

National Pollutant Discharge Elimination System (NPDES) Permit Program

F A C T S H E E T

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for the **City of Sidney WWTP**

Public Notice No.: 11-05-014
Public Notice Date: May 11, 2011
Comment Period Ends: June 11, 2011

OEPA Permit No.: **1PD00009* OD**
Application No.: OH0027421

Name and Address of Applicant:

City of Sidney Wastewater Treatment Plant
201 West Poplar
Sidney, Ohio 45365

Name and Address of Facility Where
Discharge Occurs:

City of Sidney Wastewater Treatment Plant
1091 Childrens-Home Road
Sidney, Ohio 45365
Shelby County

Receiving Water: **Great Miami River**

Subsequent
Stream Network: **Ohio River**

Introduction

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations, Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency, as well as the methods by which the public can participate in the process of finalizing those actions.

This Fact Sheet is prepared in order to document the technical basis and risk management decisions that are considered in the determination of water quality based NPDES Permit effluent limitations. The technical basis for the Fact Sheet may consist of evaluations of promulgated effluent guidelines, existing effluent quality, instream biological, chemical and physical conditions, and the relative risk of alternative effluent limitations. This Fact Sheet details the discretionary decision-making process empowered to the Director by the Clean Water Act and Ohio Water Pollution Control Law (ORC 6111). Decisions to award variances to Water Quality Standards or promulgated effluent guidelines for economic or technological reasons will also be justified in the Fact Sheet where necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the Clean Water Act. Many of these have already been established by U.S. EPA in the effluent guideline regulations (a.k.a. categorical regulations) for industry categories in 40 CFR Parts 405-499. Technology-based regulations for publicly-owned treatment works are listed in the Secondary Treatment Regulations (40 CFR Part 133). If regulations have not been established for a category of dischargers, the director may establish technology-based limits based on best professional judgment (BPJ).

Ohio EPA reviews the need for water-quality-based limits on a pollutant-by-pollutant basis. Wasteload allocations are used to develop these limits based on the pollutants that have been detected in the discharge, and the receiving water's assimilative capacity. The assimilative capacity depends on the flow in the water receiving the discharge, and the concentration of the pollutant upstream. The greater the upstream flow, and the lower the upstream concentration, the greater the assimilative capacity is. Assimilative capacity may represent dilution (as

in allocations for metals), or it may also incorporate the break-down of pollutants in the receiving water (as in allocations for oxygen-demanding materials).

The need for water-quality-based limits is determined by comparing the wasteload allocation for a pollutant to a measure of the effluent quality. The measure of effluent quality is called PEQ - Projected Effluent Quality. This is a statistical measure of the average and maximum effluent values for a pollutant. As with any statistical method, the more data that exists for a given pollutant, the more likely that PEQ will match the actual observed data. If there is a small data set for a given pollutant, the highest measured value is multiplied by a statistical factor to obtain a PEQ; for example if only one sample exists, the factor is 6.2, for two samples - 3.8, for three samples - 3.0. The factors continue to decline as samples sizes increase. These factors are intended to account for effluent variability, but if the pollutant concentrations are fairly constant, these factors may make PEQ appear larger than it would be shown to be if more sample results existed.

Summary of Permit Conditions

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the current permit, although some monitoring frequencies might have changed: flow, temperature, dissolved oxygen, CBOD₅, total suspended solids, total phosphorus, nitrite+nitrate-nitrogen, fecal coliform, total Kjeldahl nitrogen, oil and grease, pH, free cyanide, cadmium, total chromium, hexavalent chromium, copper, lead, mercury, nickel, zinc, total residual chlorine, total dissolved solids and silver.

New water quality-based effluent limits are proposed for ammonia-nitrogen based on Waste Load Allocation (WLA). New final effluent limits are proposed for *Escherichia coli* based on WQS

Annual chronic toxicity testing with the determination of acute endpoints is proposed for the life of the permit. Available data do not indicate that the plant's effluent poses a toxicity problem, but federal NPDES application requirements at 40 CFR 122.21 require a permit holder to submit the results of four toxicity tests as part of its NPDES renewal application. The proposed monitoring will fulfill this requirement and adequately characterize toxicity in the plant's effluent.

In Part II of the permit, special conditions are included that address sanitary sewer overflow reporting; operator certification, minimum staffing and operator of record, outfall signage and pretreatment program requirements.

In Part I. C. Schedule of Compliance, the following requirement has been added.

- a. The city of Sidney shall conduct a comprehensive analysis of all feasible alternatives necessary to eliminate the bypass at the treatment plant and any overflows in the collection system.
- b. Under municipal pretreatment schedule, the city of Sidney shall evaluate the adequacy of local industrial user limitations to attain compliance with final table limits.
- c. The city of Sidney will be required to meet ammonia and *E.coli* limits.

