7.74	0.22	2.85	2.62
Banded Darter	D	I	S I	41	61.50	5.77	0.09	1.13	1.40
Rainbow Darter	D	I	S M	108	162.00	15.19	0.15	2.02	0.94
Orangethroat Darter	D	I	S	4	6.00	0.56	0.01	0.11	1.25
Fantail Darter	D	I	C	7	10.50	0.98	0.02	0.20	1.43
<i>Mile Total</i>				711	1,066.50		7.59		
<i>Number of Species</i>				21					
<i>Number of Hybrids</i>				0					

Species List

River Code: 06-617	Stream: Middle Fork Short Creek	Sample Date: 2010
River Mile: 5.40	Location: 2nd Co. Rd. 15 bridge dst. Cadiz WWTP	Date Range: 08/30/2010
Time Fished: 1800 sec	Drainage: 15.9 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	6	12.00	0.82			
White Sucker	W	O	S	T	67	134.00	9.10			
Common Carp	G	O	M	T	7	14.00	0.95			
Western Blacknose Dace	N	G	S	T	1	2.00	0.14			
Creek Chub	N	G	N	T	79	158.00	10.73			
Striped Shiner	N	I	S		3	6.00	0.41			
Mimic Shiner	N	I	M	I	1	2.00	0.14			
Bluntnose Minnow	N	O	C	T	7	14.00	0.95			
Central Stoneroller	N	H	N		501	1,002.00	68.07			
Largemouth Bass	F	C	C		2	4.00	0.27			
Green Sunfish	S	I	C	T	1	2.00	0.14			
Bluegill Sunfish	S	I	C	P	11	22.00	1.49			
Johnny Darter	D	I	C		2	4.00	0.27			
Greenside Darter	D	I	S	M	28	56.00	3.80			
Orangethroat Darter	D	I	S		20	40.00	2.72			
<i>Mile Total</i>					736	1,472.00				
<i>Number of Species</i>					15					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-617	Stream: Middle Fork Short Creek	Sample Date: 2010
River Mile: 0.20	Location: Co. Rd. 41	Date Range: 08/31/2010
Time Fished: 1800 sec	Drainage: 24.0 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	9	18.00	0.61			
White Sucker	W	O	S	T	183	366.00	12.46			
Common Carp	G	O	M	T	1	2.00	0.07			
Western Blacknose Dace	N	G	S	T	4	8.00	0.27			
Creek Chub	N	G	N	T	28	56.00	1.91			
Sand Shiner	N	I	M	M	2	4.00	0.14			
Central Stoneroller	N	H	N		795	1,590.00	54.12			
Yellow Bullhead		I	C	T	7	14.00	0.48			
Largemouth Bass	F	C	C		3	6.00	0.20			
Bluegill Sunfish	S	I	C	P	5	10.00	0.34			
Johnny Darter	D	I	C		2	4.00	0.14			
Greenside Darter	D	I	S	M	282	564.00	19.20			
Banded Darter	D	I	S	I	51	102.00	3.47			
Rainbow Darter	D	I	S	M	97	194.00	6.60			
<i>Mile Total</i>					1,469	2,938.00				
<i>Number of Species</i>					14					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-618 River Mile: 1.10 Time Fished: 1800 sec Dist Fished: 0.15 km	Stream: South Fork Short Creek Location: Twp. Rd. 83 Drainage: 14.0 sq mi Basin: Central Ohio River Tribs No of Passes: 1	Sample Date: 2010 Date Range: 08/31/2010 Sampler Type: E
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Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	3	6.00	1.18			
White Sucker	W	O	S	T	3	6.00	1.18			
Western Blacknose Dace	N	G	S	T	18	36.00	7.06			
Creek Chub	N	G	N	T	6	12.00	2.35			
Silver Shiner	N	I	S	I	1	2.00	0.39			
Central Stoneroller	N	H	N		121	242.00	47.45			
Largemouth Bass	F	C	C		1	2.00	0.39			
Greenside Darter	D	I	S	M	18	36.00	7.06			
Banded Darter	D	I	S	I	37	74.00	14.51			
Rainbow Darter	D	I	S	M	47	94.00	18.43			
<i>Mile Total</i>					255	510.00				
<i>Number of Species</i>					10					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-619	Stream: Sally Buffalo Creek	Sample Date: 2010
River Mile: 0.20	Location: just dst. Cadiz WWTP	Date Range: 08/30/2010
Time Fished: 1800 sec	Drainage: 9.9 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	16	32.00	5.32			
White Sucker	W	O	S	T	6	12.00	1.99			
Creek Chub	N	G	N	T	35	70.00	11.63			
Central Stoneroller	N	H	N		81	162.00	26.91			
Yellow Bullhead		I	C	T	34	68.00	11.30			
Largemouth Bass	F	C	C		2	4.00	0.66			
Warmouth Sunfish	S	C	C		1	2.00	0.33			
Bluegill Sunfish	S	I	C	P	18	36.00	5.98			
Johnny Darter	D	I	C		1	2.00	0.33			
Greenside Darter	D	I	S	M	53	106.00	17.61			
Orangethroat Darter	D	I	S		54	108.00	17.94			
<i>Mile Total</i>					301	602.00				
<i>Number of Species</i>					11					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-620 River Mile: 6.20 Time Fished: 1800 sec Dist Fished: 0.15 km	Stream: North Fork Short Creek Location: upst. Unionvale Rd. Drainage: 11.0 sq mi Basin: Central Ohio River Tribs No of Passes: 1	Sample Date: 2010 Date Range: 08/31/2010 Sampler Type: E
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Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	6	12.00	0.73			
White Sucker	W	O	S	T	40	80.00	4.84			
Western Blacknose Dace	N	G	S	T	40	80.00	4.84			
Creek Chub	N	G	N	T	78	156.00	9.44			
Striped Shiner	N	I	S		21	42.00	2.54			
Sand Shiner	N	I	M	M	12	24.00	1.45			
Central Stoneroller	N	H	N		502	1,004.00	60.77			
Largemouth Bass	F	C	C		1	2.00	0.12			
Warmouth Sunfish	S	C	C		1	2.00	0.12			
Green Sunfish	S	I	C	T	7	14.00	0.85			
Johnny Darter	D	I	C		21	42.00	2.54			
Greenside Darter	D	I	S	M	20	40.00	2.42			
Orangethroat Darter	D	I	S		76	152.00	9.20			
Fantail Darter	D	I	C		1	2.00	0.12			
<i>Mile Total</i>					826	1,652.00				
<i>Number of Species</i>					14					
<i>Number of Hybrids</i>					0					

Species List

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River Code: 06-620	Stream: North Fork Short Creek	Sample Date: 2010
River Mile: 0.10	Location: Nagy lane, off Co. Rd. 10	Date Range: 08/31/2010
Time Fished: 1800 sec	Drainage: 20.0 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	53	106.00	10.29			
White Sucker	W	O	S	T	56	112.00	10.87			
Western Blacknose Dace	N	G	S	T	30	60.00	5.83			
Creek Chub	N	G	N	T	95	190.00	18.45			
Striped Shiner	N	I	S		26	52.00	5.05			
Spotfin Shiner	N	I	M		1	2.00	0.19			
Sand Shiner	N	I	M	M	12	24.00	2.33			
Mimic Shiner	N	I	M	I	1	2.00	0.19			
Central Stoneroller	N	H	N		153	306.00	29.71			
Yellow Bullhead		I	C	T	1	2.00	0.19			
Johnny Darter	D	I	C		3	6.00	0.58			
Greenside Darter	D	I	S	M	20	40.00	3.88			
Banded Darter	D	I	S	I	16	32.00	3.11			
Orangethroat Darter	D	I	S		42	84.00	8.16			
Fantail Darter	D	I	C		3	6.00	0.58			
Freshwater Drum			M	P	3	6.00	0.58			
<i>Mile Total</i>					515	1,030.00				
<i>Number of Species</i>					16					
<i>Number of Hybrids</i>					0					