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Procedures for Participation in the Formulation of Final Determinations

The draft action shall be issued as a final action unless the Director revises the draft after consideration of the record of a public meeting or written comments, or upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty days of the date of the Public Notice, any person may request or petition for a public meeting for presentation of evidence, statements or opinions. The purpose of the public meeting is to obtain additional evidence. Statements concerning the issues raised by the party requesting the meeting are invited. Evidence may be presented by the applicant, the state, and other parties, and following presentation of such evidence other interested persons may present testimony of facts or statements of opinion.

Requests for public meetings shall be in writing and shall state the action of the Director objected to, the questions to be considered, and the reasons the action is contested. Such requests should be addressed to:

**Legal Records Section
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216-1049**

Interested persons are invited to submit written comments upon the discharge permit. Comments should be submitted in person or by mail no later than 30 days after the date of this Public Notice. Deliver or mail all comments to:

**Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits and Compliance Section
P.O. Box 1049
Columbus, Ohio 43216-1049**

The OEPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

Citizens may conduct file reviews regarding specific companies or sites. Appointments are necessary to conduct file reviews, because requests to review files have increased dramatically in recent years. The first 250 pages copied are free. For requests to copy more than 250 pages, there is a five-cent charge for each page copied. Payment is required by check or money order, made payable to Treasurer State of Ohio.

For additional information about this fact sheet or the draft permit, contact Raj Chakrabarti by phone (614) 644-2027 or by email raj.chakrabarti@epa.state.oh.us. You may also contact Sandy Leibfritz by phone (937) 285-6104 or by email sandy.leibfritz@epa.state.oh.us.

Location of Discharge

The Sidney Wastewater Treatment Plant (WWTP) is located in Shelby County and discharges to the Great Miami River at River Mile 128.68. This portion of the Great Miami is identified by Ohio EPA River Code 14-001 and USEPA River Reach Number 05080001-028. The Great Miami flows into the Ohio River.

The Great Miami is designated for the following uses: Exceptional Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, and Class A Primary Contact Recreation. Figure 1 shows the approximate location of the plant and the surrounding area. The Sidney WWTP is in the Eastern Corn Belt Plain.

Use designations define the goals and expectations of a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio WQS (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules -08 through -32 of the Ohio WQS. Once the goals are set, numeric water quality standards are developed to protect these uses. Different uses have different water quality criteria.

Use designations for aquatic life protection include habitats for coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal Clean Water Act. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the Clean Water Act goals because of human-caused conditions that cannot be remedied without causing fundamental changes to land use and widespread economic impact. The dredging and clearing of some small streams to support agricultural or urban drainage is the most common of these conditions. These streams are given Modified Warmwater or Limited Resource Water designations.

Recreation uses are defined by the depth of the waterbody and the potential for wading or swimming. Uses are defined for bathing waters, swimming/canoeing (Primary Contact) and wading only (Secondary Contact - generally waters too shallow for swimming or canoeing).

Water supply uses are defined by the actual or potential use of the waterbody. Public Water Supply designations apply near existing water intakes so that waters are safe to drink with standard treatment. Most other waters are designated for agricultural and industrial water supply.

Facility Description

The Sidney WWTP is an advanced treatment facility that was originally constructed in 1955, expanded to secondary treatment in 1988, and in 2001-2002 expanded its average design capacity from 5.0 MGD to 7.0 MGD. The wet stream treatment processes at the WWTP include communitation, coarse bar screens, fine screens, grit removal, equalization, primary clarification, conventional aeration, secondary clarification, chlorination/dechlorination, and cascade aeration. Solid stream processes incorporate primary digester (anaerobic digestion), secondary digesters (storage), centrifuge dewatering, solids storage and land applied at agronomic rates.

The Sidney WWTP sewage collection system is comprised of separate sanitary sewers and serves 100% of the potential service area. The system has six lift stations and a bypass at the plant station 602.

The City of Sidney has implemented an Ohio EPA approved industrial pretreatment program. There are twelve categorical industrial users that discharge to the treatment works. The majority of these industries are related to metal finishing including electroplating, coil coating, metal holding, and casting. The total average daily wastewater flow from categorical industrial users is 0.428 mgd and from non-categorical significant industrial users is 0.657 mgd.

Description of Existing Discharge

Table A presents results from the acute bioassay tests conducted by Ohio EPA. Pimephales promelas (fathead minnows) and Ceriodaphnia dubia (water flea) were the test organisms.

Table B presents a summary of analytical results for outfall 1PD00009001 effluent samples compiled from the bioassay tests performed by the Ohio EPA and from Sidney as part of their pretreatment program

Table C presents a summary of unaltered monthly operation report data for the period of January 2005 to September 2010 for the Sidney WWTP. Current permit limits have also been included in this table.

Under the provisions of 40 CFR 122.21(j), the Director has waived the requirement for submittal of expanded effluent testing data as part of the NPDES renewal application. Ohio EPA has access to substantially identical information through the submission of annual pretreatment program reports and/or from effluent testing conducted by the Agency.

Assessment of Impact on Receiving Waters

An assessment of the impact of a permitted point source on the immediate receiving waters includes an evaluation of the available chemical/physical, biological, and habitat data which have been collected by Ohio EPA pursuant to the Five-Year Basin Approach for Monitoring and NPDES Reissuance. Other data may be used provided it was collected in accordance with Ohio EPA methods and protocols as specified by the Ohio Water Quality Standards and Ohio EPA guidance documents. Other information which may be evaluated includes, but is not limited to: NPDES permittee self-monitoring data; effluent and mixing zone bioassays conducted by Ohio EPA, the permittee, or U.S. EPA.

In evaluating this data, Ohio EPA attempts to link environmental stresses and measured pollutant exposure to the health and diversity of biological communities. Stresses can include pollutant discharges (permitted and unpermitted), land use effects, and habitat modifications. Indicators of exposure to these stresses include whole effluent toxicity tests, fish tissue chemical data, and fish health biomarkers (for example, fish blood tests).

Use attainment is a term which describes 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 use attainment status for aquatic life uses primarily relies on the Ohio EPA biological criteria (OAC 3745-1-07; Table 7-15). These criteria apply to rivers and streams outside of mixing zones. Numerical biological criteria are based on measuring several characteristics of the fish and macroinvertebrate communities; these characteristics are combined into multimetric biological indices including the Index of Biotic Integrity (IBI) and modified Index of Well-Being (MIwb), which indicate the response of the fish community, and the Invertebrate Community Index (ICI), which indicates the response of the macroinvertebrate community. Numerical criteria are broken down by ecoregion, use designation, and stream or river size. Ohio has five ecoregions defined by common topography, land use, potential vegetation and soil type.

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 meet the biocriteria or one of the organism groups reflects poor or very poor performance. Nonattainment means that either none of the applicable indices meet the biocriteria or one of the organism groups indicates poor or very poor performance. An aquatic life use attainment table (see Table 8) 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 comments and observations for each sampling location.

Biological sampling completed in 2009 indicates that middle Great Miami River is in full-attainment of the EWH use designation downstream of the Sidney WWTP.

As shown in Table 8, no aquatic life impairment was found in this assessment unit during Ohio EPA's 2009 intensive survey. A TMDL (total maximum daily loads) study for the Middle Great Miami River is scheduled for 2012 to address any areas of impairment identified during the 2009 survey. Information on the TMDL is available at the following Ohio EPA web site:
http://www.epa.ohio.gov/dsw/tmdl/monitoring_MiddleGreatMiamiRiver.aspx .

Development of Water-Quality-Based Effluent Limits

Determining appropriate effluent concentrations is a multiple-step process in which parameters are identified as likely to be discharged by a facility, evaluated with respect to Ohio water quality criteria, and examined to determine the likelihood that the existing effluent could violate the calculated limits.

Parameter Selection Effluent data for the Sidney wastewater plant were used to determine what parameters should undergo wasteload allocation. The parameters discharged are identified by the data available to Ohio EPA - Discharge Monitoring Report (DMR) data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	January 2005 through September 2010
Pretreatment data	2005 - 2008
Ohio EPA compliance sampling data	2009

The data were examined for outliers, and one value for mercury of 65 ng/l was removed from the evaluation.

This data is evaluated statistically, and Projected Effluent Quality (PEQ) values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95th percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95th percentile of all data points. The average and maximum PEQ values are presented in Table 1.

The PEQ values are used according to Ohio rules to compare to applicable water quality standards (WQS) and allowable wasteload allocation (WLA) values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no wasteload allocation is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a wasteload allocation is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Table 5 for a summary of the screening results.

Wasteload Allocation For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio Water Quality Standards (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. Wasteload allocations using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations.

The Sidney wastewater plant is interactive with the Troy (RM 105.62) and Piqua (RM 114.3) wastewater plants. The assimilative capacity was distributed among the three outfalls using the CONSWLA water quality model. See Figure 2 for a diagram of the study area.

The applicable waterbody uses for this facility's discharge and the associated stream design flows are as follows:

Aquatic life (WWH)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia	Average	Summer 30Q10
		Winter 30Q10
Agricultural Water Supply		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 3, and allocations cannot exceed the Inside Mixing Zone Maximum criteria.