Species List

River Code: 06-624	Stream: Liming Creek	Sample Date: 2010
River Mile: 0.20	Location: Twp. Rd. 76	Date Range: 08/30/2010
Time Fished: 1800 sec	Drainage: 4.7 sq mi	
Dist Fished: 0.15 km	Basin: Central Ohio River Tribs No of Passes: 1	Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	1	2.00	0.08			
White Sucker	W	O	S	T	518	1,036.00	41.57			
Western Blacknose Dace	N	G	S	T	85	170.00	6.82			
Creek Chub	N	G	N	T	115	230.00	9.23			
Bluntnose Minnow	N	O	C	T	1	2.00	0.08			
Central Stoneroller	N	H	N		406	812.00	32.58			
Yellow Bullhead		I	C	T	16	32.00	1.28			
Largemouth Bass	F	C	C		4	8.00	0.32			
Green Sunfish	S	I	C	T	2	4.00	0.16			
Bluegill Sunfish	S	I	C	P	26	52.00	2.09			
Johnny Darter	D	I	C		13	26.00	1.04			
Greenside Darter	D	I	S	M	38	76.00	3.05			
Orangethroat Darter	D	I	S		21	42.00	1.69			
<i>Mile Total</i>					1,246	2,492.00				
<i>Number of Species</i>					13					
<i>Number of Hybrids</i>					0					

Appendix Table 9. Fish Index of Biological Integrity (IBI) scores and metrics

A9 Fish IBI Scores for Short Creek and Direct Ohio River Tributaries, 2010.

River Mile	Type	Date	Drainage area (sq mi)	Number of						Percent of Individuals					Rel.No. minus tolerants /(0.3km)	IBI	
				Total species	Minnow species	Headwater species	Sensitive species	Darter & Sculpin species	Simple Lithophils	Tolerant fishes	Omni-vores	Pioneering fishes	Insect-ivores	DELT anomalies			
Glenns Run - (06-053)																	
Year: 2010																	
3.30	E	08/06/2010	4.7	4(1)	3(3)	1(1)	0(1)	0(1)	2(1)	79(1)	6(5)	47(3)	0(1)	0.0(5)	60(1)	24	
2.90	E	09/30/2010	6.2	4(1)	3(3)	1(1)	0(1)	0(1)	2(1)	58(1)	1(5)	12(5)	0(1)	0.0(5)	878(5)	30	
2.50	E	08/06/2010	7.6	4(1)	3(3)	1(1)	0(1)	0(1)	2(1)	85(1)	4(5)	52(3)	0(1)	0.0(5)	30(1)	24	
0.10	E	09/30/2010	10.7	17(5)	10(5)	1(1)	9(5)	2(3)	8(5)	26(5)	6(5)	3(5)	28(3)	0.0(5)	940(5)	52	
Deep Run - (06-058)																	
Year: 2010																	
2.40	E	09/30/2010	2.5	2(1)	2(1)	1(1)	0(1)	0(1)	1(1)	100(1)	0(5)	43(3)	0(1)	0.0(5)	0(1)	22	
0.30	E	09/30/2010	4.1	7(3)	6(5)	1(1)	3(3)	1(1)	3(3)	90(1)	1(5)	26(5)	9(1)	0.0(5)	93(1)	34	
Rush Run - (06-060)																	
Year: 2010																	
2.80	E	09/03/2010	8.4	7(3)	4(3)	1(1)	1(1)	0(1)	3(3)	75(1)	8(5)	54(3)	7(1)	0.0(5)	598(3)	30	
0.70	E	09/01/2010	12.0	24(5)	12(5)	2(3)	*(5)	4(3)	11(5)	21(5)	19(3)	15(5)	44(3)	0.0(5)	1623(5)	52	
Salt Run - (06-062)																	
Year: 2010																	
0.40	E	09/15/2010	4.0	5(1)	3(3)	2(3)	1(1)	2(3)	2(1)	88(1)	0(5)	1(5)	8(1)	0.0(5)	109(3)	32	

◆ - IBI is low end adjusted.

* - < 200 Total individuals in sample

** - < 50 Total individuals in sample

● - One or more species excluded from IBI calculation.

River Mile	Type	Date	Drainage area (sq mi)	Number of					Percent of Individuals					Rel.No. minus tolerants /(0.3km)	IBI	Modified Iwb	
				Total species	Sunfish species	Sucker species	Intolerant species	Darter species	Simple Lithophils	Tolerant fishes	Omni-vores	Top carnivores	Insect-ivores				DELT anomalies
Short Creek - (06600)																	
Year: 2010																	
18.20	D	08/09/2010	65	20(3)	2(3)	2(3)	3(3)	5(5)	42(5)	12(5)	4(5)	1.0(3)	43(3)	0.0(5)	1782(5)	48	9.3
18.20	D	09/08/2010	65	16(3)	2(3)	2(3)	2(1)	3(3)	51(5)	12(5)	5(5)	2.0(3)	49(3)	0.0(5)	1145(5)	44	8.9
12.70	D	08/09/2010	76	23(5)	4(5)	4(5)	4(3)	3(3)	46(5)	10(5)	8(5)	4.8(3)	77(5)	0.0(5)	534(3)	52	9.5
12.70	D	09/09/2010	76	25(5)	4(5)	3(3)	5(3)	3(3)	56(5)	4(5)	3(5)	4.0(3)	88(5)	0.7(3)	392(3)	48	9.1
11.40	E	08/18/2010	84	9(1)	0(1)	1(1)	1(1)	2(1)	66(5)	8(5)	2(5)	0.0(1)	80(5)	0.0(5)	89(1) *	32	5.3
8.70	D	08/09/2010	87	19(3)	3(3)	5(5)	2(1)	4(3)	65(5)	6(5)	7(5)	9.0(5)	78(5)	0.0(5)	218(3)	48	8.9
8.70	D	09/09/2010	87	18(3)	5(5)	5(5)	2(1)	3(3)	58(5)	10(5)	12(5)	17.0(5)	62(5)	0.4(5)	374(3)	50	9.7
5.80	E	08/08/2010	121	16(3)	4(5)	2(1)	2(1)	3(3)	68(5)	8(5)	4(5)	10.0(5)	80(5)	0.0(5)	111(1) *	44	7.2
4.10	D	08/10/2010	124	23(5)	3(3)	2(1)	4(3)	5(3)	72(5)	5(5)	4(5)	3.1(3)	87(5)	0.0(5)	510(3)	46	8.3
4.10	D	09/14/2010	124	31(5)	3(3)	3(3)	8(5)	7(5)	75(5)	2(5)	2(5)	1.8(3)	87(5)	0.0(5)	1605(5)	54	9.7
3.60	E	08/18/2010	125	16(3)	2(3)	2(1)	2(1)	4(3)	70(5)	2(5)	1(5)	4.4(3)	89(5)	0.0(5)	203(3)	42	6.1
Piney Fork - (06610)																	
Year: 2010																	
0.40	E	09/01/2010	22	21(5)	3(3)	2(3)	1(1)	6(5)	55(5)	18(5)	10(5)	0.7(1)	49(3)	0.0(5)	876(5)	46	8.2
M. Fk. Short Creek - (06617)																	
Year: 2010																	
0.20	E	08/31/2010	24	13(3)	1(1)	2(3)	1(1)	4(5)	43(5)	15(5)	13(5)	0.2(1)	31(3)	0.0(5)	2492(5)	42	na

na - Qualitative data, Modified Iwb not applicable.

◆ - IBI is low end adjusted.

* - < 200 Total individuals in sample

** - < 50 Total individuals in sample

● - One or more species excluded from IBI calculation.

A9 Fish IBI Scores for Short Creek and Direct Ohio River Tributaries, 2010.