Ohio's water quality standard implementation rules [OAC 3745-2-05(A)(2)(d)(iv)] required a phase out of mixing zones for bioaccumulative chemicals of concern (BCCs) as of November 15, 2010. This rule applied statewide. Mercury is a BCC. The mixing zone phase-out means that as of November 15, 2010 all dischargers requiring mercury limits in their NPDES permit must meet water quality standards at the end-of-pipe - 12 ng/l in the Ohio River basin.

The data used in the WLA are listed in Tables 2 and 3. The wasteload allocation results to maintain all applicable criteria are presented in Table 4. The current ammonia limits were evaluated using the wasteload allocation procedures. The calculation showed that the current ammonia limits are not protective of water quality standards for ammonia toxicity.

Whole Effluent Toxicity WLA Whole effluent toxicity (WET) is the total toxic effect of an effluent on aquatic life measured directly with a toxicity test. Acute WET measures short term effects of the effluent while chronic WET measures longer term and potentially more subtle effects of the effluent.

Water quality standards for WET are expressed in Ohio's narrative "free from" WQS rule [OAC 3745-1-04(D)]. These "free from" are translated into toxicity units (TUs) by the associated WQS Implementation Rule (OAC 3745-2-09). Wasteload allocations can then be calculated using TUs as if they were water quality criteria.

The wasteload allocation calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TU_c) and 7Q10 flow for the average and the acute toxicity unit (TU_a) and 1Q10 flow for the maximum. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For Sidney, the wasteload allocation values are 1.0 TU_a and 3.03 TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the IC₂₅:

$$TU_c = 100/IC_{25}$$

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations except when the following equation is more restrictive (*Ceriodaphnia dubia* only):

$$TU_c = 100/\text{geometric mean of NOEC and LOEC}$$

The acute toxicity unit (TU_a) is defined as 100 divided by the LC₅₀ for the most sensitive test species:

$$TU_a = 100/LC_{50}$$

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations.

Reasonable Potential/ Effluent Limits/ Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the water quality standards must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a water quality standard or do not require a wasteload allocation based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum wasteload allocations are selected from Table 4. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 1, and the PEL_{max} is compared to the PEQ_{max} . Based on the calculated percentage of the allocated value [$(PEQ_{avg} \div PEL_{avg}) \times 100$, or $(PEQ_{max} \div PEL_{max}) \times 100$], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 5.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 6 shows the proposed interim effluent limits and monitoring requirements and Table 7 lists the final effluent limits and monitoring requirements for the City of Sidney's WWTP.

A continuation of the existing permit limits for dissolved oxygen; total suspended solids and 5-day carbonaceous biochemical oxygen demand (CBOD₅) is proposed based on best engineering judgment. The results of Ohio EPA's 2009 survey of the Middle Great Miami River basin show that these limits are adequate to maintain the Exceptional Warmwater Habitat aquatic life use designations.

For ammonia-nitrogen, the WLA indicates that the Sidney WWTP's existing 30-day ammonia-nitrogen limits of 2.0 summer and 14.0 winter are not adequate to meet instream ammonia-nitrogen criteria. As discussed and agreed upon with the officials of city of Sidney, one year compliance schedule has been recommended in the permit so that city can meet 1.6 mg/l during summer at the end of one year from the effective date of the permit. The winter limit has been revised to 12 mg/l. During the interim period, the existing permit limits of 2.0 mg/l summer and 14.0 mg/l for winter will remain effective.

Limits proposed for oil and grease, pH, and *Escherichia coli* are based on Water Quality Standards (OAC 3745-1-07). Class A Primary Contact Recreation *E. coli* standards apply to the Great Miami River. As discussed and agreed upon with the officials of city of Sidney, 48 (forty-eight) months of compliance schedule have been recommended in the permit so that city can meet the *E. coli* limits at the end of 48 months from the effective date of the permit. During the interim period, the existing fecal coliform limits (1000 monthly and 2000 weekly) and monitoring of *E. coli* will remain effective.

A continuation of monitoring for total phosphorus and nitrite+nitrate-nitrogen and for total Kjeldahl nitrogen is proposed based on best engineering judgment. In addition, monitoring for total phosphorus and nitrite+nitrate-nitrogen is proposed to continue at the upstream and downstream stations, 801 and 901. The purpose of the monitoring is to maintain a data base on nutrient loadings and ambient concentrations in the basin. This data will be available for future studies addressing nutrient-related water quality impairment.