River Mile	Type	Date	Drainage area (sq mi)	Number of						Percent of Individuals					Rel.No. minus tolerants /(0.3km)	IBI	
				Total species	Minnow species	Headwater species	Sensitive species	Darter & Sculpin species	Simple Lithophils	Tolerant fishes	Omni- vores	Pioneering fishes	Insect- ivores	DELT anomalies			
<i>Little Short Creek - (06-602)</i>																	
Year: 2010																	
5.00	E	09/01/2010	11.0	11(3)	6(3)	3(3)	1(1)	1(1)	4(3)	63(1)	22(3)	18(5)	5(1)	0.0(5)	1482(5)	34	
3.50	E	08/19/2010	14.0	5(1)	4(3)	2(3)	0(1)	0(1)	3(1)	99(1)	4(5)	45(3)	0(1)	0.3(5)	8(1)	26	
0.10	E	09/01/2010	17.6	22(5)	9(5)	3(3)	8(5)	7(5)	10(5)	19(5)	11(5)	19(5)	28(3)	0.0(5)	1168(5)	56	
<i>Coal Run - (06-604)</i>																	
Year: 2010																	
0.20	E	09/07/2010	2.0	7(3)	5(5)	3(3)	0(1)	1(3)	3(3)	71(1)	29(1)	33(3)	4(1)	0.0(5)	758(5)	34	
<i>Dry Fork - (06-606)</i>																	
Year: 2010																	
0.20	E	09/01/2010	8.5	14(5)	3(1)	2(3)	3(3)	5(5)	6(5)	53(3)	7(5)	23(5)	25(3)	0.0(5)	314(3)	46	
<i>Long Run - (06-607)</i>																	
Year: 2010																	
0.30	E	09/01/2010	6.5	11(3)	4(3)	1(1)	4(3)	4(5)	8(5)	69(1)	11(5)	22(5)	28(3)	0.0(5)	484(3)	42	
<i>Piney Fork - (06-610)</i>																	
Year: 2010																	
10.50	E	08/31/2010	7.6	9(3)	3(3)	2(3)	2(1)	4(5)	5(3)	23(5)	2(5)	36(3)	34(3)	0.0(5)	2176(5)	44	
<i>M. Fk. Short Creek - (06-617)</i>																	
Year: 2010																	
5.40	E	08/30/2010	15.9	14(3)	6(3)	1(1)	3(3)	3(3)	6(3)	22(5)	11(5)	15(5)	10(1)	0.0(5)	1148(5)	42	
<i>S. Fk. Short Creek - (06-618)</i>																	
Year: 2010																	
1.10	E	08/31/2010	14.0	10(3)	4(3)	1(1)	5(3)	3(3)	7(5)	11(5)	1(5)	2(5)	42(3)	0.0(5)	456(3)	44	
<i>Sally Buffalo Creek - (06-619)</i>																	
Year: 2010																	
0.20	E	08/30/2010	9.9	11(3)	2(1)	0(1)	2(1)	3(3)	4(3)	25(5)	2(5)	30(5)	59(5)	0.0(5)	452(3)	40	
<i>N. Fk. Short Creek - (06-620)</i>																	
Year: 2010																	
6.20	E	08/31/2010	11.0	14(3)	5(3)	2(3)	3(3)	4(3)	6(3)	20(5)	5(5)	22(5)	20(1)	0.0(5)	1322(5)	44	

◆ - IBI is low end adjusted.

* - < 200 Total individuals in sample

** - < 50 Total individuals in sample

● - One or more species excluded from IBI calculation.

A9 Fish IBI Scores for Short Creek and Direct Ohio River Tributaries, 2010.

River Mile	Type	Date	Drainage area (sq mi)	Number of						Percent of Individuals					Rel.No. minus tolerants / (0.3km)	IBI
				Total species	Minnow species	Headwater species	Sensitive species	Darter & Sculpin species	Simple Lithophils	Tolerant fishes	Omni-vores	Pioneering fishes	Insect-ivores	DELT anomalies		
0.10	E	08/31/2010	20.0	16(3)	7(3)	2(3)	5(3)	5(5)	7(3)	35(3)	11(5)	27(5)	35(3)	0.0(5)	666(3)	44
<i>Liming Creek - (06-624)</i>																
Year: 2010																
0.20	E	08/30/2010	4.7	13(5)	4(3)	1(1)	2(3)	3(3)	5(5)	59(1)	42(1)	12(5)	9(1)	0.0(5)	1018(5)	38

◆ - IBI is low end adjusted.

* - < 200 Total individuals in sample

** - < 50 Total individuals in sample

● - One or more species excluded from IBI calculation.

Appendix Table 10. Macroinvertebrates collection results

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

Site: Glenss Run
upst. Treadway Run

Collection Date: 08/04/2010 River Code: 06-053 RM: 2.70

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03360	<i>Plumatella sp</i>	+			
03600	<i>Oligochaeta</i>	+			
06830	<i>Gammarus minus</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
11120	<i>Baetis flavistriga</i>	+			
13400	<i>Stenacron sp</i>	+			
15000	<i>Paraleptophlebia sp</i>	+			
17200	<i>Caenis sp</i>	+			
18600	<i>Ephemera sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
23905	<i>Boyeria grafiana</i>	+			
44501	<i>Corixidae</i>	+			
51100	<i>poss. Cernotina sp or Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
68075	<i>Psephenus herricki</i>	+			
68707	<i>Dubiraphia quadrinotata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
71900	<i>Tipula sp</i>	+			
72340	<i>Dixella sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84750	<i>Stictochironomus sp</i>	+			
85840	<i>Tanytarsus sepp</i>	+			
87400	<i>Stratiomys sp</i>	+			
87540	<i>Hemerodromia sp</i>	+			
95100	<i>Physella sp</i>	+			
96900	<i>Ferrissia sp</i>	+			
98200	<i>Pisidium sp</i>	+			

No. Quantitative Taxa: 0 Total Taxa: 40
 No. Qualitative Taxa: 40 ICI:
 Number of Organisms: 0 Qual EPT: 10

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

Site: Glens Run

Collection Date: 08/26/2010 River Code: 06-053 RM: 2.15

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
21200	<i>Calopteryx sp</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
27500	<i>Somatochlora sp</i>	+			
51100	<i>poss. Cernotina sp or Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
68075	<i>Psephenus herricki</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
71900	<i>Tipula sp</i>	+			
72700	<i>Anopheles sp</i>	+			
82885	<i>Cryptotendipes pseudotener</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84750	<i>Stictochironomus sp</i>	+			
87400	<i>Stratiomys sp</i>	+			

No. Quantitative Taxa: 0	Total Taxa: 16
No. Qualitative Taxa: 16	ICI:
Number of Organisms: 0	Qual EPT: 4

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

Site: Glenss Run
Co. Rd. 4

Collection Date: 08/04/2010 River Code: 06-053 RM: 0.10

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+			
06830	<i>Gammarus minus</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
11245	<i>Centroptilum sp</i>	+			
17200	<i>Caenis sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
53800	<i>Hydroptila sp</i>	+			
68707	<i>Dubiraphia quadrinotata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
71900	<i>Tipula sp</i>	+			
74100	<i>Simulium sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	+			
77800	<i>Helopelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
84155	<i>Paralauterborniella nigrohalteralis</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84750	<i>Stictochironomus sp</i>	+			
85800	<i>Tanytarsus sp</i>	+			
85840	<i>Tanytarsus sepp</i>	+			
95100	<i>Physella sp</i>	+			

No. Quantitative Taxa: 0 Total Taxa: 29
 No. Qualitative Taxa: 29 ICI:
 Number of Organisms: 0 Qual EPT: 7

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

Site: Deep Run
adj. Deep Run Rd.

Collection Date: 08/10/2010 River Code: 06-058 RM: 2.40

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03600	<i>Oligochaeta</i>	+			
05800	<i>Caecidotea sp</i>	+			
06830	<i>Gammarus minus</i>	+			
07820	<i>Cambarus (Cambarus) sp A</i>	+			
13400	<i>Stenacron sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
33100	<i>Leuctra sp</i>	+			
47600	<i>Sialis sp</i>	+			
51100	<i>poss. Cernotina sp or Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
69400	<i>Stenelmis sp</i>	+			
70600	<i>Antocha sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77500	<i>Conchapelopia sp</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83800	<i>Microtendipes sp</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84300	<i>Phaenopsectra obediens group</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
95100	<i>Physella sp</i>	+			

No. Quantitative Taxa: 0	Total Taxa: 27
No. Qualitative Taxa: 27	ICI:
Number of Organisms: 0	Qual EPT: 7

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

Site: Deep Run

Collection Date: 08/26/2010 River Code: 06-058 RM: 1.55

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
68700	<i>Dubiraphia sp</i>	+			
69400	<i>Stenelmis sp</i>	+			

No. Quantitative Taxa: 0	Total Taxa: 2
No. Qualitative Taxa: 2	ICI:
Number of Organisms: 0	Qual EPT: 0

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

Site: Deep Run
RR bridge near mouth

Collection Date: 08/10/2010 River Code: 06-058 RM: 0.25

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03600	<i>Oligochaeta</i>	+			
06830	<i>Gammarus minus</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
63900	<i>Laccophilus sp</i>	+			
67800	<i>Tropisternus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
71900	<i>Tipula sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74100	<i>Simulium sp</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			

No. Quantitative Taxa: 0	Total Taxa: 13
No. Qualitative Taxa: 13	ICI:
Number of Organisms: 0	Qual EPT: 2

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

Site: Rush Run

Collection Date: 08/11/2011 River Code: 06-060 RM: 1.00

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03360	<i>Plumatella sp</i>	+			
03600	<i>Oligochaeta</i>	+	No. Quantitative Taxa: 0		Total Taxa: 41
06830	<i>Gammarus minus</i>	+	No. Qualitative Taxa: 41		ICI:
08230	<i>Orconectes (Crockerinus) obscurus</i>	+	Number of Organisms: 0		Qual EPT: 9
13400	<i>Stenacron sp</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
23909	<i>Boyeria vinosa</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
33100	<i>Leuctra sp</i>	+			
47600	<i>Sialis sp</i>	+			
48610	<i>Nigronia fasciata</i>	+			
51100	<i>poss. Cernotina sp or Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
53800	<i>Hydroptila sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
66500	<i>Enochrus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69400	<i>Stenelmis sp</i>	+			
70700	<i>Dicranota sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74100	<i>Simulium sp</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
79761	<i>Pagastia orthogonia</i>	+			
80430	<i>Cricotopus (C.) tremulus group</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	+			
84155	<i>Paralauterborniella nigrohalteralis</i>	+			
84460	<i>Polypedilum (P.) fallax group</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
85840	<i>Tanytarsus sepp</i>	+			
86100	<i>Chrysops sp</i>	+			
86401	<i>Atherix lantha</i>	+			
87540	<i>Hemerodromia sp</i>	+			
95100	<i>Physella sp</i>	+			

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

Site: Rush Run
adj. Rush Run Rd.

Collection Date: 07/22/2010 River Code: 06-060 RM: 2.80

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+			
06830	<i>Gammarus minus</i>	+			
08601	<i>Hydrachnidia</i>	+			
11130	<i>Baetis intercalaris</i>	+			
15000	<i>Paraleptophlebia sp</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
33100	<i>Leuctra sp</i>	+			
47600	<i>Sialis sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69275	<i>Optioservus trivittatus</i>	+			
69400	<i>Stenelmis sp</i>	+			
70600	<i>Antocha sp</i>	+			
70700	<i>Dicranota sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
74100	<i>Simulium sp</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
80427	<i>Cricotopus (C.) politus</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84750	<i>Stictochironomus sp</i>	+			
87540	<i>Hemerodromia sp</i>	+			
95100	<i>Physella sp</i>	+			

No. Quantitative Taxa: 0 Total Taxa: 35

No. Qualitative Taxa: 35 ICI:

Number of Organisms: 0 Qual EPT: 10

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

Site: Rush Run

Collection Date: 08/26/2010 River Code: 06-060 RM: 1.00

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+			
05800	<i>Caecidotea sp</i>	+			
06830	<i>Gammarus minus</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
11130	<i>Baetis intercalaris</i>	+			
13400	<i>Stenacron sp</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
22300	<i>Argia sp</i>	+			
23909	<i>Boyeria vinosa</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
47600	<i>Sialis sp</i>	+			
50315	<i>Chimarra obscura</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69400	<i>Stenelmis sp</i>	+			
70600	<i>Antocha sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
71900	<i>Tipula sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74100	<i>Simulium sp</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
86401	<i>Atherix lantha</i>	+			
94400	<i>Fossaria sp</i>	+			
95100	<i>Physella sp</i>	+			

No. Quantitative Taxa: 0 Total Taxa: 33
 No. Qualitative Taxa: 33 ICI:
 Number of Organisms: 0 Qual EPT: 7

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

Site: Salt Run

Collection Date: 08/26/2010 River Code: 06-062 RM: 0.60

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03600	<i>Oligochaeta</i>	+			
06830	<i>Gammarus minus</i>	+			
07820	<i>Cambarus (Cambarus) sp A</i>	+			
21200	<i>Calopteryx sp</i>	+			
47600	<i>Sialis sp</i>	+			
48610	<i>Nigronia fasciata</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
53800	<i>Hydroptila sp</i>	+			
63300	<i>Hydroporini</i>	+			
67700	<i>Paracymus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
70700	<i>Dicranota sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74100	<i>Simulium sp</i>	+			
77500	<i>Conchapelopia sp</i>	+			
78401	<i>Natarsia species A (sensu Roback, 1978)</i>	+			
79400	<i>Zavreliomyia sp</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			
80430	<i>Cricotopus (C.) tremulus group</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
85800	<i>Tanytarsus sp</i>	+			
86100	<i>Chrysops sp</i>	+			
95100	<i>Physella sp</i>	+			

No. Quantitative Taxa: 0 Total Taxa: 35
 No. Qualitative Taxa: 35 ICI:
 Number of Organisms: 0 Qual EPT: 5

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

Site: Short Creek

Collection Date: 08/18/2010 River Code: 06-600 RM: 18.90

upst. Adena WWTP nr. RR bridge

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+	82730	<i>Chironomus (C.) decorus group</i>	20 +
06700	<i>Crangonyx sp</i>	+	82820	<i>Cryptochironomus sp</i>	+
08230	<i>Orconectes (Crockerinus) obscurus</i>	+	83040	<i>Dicrotendipes neomodestus</i>	20 +
08601	<i>Hydrachnidia</i>	+	83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	+
11200	<i>Callibaetis sp</i>	+	84155	<i>Paralauterborniella nigrohalteralis</i>	+
13400	<i>Stenacron sp</i>	+	84300	<i>Phaenopsectra obediens group</i>	+
16700	<i>Tricorythodes sp</i>	8 +	84450	<i>Polypedilum (Uresipedilum) flavum</i>	20 +
17200	<i>Caenis sp</i>	1 +	84460	<i>Polypedilum (P.) fallax group</i>	39
21200	<i>Calopteryx sp</i>	5 +	84470	<i>Polypedilum (P.) illinoense</i>	+
22001	<i>Coenagrionidae</i>	8 +	84960	<i>Pseudochironomus sp</i>	+
22300	<i>Argia sp</i>	1 +	85230	<i>Cladotanytarsus mancus group</i>	+
23909	<i>Boyeria vinosa</i>	2	85500	<i>Paratanytarsus sp</i>	20
26700	<i>Macromia sp</i>	+	85625	<i>Rheotanytarsus sp</i>	433 +
42700	<i>Belostoma sp</i>	+	85800	<i>Tanytarsus sp</i>	78 +
47600	<i>Sialis sp</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	1082 +
50315	<i>Chimarra obscura</i>	+	86100	<i>Chrysops sp</i>	+
52200	<i>Cheumatopsyche sp</i>	95 +	86200	<i>Tabanus sp</i>	+
52430	<i>Ceratopsyche morosa group</i>	100 +	87540	<i>Hemerodromia sp</i>	125
52530	<i>Hydropsyche depravata group</i>	+	95100	<i>Physella sp</i>	1 +
53800	<i>Hydroptila sp</i>	8 +	96900	<i>Ferrissia sp</i>	8 +
54100	<i>Neotrichia sp</i>	8			
63900	<i>Laccophilus sp</i>	+			
66500	<i>Enochrus sp</i>	+	No. Quantitative Taxa: 34		Total Taxa: 64
67500	<i>Laccobius sp</i>	+	No. Qualitative Taxa: 51		ICI: 42
68075	<i>Psephenus herricki</i>	+	Number of Organisms: 2578		Qual EPT: 9
68708	<i>Dubiraphia vittata group</i>	8 +			
68901	<i>Macronychus glabratus</i>	2			
69400	<i>Stenelmis sp</i>	22 +			
71100	<i>Hexatoma sp</i>	+			
71500	<i>Ormosia sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77120	<i>Ablabesmyia mallochi</i>	20 +			
77500	<i>Conchapelopia sp</i>	78 +			
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	+			
78200	<i>Larsia sp</i>	39			
78450	<i>Nilotanypus fimbriatus</i>	20 +			
80370	<i>Corynoneura lobata</i>	24			
80410	<i>Cricotopus (C.) sp</i>	78			
80420	<i>Cricotopus (C.) bicinctus</i>	20			
80430	<i>Cricotopus (C.) tremulus group</i>	138			
81465	<i>Orthocladius (O.) carlatus</i>	+			
81650	<i>Parametriocnemus sp</i>	39			
82141	<i>Thienemanniella xena</i>	8			