The Ohio EPA risk assessment (Table 5) places silver and total residual chlorine in group 5. Silver was detected once in sixty nine samples. Using the discretion allowed under OAC 3745-33-07(A)(5), monitoring instead of a limit has been recommended in the permit. Total residual chlorine limit based on WLA remains in the permit.

Drinking water criteria is not applicable with Sidney WWTP discharge and therefore group 4 determination of phenol and TDS in table 5 is not valid. Phenol monitoring is therefore not required. However, concern with regard to the environmental effects of total dissolved solids (TDS) has increased over the last couple of years (2009-2010). Efforts have been underway for some time to develop more protective TDS water quality criteria. Sampling for TDS from major dischargers is necessary to develop the protective TDS criteria and therefore quarterly monitoring has remained in the permit.

Ohio EPA risk assessment (Table 5) places commonly detected pollutants namely, cadmium, chromium, copper, lead nickel, mercury, zinc, and hexavalent chromium (aquatic life) in groups 2 and 3. These parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring at a low frequency is proposed to document that these pollutants continue to remain at low

levels. The other detected pollutants namely, bromodichloromethane, thallium, strontium, molybdenum, chloroform, arsenic, barium, selenium, chlorides and tetrachloroethylene pose no environmental hazard and are not recommended for monitoring. There was one free cyanide detection by Ohio EPA's test in May, 2009 and reduced monitoring of this parameter will be appropriate. Arsenic monitoring is not required because the reasonable potential assessment is based on drinking water standard which is not applicable for Sidney's discharge.

Limits and monitoring requirements proposed for the disposal of sewage sludge by the following management practices are based on OAC 3745-40: land application, removal to sanitary landfill or transfer to another facility with an NPDES permit.

Additional monitoring requirements proposed at the final effluent, influent and upstream/downstream stations are included for all facilities in Ohio and vary according to the type and size of the discharge. In addition to permit compliance, this data is used to assist in the evaluation of effluent quality and treatment plant performance and for designing plant improvements and conducting future stream studies.

Whole Effluent Toxicity Reasonable Potential

Based on best engineering judgment, annual chronic toxicity testing with the determination of acute endpoints is proposed for the life of the permit. Evaluating the whole effluent toxicity data presented in Table A and other pertinent data under the provisions of OAC 3745-33-07(B) placed the Sidney wastewater plant in Category 4 with respect to whole effluent toxicity. While this indicates that the plant's effluent does not currently pose a toxicity problem, federal NPDES application requirements at 40 CFR 122.21 require a permit holder to submit the results of four toxicity tests as part of its NPDES renewal application. The proposed monitoring will characterize the plant's effluent for acute and chronic toxicity as well as fulfill the application requirement

Other Requirements

Schedule of Compliance: The schedule of compliance for the following items have been included in the permit.

- a. The city of Sidney shall conduct a comprehensive analysis of all feasible alternatives necessary to eliminate the bypass at the treatment plant and any overflows in the collection system.
- b. Under municipal pretreatment schedule, the city of Sidney shall evaluate the adequacy of local industrial user limitations to attain compliance with final table limits.
- c. The city of Sidney will be required to meet ammonia and *E.coli* limits

Sanitary Sewer Overflow Reporting

Provisions for reporting sanitary sewer overflows (SSOs) are also proposed in this permit. These provisions include: the reporting of the system-wide number of SSO occurrences on monthly operating reports; telephone notification of Ohio EPA and the local health department, and 5-day follow up written reports for certain high risk SSOs; and preparation of an annual report that is submitted to Ohio EPA and made available to the public. Many of these provisions were already required under the "Noncompliance Notification", "Records Retention", and "Facility Operation and Quality Control" general conditions in Part III of Ohio NPDES permits.

Operator Certification

Operator certification requirements have been included in Part II, Item A of the permit in accordance with rules adopted in December 2006. These rules require the City of Sidney to have a Class IV wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001.

Operator of Record

In December 2006, Ohio Administrative Code rule revisions became effective that affect the requirements for

certified operators for sewage collection systems and treatment works regulated under NPDES permits. Part II, Item A of this NPDES permit is included to implement rule 3745-7-02 of the Ohio Administrative Code (OAC). It requires the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

Storm Water Compliance – Sidney has a No Exposure Certification and therefore stormwater pollution prevention requirements (Parts IV, V and VI in the NPDES Permit) is not required.

Outfall Signage

Part II of the permit includes requirements for the permittee to place a sign at each outfall to the Great Miami River providing information about the discharge. Signage at outfalls is required pursuant to Ohio Administrative Code 3745-33-08(A).