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

Site: Short Creek
upst. Long Run

Collection Date: 08/17/2010 River Code: 06-600 RM: 12.80

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+	No. Quantitative Taxa: 25		Total Taxa: 44
08601	<i>Hydrachnidia</i>	+	No. Qualitative Taxa: 35		ICI: 32
13400	<i>Stenacron sp</i>	38 +	Number of Organisms: 2275		Qual EPT: 6
16700	<i>Tricorythodes sp</i>	18 +			
21200	<i>Calopteryx sp</i>	5 +			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	2 +			
23909	<i>Boyeria vinosa</i>	2 +			
24900	<i>Gomphus sp</i>	+			
26700	<i>Macromia sp</i>	+			
43570	<i>Neoplea sp</i>	+			
47600	<i>Sialis sp</i>	+			
48620	<i>Nigronia serricornis</i>	2 +			
50315	<i>Chimarra obscura</i>	+			
52200	<i>Cheumatopsyche sp</i>	71 +			
52430	<i>Ceratopsyche morosa group</i>	51 +			
53800	<i>Hydroptila sp</i>	+			
59500	<i>Oecetis sp</i>	1			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	1			
68201	<i>Scirtidae</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	14 +			
69400	<i>Stenelmis sp</i>	28 +			
71100	<i>Hexatoma sp</i>	+			
77120	<i>Ablabesmyia mallochii</i>	+			
77500	<i>Conchapelopia sp</i>	94			
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	38			
78200	<i>Larsia sp</i>	19			
78450	<i>Nilotanytus fimbriatus</i>	19			
80420	<i>Cricotopus (C.) bicinctus</i>	19 +			
81650	<i>Parametriocnemus sp</i>	+			
82885	<i>Cryptotendipes pseudotener</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	113 +			
84460	<i>Polypedilum (P.) fallax group</i>	132 +			
84470	<i>Polypedilum (P.) illinoense</i>	+			
85500	<i>Paratanytarsus sp</i>	19			
85625	<i>Rheotanytarsus sp</i>	547 +			
85800	<i>Tanytarsus sp</i>	113			
85821	<i>Tanytarsus glabrescens group sp 7</i>	887 +			
86100	<i>Chrysops sp</i>	+			
87540	<i>Hemerodromia sp</i>	41 +			
95100	<i>Physella sp</i>	1			

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

Site: Short Creek

Collection Date: 08/18/2010 River Code: 06-600 RM: 8.40

dst. Dillonvale WWTP

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	8	79030	<i>Tanypus "punctipennis" (sensu Roback, 1977)</i>	+
01801	<i>Turbellaria</i>	3 +	80410	<i>Cricotopus (C.) sp</i>	51 +
01900	<i>Nemertea</i>	25	80420	<i>Cricotopus (C.) bicinctus</i>	+
03600	<i>Oligochaeta</i>	+	80430	<i>Cricotopus (C.) tremulus group</i>	64
06201	<i>Hyaella azteca</i>	3	81650	<i>Parametrioctenemus sp</i>	13
06700	<i>Crangonyx sp</i>	+	82100	<i>Thienemanniella sp</i>	8
08230	<i>Orconectes (Crockerinus) obscurus</i>	+	82730	<i>Chironomus (C.) decorus group</i>	+
08601	<i>Hydrachnidia</i>	8	82800	<i>Cladopelma sp</i>	+
13400	<i>Stenacron sp</i>	1 +	82820	<i>Cryptochironomus sp</i>	13 +
16700	<i>Tricorythodes sp</i>	144 +	82885	<i>Cryptotendipes pseudotener</i>	+
17200	<i>Caenis sp</i>	72 +	83040	<i>Dicrotendipes neomodestus</i>	191 +
21200	<i>Calopteryx sp</i>	3 +	83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	25
22300	<i>Argia sp</i>	2 +	84155	<i>Paralauterborniella nigrohalteralis</i>	13
23909	<i>Boyeria vinosa</i>	+	84300	<i>Phaenopsectra obediens group</i>	38 +
26700	<i>Macromia sp</i>	+	84460	<i>Polypedilum (P.) fallax group</i>	38
28001	<i>Libellulidae</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
44501	<i>Corixidae</i>	+	85625	<i>Rheotanytarsus sp</i>	64 +
47600	<i>Sialis sp</i>	+	85800	<i>Tanytarsus sp</i>	102 +
48620	<i>Nigronia serricornis</i>	1 +	85821	<i>Tanytarsus glabrescens group sp 7</i>	509 +
50315	<i>Chimarra obscura</i>	+	86401	<i>Atherix lantha</i>	+
51300	<i>Neureclipsis sp</i>	1	87540	<i>Hemerodromia sp</i>	99
52200	<i>Cheumatopsyche sp</i>	87 +	95100	<i>Physella sp</i>	1 +
52430	<i>Ceratopsyche morosa group</i>	59 +	96900	<i>Ferrissia sp</i>	+
52540	<i>Hydropsyche dicantha</i>	16 +	98200	<i>Pisidium sp</i>	1 +
53800	<i>Hydroptila sp</i>	112 +			
59510	<i>Oecetis avara</i>	2			
60300	<i>Dineutus sp</i>	2	No. Quantitative Taxa: 44		Total Taxa: 68
65800	<i>Berosus sp</i>	1 +	No. Qualitative Taxa: 49		ICI: 42
67800	<i>Tropisternus sp</i>	+	Number of Organisms: 1948		Qual EPT: 8
68025	<i>Ectopria sp</i>	2			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	1 +			
68901	<i>Macronychus glabratus</i>	19 +			
69400	<i>Stenelmis sp</i>	35 +			
69713	<i>Lutrochus laticeps</i>	22 +			
72700	<i>Anopheles sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77120	<i>Ablabesmyia mallochi</i>	25			
77355	<i>Clinotanytus pinguis</i>	+			
77500	<i>Conchapelopia sp</i>	38			
77800	<i>Helopelopia sp</i>	13			
78450	<i>Nilotanytus fimbriatus</i>	13			
78655	<i>Procladius (Holotanytus) sp</i>	+			

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: Short Creek
 St. Rt. 150

Collection Date: 08/17/2010 River Code: 06-600 RM: 4.96

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01900	<i>Nemertea</i>	16	80430	<i>Cricotopus (C.) tremulus group</i>	73 +
03360	<i>Plumatella sp</i>	1	82800	<i>Cladopelma sp</i>	+
03600	<i>Oligochaeta</i>	16 +	82885	<i>Cryptotendipes pseudotener</i>	+
05800	<i>Caecidotea sp</i>	+	84155	<i>Paralauterborniella nigrohalteralis</i>	+
06201	<i>Hyaella azteca</i>	+	84300	<i>Phaenopsectra obediens group</i>	+
06810	<i>Gammarus fasciatus</i>	+	84460	<i>Polypedilum (P.) fallax group</i>	18
08230	<i>Orconectes (Crockerinus) obscurus</i>	1 +	84470	<i>Polypedilum (P.) illinoense</i>	+
08601	<i>Hydrachnidia</i>	17	85625	<i>Rheotanytarsus sp</i>	752 +
13400	<i>Stenacron sp</i>	18 +	85800	<i>Tanytarsus sp</i>	18 +
16700	<i>Tricorythodes sp</i>	748 +	85821	<i>Tanytarsus glabrescens group sp 7</i>	367
17200	<i>Caenis sp</i>	1 +	86401	<i>Atherix lantha</i>	+
21200	<i>Calopteryx sp</i>	+	87540	<i>Hemerodromia sp</i>	67
22001	<i>Coenagrionidae</i>	+	96900	<i>Ferrissia sp</i>	+
22300	<i>Argia sp</i>	1 +			
23909	<i>Boyeria vinosa</i>	+	No. Quantitative Taxa: 32		Total Taxa: 57
24501	<i>Gomphidae</i>	+	No. Qualitative Taxa: 44		ICI: 44
28001	<i>Libellulidae</i>	+	Number of Organisms: 3124		Qual EPT: 10
45100	<i>Palmacorixa sp</i>	+			
45900	<i>Notonecta sp</i>	+			
47600	<i>Sialis sp</i>	+			
50315	<i>Chimarra obscura</i>	10 +			
51300	<i>Neureclipsis sp</i>	8 +			
52200	<i>Cheumatopsyche sp</i>	125 +			
52430	<i>Ceratopsyche morosa group</i>	26 +			
52540	<i>Hydropsyche dicantha</i>	18 +			
53800	<i>Hydroptila sp</i>	299 +			
54100	<i>Neotrichia sp</i>	9			
59500	<i>Oecetis sp</i>	9			
59510	<i>Oecetis avara</i>	+			
60300	<i>Dineutus sp</i>	4 +			
65800	<i>Berosus sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	12 +			
69400	<i>Stenelmis sp</i>	23 +			
69713	<i>Lutrochus laticeps</i>	1			
72700	<i>Anopheles sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77500	<i>Conchapelopia sp</i>	73			
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	73 +			
78450	<i>Nilotanytus fimbriatus</i>	18			
78655	<i>Procladius (Holotanytus) sp</i>	+			
80370	<i>Corynoneura lobata</i>	8			
80410	<i>Cricotopus (C.) sp</i>	294			

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

Site: Little Short Creek
Twp. Rd. 472

Collection Date: 08/10/2010 River Code: 06-602 RM: 4.99

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+	94400	<i>Fossaria sp</i>	+
06830	<i>Gammarus minus</i>	+	95100	<i>Physella sp</i>	+
08230	<i>Orconectes (Crockerinus) obscurus</i>	+	96900	<i>Ferrissia sp</i>	+
08601	<i>Hydrachnidia</i>	+	98200	<i>Pisidium sp</i>	+
11130	<i>Baetis intercalaris</i>	+			
11245	<i>Centroptilum sp</i>	+	No. Quantitative Taxa: 0		Total Taxa: 48
13400	<i>Stenacron sp</i>	+	No. Qualitative Taxa: 48		ICI:
13521	<i>Stenonema femoratum</i>	+	Number of Organisms: 0		Qual EPT: 15
17200	<i>Caenis sp</i>	+			
18600	<i>Ephemera sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
33100	<i>Leuctra sp</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
44501	<i>Corixidae</i>	+			
47600	<i>Sialis sp</i>	+			
50315	<i>Chimarra obscura</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
63300	<i>Hydroporini</i>	+			
67500	<i>Laccobius sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
70700	<i>Dicranota sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
82885	<i>Cryptotendipes pseudotener</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84750	<i>Stictochironomus sp</i>	+			
85720	<i>Stempellinella fimbriata</i>	+			
85800	<i>Tanytarsus sp</i>	+			
85840	<i>Tanytarsus sepp</i>	+			
86100	<i>Chrysops sp</i>	+			
87400	<i>Stratiomys sp</i>	+			
87540	<i>Hemerodromia sp</i>	+			

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

Site: Little Short Creek
Mt. Pleasant Rd.

Collection Date: 08/10/2010 River Code: 06-602 RM: 0.08

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
06830	<i>Gammarus minus</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
11130	<i>Baetis intercalaris</i>	+			
13400	<i>Stenacron sp</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
23909	<i>Boyeria vinosa</i>	+			
34120	<i>Acroneuria carolinensis</i>	+			
47600	<i>Sialis sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
52540	<i>Hydropsyche dicantha</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
68130	<i>Helichus sp</i>	+			
68601	<i>Ancyronyx variegata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69400	<i>Stenelmis sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74100	<i>Simulium sp</i>	+			
80410	<i>Cricotopus (C.) sp</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84460	<i>Polypedilum (P.) fallax group</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
85800	<i>Tanytarsus sp</i>	+			
85840	<i>Tanytarsus sepp</i>	+			
87540	<i>Hemerodromia sp</i>	+			

No. Quantitative Taxa: 0 Total Taxa: 34
 No. Qualitative Taxa: 34 ICI:
 Number of Organisms: 0 Qual EPT: 12

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

Site: Coal Run

Collection Date: 08/10/2010 River Code: 06-604 RM: 0.15

St. Rt. 647/Twp. Rd. 475

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+	83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	+
03600	<i>Oligochaeta</i>	+			
04664	<i>Helobdella stagnalis</i>	+	84155	<i>Paralauterborniella nigrohalteralis</i>	+
06830	<i>Gammarus minus</i>	+	84210	<i>Paratendipes albimanus or P. duplicatus</i>	+
08230	<i>Orconectes (Crockerinus) obscurus</i>	+	84280	<i>Phaenopsectra sp or Tribelos sp</i>	+
08601	<i>Hydrachnidia</i>	+	84750	<i>Stictochironomus sp</i>	+
11130	<i>Baetis intercalaris</i>	+	85800	<i>Tanytarsus sp</i>	+
13400	<i>Stenacron sp</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	+
13521	<i>Stenonema femoratum</i>	+	86100	<i>Chrysops sp</i>	+
17200	<i>Caenis sp</i>	+	86401	<i>Atherix lantha</i>	+
18600	<i>Ephemera sp</i>	+	94400	<i>Fossaria sp</i>	+
21200	<i>Calopteryx sp</i>	+	95100	<i>Physella sp</i>	+
22001	<i>Coenagrionidae</i>	+	98200	<i>Pisidium sp</i>	+
22300	<i>Argia sp</i>	+			
25510	<i>Stylogomphus albistylus</i>	+	No. Quantitative Taxa: 0		Total Taxa: 56
27500	<i>Somatochlora sp</i>	+	No. Qualitative Taxa: 56		ICI:
34130	<i>Acroneuria frisoni</i>	+	Number of Organisms: 0		Qual EPT: 12
45300	<i>Sigara sp</i>	+			
45400	<i>Trichocorixa sp</i>	+			
47600	<i>Sialis sp</i>	+			
48620	<i>Nigronia serricornis</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
60900	<i>Peltodytes sp</i>	+			
67800	<i>Tropisternus sp</i>	+			
68025	<i>Ectopria sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68707	<i>Dubiraphia quadrinotata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
70700	<i>Dicranota sp</i>	+			
71900	<i>Tipula sp</i>	+			
72340	<i>Dixella sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
79720	<i>Diamesa sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			

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

Site: Dry Fork

Collection Date: 08/11/2010 River Code: 06-606 RM: 0.15

near mouth, adj. Dry Fork Rd.