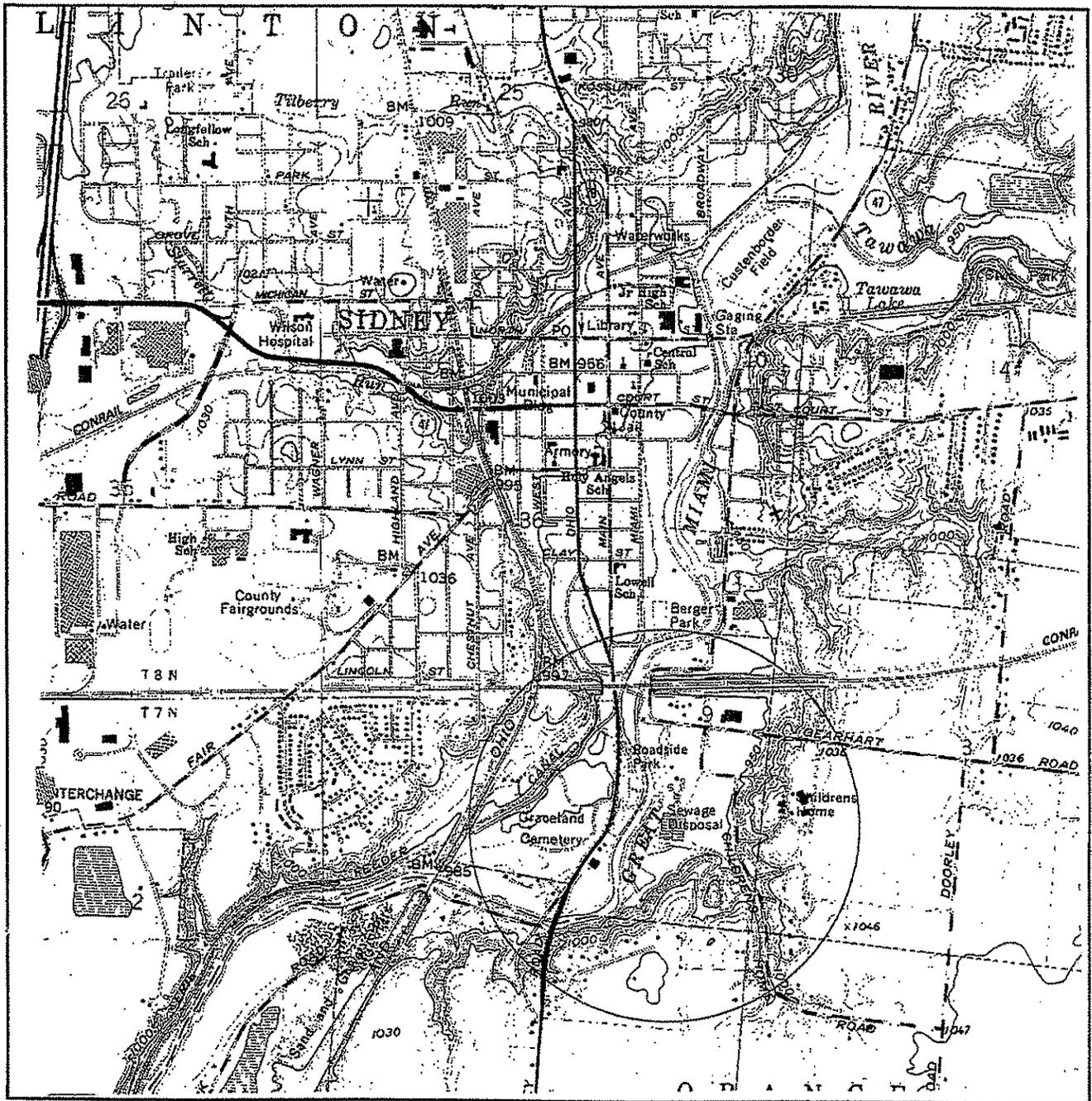


Figure1. Approximate location of the Sidney WWTP.