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03600	<i>Oligochaeta</i>	+			
06830	<i>Gammarus minus</i>	+			
11130	<i>Baetis intercalaris</i>	+			
13400	<i>Stenacron sp</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	+			
24900	<i>Gomphus sp</i>	+			
33100	<i>Leuctra sp</i>	+			
45300	<i>Sigara sp</i>	+			
47600	<i>Sialis sp</i>	+			
48620	<i>Nigronia serricornis</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
63300	<i>Hydroporini</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
74100	<i>Simulium sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
82885	<i>Cryptotendipes pseudotener</i>	+			
84155	<i>Paralauterborniella nigrohalteralis</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
85800	<i>Tanytarsus sp</i>	+			
86100	<i>Chrysops sp</i>	+			
95100	<i>Physella sp</i>	+			

No. Quantitative Taxa: 0 Total Taxa: 36
 No. Qualitative Taxa: 36 ICI:
 Number of Organisms: 0 Qual EPT: 11

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

Site: Long Run

Collection Date: 08/11/2010 River Code: 06-607 RM: 0.26

Co. Rd. 7

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
06830	<i>Gammarus minus</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
08601	<i>Hydrachnidia</i>	+			
13400	<i>Stenacron sp</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
22300	<i>Argia sp</i>	+			
23909	<i>Boyeria vinosa</i>	+			
24900	<i>Gomphus sp</i>	+			
33100	<i>Leuctra sp</i>	+			
47600	<i>Sialis sp</i>	+			
48620	<i>Nigronia serricornis</i>	+			
50301	<i>Chimarra aterrima</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
64800	<i>Uvarus sp</i>	+			
68130	<i>Helichus sp</i>	+			
68707	<i>Dubiraphia quadrinotata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
70600	<i>Antocha sp</i>	+			
70700	<i>Dicranota sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
71900	<i>Tipula sp</i>	+			
71910	<i>Tipula abdominalis</i>	+			
72700	<i>Anopheles sp</i>	+			
74100	<i>Simulium sp</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82885	<i>Cryptotendipes pseudotener</i>	+			
84155	<i>Paralauterborniella nigrohalteralis</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
85821	<i>Tanytarsus glabrescens group sp 7</i>	+			
86401	<i>Atherix lantha</i>	+			
87540	<i>Hemerodromia sp</i>	+			
89001	<i>Sciomyzidae</i>	+			
95100	<i>Physella sp</i>	+			

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

Site: Piney Fork
Twp. Rd. 192

Collection Date: 08/11/2010 River Code: 06-610 RM: 10.51

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03600	<i>Oligochaeta</i>	+			
06830	<i>Gammarus minus</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
11130	<i>Baetis intercalaris</i>	+			
13400	<i>Stenacron sp</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
22300	<i>Argia sp</i>	+			
23909	<i>Boyeria vinosa</i>	+			
50301	<i>Chimarra aterrima</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
63300	<i>Hydroporini</i>	+			
68700	<i>Dubiraphia sp</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69400	<i>Stenelmis sp</i>	+			
70700	<i>Dicranota sp</i>	+			
71900	<i>Tipula sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			
80430	<i>Cricotopus (C.) tremulus group</i>	+			
82141	<i>Thienemanniella xena</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84750	<i>Stictochironomus sp</i>	+			
86100	<i>Chrysops sp</i>	+			
98600	<i>Sphaerium sp</i>	+			

No. Quantitative Taxa: 0	Total Taxa: 33
No. Qualitative Taxa: 33	ICI:
Number of Organisms: 0	Qual EPT: 9

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: Piney Fork
 adj. St. Rt. 150 nr. mouth

Collection Date: 08/17/2010 River Code: 06-610 RM: 0.35

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	7			
01900	<i>Nemertea</i>	5			
03600	<i>Oligochaeta</i>	2 +			
06700	<i>Crangonyx sp</i>	+			
11130	<i>Baetis intercalaris</i>	115 +			
12200	<i>Isonychia sp</i>	21 +			
13400	<i>Stenacron sp</i>	21 +			
16700	<i>Tricorythodes sp</i>	26			
17200	<i>Caenis sp</i>	4 +			
21200	<i>Calopteryx sp</i>	4 +			
25510	<i>Stylogomphus albistylus</i>	+			
33100	<i>Leuctra sp</i>	+			
47600	<i>Sialis sp</i>	+			
48620	<i>Nigronia serricornis</i>	+			
50315	<i>Chimarra obscura</i>	15			
52200	<i>Cheumatopsyche sp</i>	259 +			
52430	<i>Ceratopsyche morosa group</i>	127 +			
52530	<i>Hydropsyche depravata group</i>	9 +			
52540	<i>Hydropsyche dicantha</i>	1			
53800	<i>Hydroptila sp</i>	1			
67500	<i>Laccobius sp</i>	+			
68601	<i>Ancyronyx variegata</i>	1			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	15			
69400	<i>Stenelmis sp</i>	22 +			
71900	<i>Tipula sp</i>	+			
74100	<i>Simulium sp</i>	+			
77500	<i>Conchapelopia sp</i>	60			
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	4			
77800	<i>Helopelopia sp</i>	14			
78450	<i>Nilotanytus fimbriatus</i>	32			
80370	<i>Corynoneura lobata</i>	8			
80410	<i>Cricotopus (C.) sp</i>	13			
81650	<i>Parametriocnemus sp</i>	78 +			
82141	<i>Thienemanniella xena</i>	12			
82730	<i>Chironomus (C.) decorus group</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	17			
84460	<i>Polypedilum (P.) fallax group</i>	17			
85500	<i>Paratanytarsus sp</i>	4			
85625	<i>Rheotanytarsus sp</i>	118 +			
85800	<i>Tanytarsus sp</i>	9			
85821	<i>Tanytarsus glabrescens group sp 7</i>	144			
85840	<i>Tanytarsus sepp</i>	9			
87540	<i>Hemerodromia sp</i>	14 +			

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

Site: Middle Fork Short Creek
2nd Co. Rd. 15 bridge dst. Cadiz WWTP

Collection Date: 08/05/2010 River Code: 06-617 RM: 5.35

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03600	<i>Oligochaeta</i>	+			
04664	<i>Helobdella stagnalis</i>	+			
06700	<i>Crangonyx sp</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	+			
23909	<i>Boyeria vinosa</i>	+			
27500	<i>Somatochlora sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
60900	<i>Peltodytes sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74100	<i>Simulium sp</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	+			
78401	<i>Natarsia species A (sensu Roback, 1978)</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			
80430	<i>Cricotopus (C.) tremulus group</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
82885	<i>Cryptotendipes pseudotener</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+			
85500	<i>Paratanytarsus sp</i>	+			

No. Quantitative Taxa: 0 Total Taxa: 30
 No. Qualitative Taxa: 30 ICI:
 Number of Organisms: 0 Qual EPT: 3

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

Site: Middle Fork Short Creek

Collection Date: 08/18/2010 River Code: 06-617 RM: 1.60

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03600	<i>Oligochaeta</i>	2 +	No. Quantitative Taxa: 24		Total Taxa: 42
06830	<i>Gammarus minus</i>	2 +	No. Qualitative Taxa: 28		ICI: 34
08230	<i>Orconectes (Crockerinus) obscurus</i>	+	Number of Organisms: 1130		Qual EPT: 5
11200	<i>Callibaetis sp</i>	+			
13400	<i>Stenacron sp</i>	1 +			
21200	<i>Calopteryx sp</i>	1 +			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	2 +			
27500	<i>Somatochlora sp</i>	+			
51001	<i>Polycentropodidae</i>	1			
52200	<i>Cheumatopsyche sp</i>	158 +			
52430	<i>Ceratopsyche morosa group</i>	11 +			
52440	<i>Ceratopsyche slossonae</i>	+			
68075	<i>Psephenus herricki</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	13 +			
71900	<i>Tipula sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	35			
77500	<i>Conchapelopia sp</i>	43			
80370	<i>Corynoneura lobata</i>	100			
81650	<i>Parametriocnemus sp</i>	21			
82141	<i>Thienemanniella xena</i>	59			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	191 +			
84460	<i>Polypedilum (P.) fallax group</i>	149			
84750	<i>Stictochironomus sp</i>	+			
85500	<i>Paratanytarsus sp</i>	21			
85625	<i>Rheotanytarsus sp</i>	28			
85800	<i>Tanytarsus sp</i>	7 +			
85802	<i>Tanytarsus n. sp nr. curticornis</i>	7			
85821	<i>Tanytarsus glabrescens group sp 7</i>	191			
85840	<i>Tanytarsus sepp</i>	78			
86100	<i>Chrysops sp</i>	+			
86401	<i>Atherix lantha</i>	+			
87400	<i>Stratiomys sp</i>	+			
87540	<i>Hemerodromia sp</i>	5			
95100	<i>Physella sp</i>	+			
96900	<i>Ferrissia sp</i>	4			
98600	<i>Sphaerium sp</i>	+			