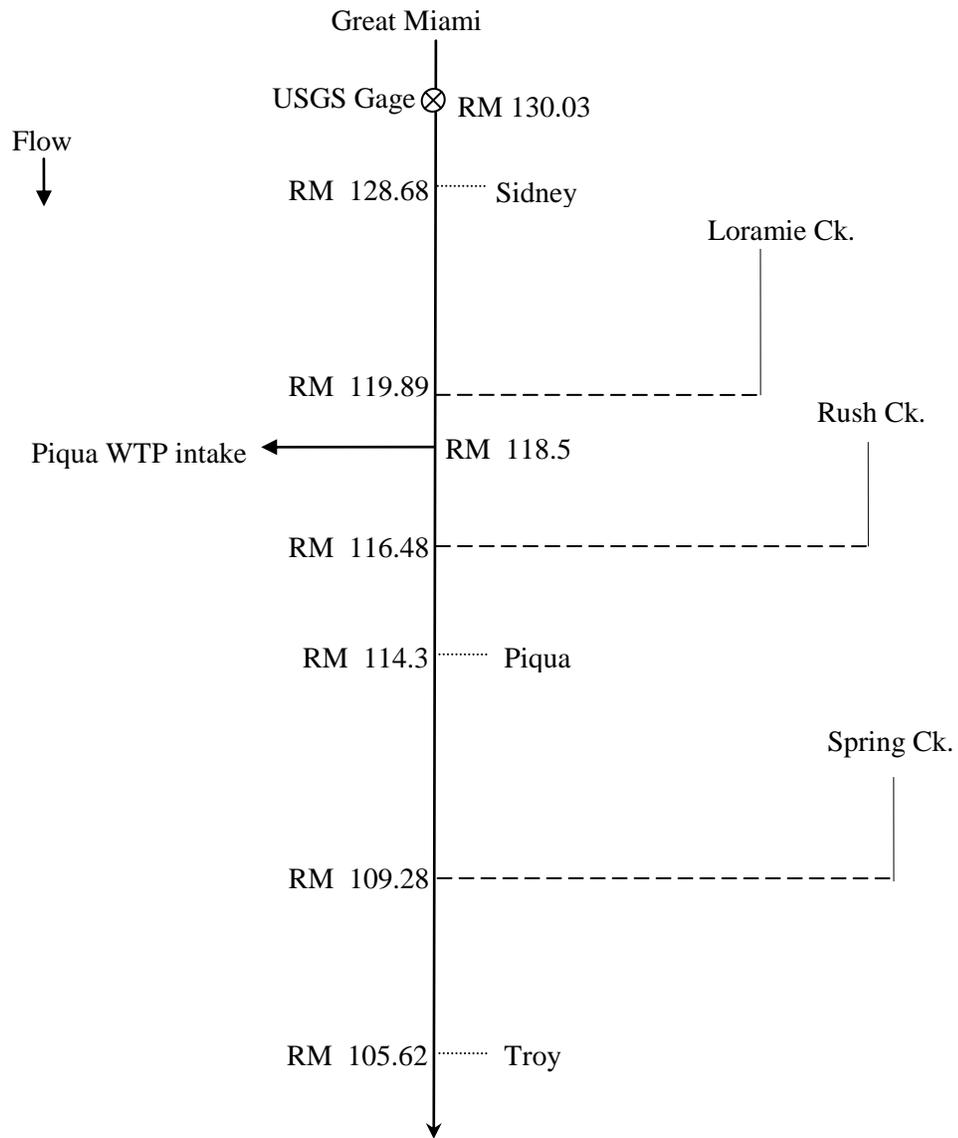
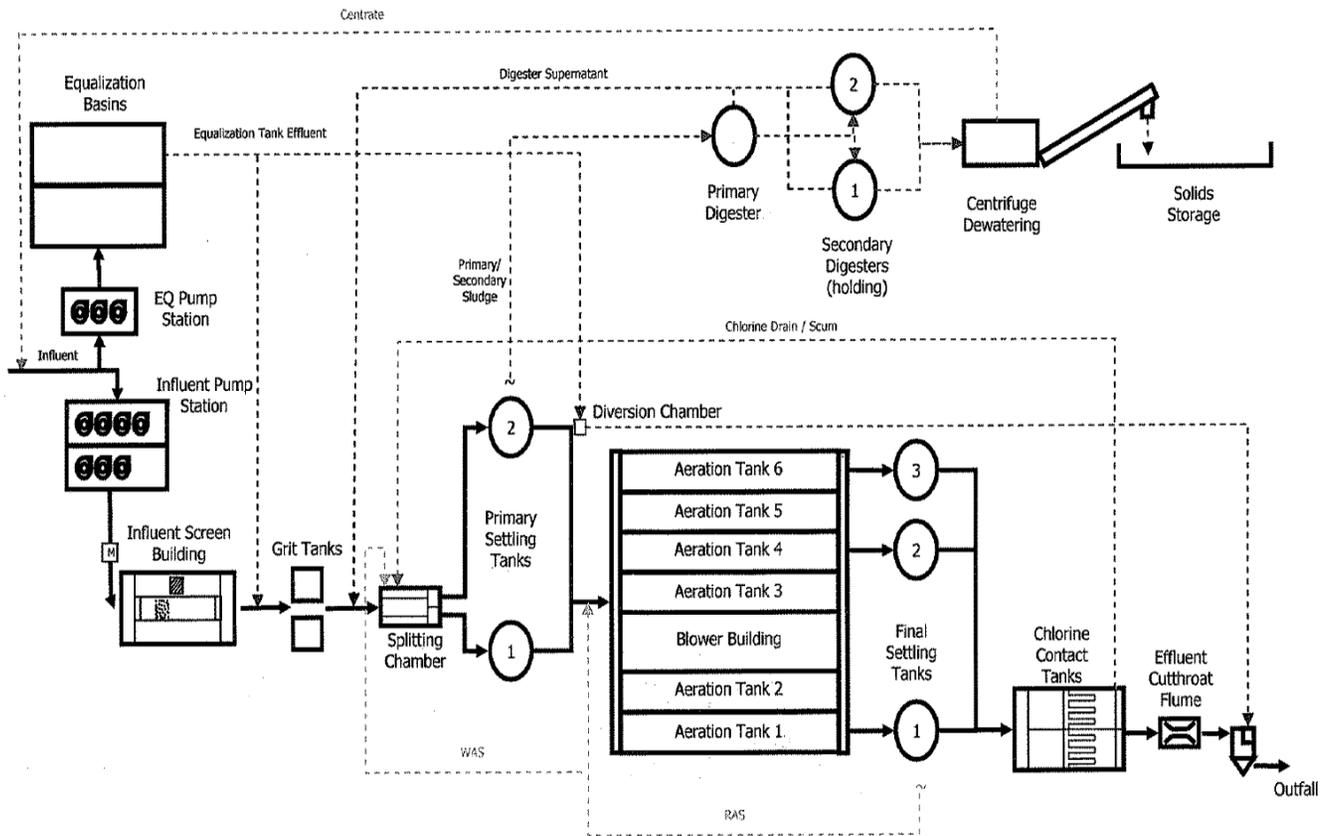