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

Site: South Fork Short Creek
Twp. Rd. 83

Collection Date: 08/11/2010 River Code: 06-618 RM: 1.13

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+			
06830	<i>Gammarus minus</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
21200	<i>Calopteryx sp</i>	+			
22300	<i>Argia sp</i>	+			
24900	<i>Gomphus sp</i>	+			
26501	<i>Macromiidae</i>	+			
47600	<i>Sialis sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77500	<i>Conchapelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
85800	<i>Tanytarsus sp</i>	+			
86401	<i>Atherix lantha</i>	+			
95100	<i>Physella sp</i>	+			

No. Quantitative Taxa: 0	Total Taxa: 29
No. Qualitative Taxa: 29	ICI:
Number of Organisms: 0	Qual EPT: 7

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

Site: Sally Buffalo Creek
just dst. Cadiz WWTP

Collection Date: 08/05/2010 River Code: 06-619 RM: 0.17

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+			
06700	<i>Crangonyx sp</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
21300	<i>Hetaerina sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	+			
23909	<i>Boyeria vinosa</i>	+			
27000	<i>Corduliidae or Libellulidae</i>	+			
47600	<i>Sialis sp</i>	+			
48620	<i>Nigronia serricornis</i>	+			
50315	<i>Chimarra obscura</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
63300	<i>Hydroporini</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69400	<i>Stenelmis sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77130	<i>Ablabesmyia rhamphe group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
85500	<i>Paratanytarsus sp</i>	+			
85840	<i>Tanytarsus sepp</i>	+			
86100	<i>Chrysops sp</i>	+			
87400	<i>Stratiomys sp</i>	+			
95100	<i>Physella sp</i>	+			
98200	<i>Pisidium sp</i>	+			

No. Quantitative Taxa: 0	Total Taxa: 33
No. Qualitative Taxa: 33	ICI:
Number of Organisms: 0	Qual EPT: 3

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

Site: North Fork Short Creek
upst. Unionvale Rd.

Collection Date: 08/11/2010 River Code: 06-620 RM: 6.21

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
06201	<i>Hyalella azteca</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
11200	<i>Callibaetis sp</i>	+			
13400	<i>Stenacron sp</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	+			
47600	<i>Sialis sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
53800	<i>Hydroptila sp</i>	+			
66500	<i>Enochrus sp</i>	+			
67800	<i>Tropisternus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69400	<i>Stenelmis sp</i>	+			
71900	<i>Tipula sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
84300	<i>Phaenopsectra obediens group</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
87501	<i>Empididae</i>	+			
95100	<i>Physella sp</i>	+			

No. Quantitative Taxa: 0 Total Taxa: 30
 No. Qualitative Taxa: 30 ICI:
 Number of Organisms: 0 Qual EPT: 7

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

Site: North Fork Short Creek

Collection Date: 08/11/2010 River Code: 06-620 RM: 0.60

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+			
06830	<i>Gammarus minus</i>	+			
08230	<i>Orconectes (Crockerinus) obscurus</i>	+			
13400	<i>Stenacron sp</i>	+			
17200	<i>Caenis sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
24900	<i>Gomphus sp</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
33100	<i>Leuctra sp</i>	+			
47600	<i>Sialis sp</i>	+			
48620	<i>Nigronia serricornis</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
62700	<i>Desmopachria sp</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
70700	<i>Dicranota sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77500	<i>Conchapelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
80410	<i>Cricotopus (C.) sp</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
84155	<i>Paralauterborniella nigrohalteralis</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
85840	<i>Tanytarsus sepp</i>	+			
86401	<i>Atherix lantha</i>	+			
87540	<i>Hemerodromia sp</i>	+			

No. Quantitative Taxa: 0 Total Taxa: 34
 No. Qualitative Taxa: 34 ICI:
 Number of Organisms: 0 Qual EPT: 7

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Site: Liming Creek

Collection Date: 08/05/2010 River Code: 06-624 RM: 0.15

Twp. Rd. 76

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+	98200	<i>Pisidium sp</i>	+
03600	<i>Oligochaeta</i>	+			
04664	<i>Helobdella stagnalis</i>	+	No. Quantitative Taxa: 0		Total Taxa: 45
06201	<i>Hyalella azteca</i>	+	No. Qualitative Taxa: 45		ICI:
08230	<i>Orconectes (Crockerinus) obscurus</i>	+	Number of Organisms: 0		Qual EPT: 7
08601	<i>Hydrachnidia</i>	+			
11130	<i>Baetis intercalaris</i>	+			
11200	<i>Callibaetis sp</i>	+			
13400	<i>Stenacron sp</i>	+			
21200	<i>Calopteryx sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	+			
23600	<i>Aeshna sp</i>	+			
23804	<i>Basiaeschna janata</i>	+			
27500	<i>Somatochlora sp</i>	+			
45300	<i>Sigara sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
53800	<i>Hydroptila sp</i>	+			
66500	<i>Enochrus sp</i>	+			
67500	<i>Laccobius sp</i>	+			
71900	<i>Tipula sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77130	<i>Ablabesmyia rhamphe group</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
85230	<i>Cladotanytarsus mancus group</i>	+			
85500	<i>Paratanytarsus sp</i>	+			
85800	<i>Tanytarsus sp</i>	+			
85840	<i>Tanytarsus sepp</i>	+			
87540	<i>Hemerodromia sp</i>	+			
95100	<i>Physella sp</i>	+			

Appendix Table 11. Macroinvertebrate Invertebrate Community Index (ICI) scores and metrics

A11 Macroinvertebrate ICI scores for Short Creek and Direct Ohio River Tributaries, 2010.

River Mile	Drainage Area (sq mi)	Number of				Percent:					Qual. EPT	Eco-region	ICI
		Total Taxa	Mayfly Taxa	Caddisfly Taxa	Dipteran Taxa	Mayflies	Caddisflies	Tany-tarsini	Other Dipt/NI	Tolerant Organisms			
Short Creek (06-600)													
Year: 2010													
18.90	64.0	34(4)	2(0)	4(6)	19(4)	0.3(2)	8.2(4)	62.6(6)	27.0(6)	3.4(6)	9(4)	4	42
12.80	76.2	25(4)	2(0)	3(4)	12(2)	2.5(2)	5.4(2)	68.8(6)	20.9(6)	6.7(4)	6(2)	4	32
8.40	87.0	44(6)	3(2)	6(6)	18(4)	11.1(2)	14.2(4)	34.7(6)	35.5(4)	2.0(6)	8(2)	4	42
4.96	123.0	32(4)	3(2)	8(6)	11(2)	24.6(4)	16.1(4)	36.4(6)	21.6(6)	1.1(6)	10(4)	4	44
Piney Fork (06-610)													
Year: 2010													
0.35	22.4	34(4)	5(4)	6(6)	16(4)	15.5(4)	34.1(6)	23.5(4)	23.4(6)	1.6(6)	8(4)	4	48
Middle Fork Short Creek (06-617)													
Year: 2010													
1.60	23.2	24(2)	1(0)	3(6)	14(4)	0.1(2)	15.0(6)	29.4(6)	54.1(2)	13.7(4)	5(2)	4	34