Figure 2. Great Miami River Study Area

Sidney, Ohio WWTP



Hazen and Sawyer
Environmental Engineers & Scientists

Figure

Table A. Summary of acute toxicity test results on the Sidney wastewater treatment plant effluent.

Test Date(a)	<i>Ceriodaphnia dubia</i> 48 hour								<i>Fathead Minnows</i> 96 hour							
	UP ^b	C ^c	LC ₅₀ ^d	EC ₅₀ ^e	%A ^f	%M ^g	TUa ^h	NF ⁱ	UP ^b	C ^c	LC ₅₀ ^d	EC ₅₀ ^e	%A ^f	%M ^g	TUa ^h	NF ⁱ
10/26/04(O)*	0	0	>100	>100	0	0	BD	0	0	0	>100	>100	0	0	BD	0
10/27/04(O)*	NT	0	>100	>100	0	0	BD	NT	NT	5	>100	>100	0	0	BD	NT
12/14/04(O)*	5	0	>100	>100	0	0	BD	0	0	0	>100	>100	0	0	BD	0
12/15/04(O)*	NT	0	>100	>100	0	0	BD	NT	NT	0	>100	>100	5	5	BD	NT
03/23/09(O)*	0	5	>100	>100	0	0	BD	NT	0	0	>100	>100	0	0	BD	NT
05/11/09(O)*	0	0	>100	>100	0	0	BD	NT	0	0	>100	>100	0	0	BD	NT

^a O = EPA test; E = entity test

^b UP = upstream control water

^c C = laboratory water control

^d LC₅₀ = median lethal concentration

^e EC₅₀ = median effects concentration

NT = not tested

* = 48 hour screening test

^f %A = percent adversely affected in 100% effluent

^g %M = percent mortality in 100% effluent

^h TUa = acute toxicity units

ⁱ NF = near field sample in Great Miami River

ND = not determined

BD = below detection

Table B. Effluent Characterization

Summary of analytical results for the Sidney wastewater treatment plant outfall 1PD00009001. All values are in $\mu\text{g/l}$ unless otherwise indicated. OEPA = data from analyses by Ohio EPA; PT = data from pretreatment program reports; ND = below detection (reporting level or detection limit); NA = not analyzed.

PARAMETER	OEPA 5/11/09	OEPA 3/23/09	PT 07/21/05	PT 07/18/06	PT 07/30/07	PT 07/30/08
TDS, mg/l	738	774	NA	NA	NA	NA
Arsenic	2.5(2.0)	4(2.0)	ND(5.0)	ND(5.0)	ND(5.)	ND(5.0)
Barium	26(15)	21(15)	NA	NA	NA	NA
Cadmium	ND(0.20)	ND(0.20)	ND(3.0)	ND(3.)	ND(3.)	ND(2.0)
Chromium, T ND(2.0)	ND(2.0)	ND(7.0)	ND(7.)	ND(7.)	ND(7)	
Copper	3.4(2)	4(2)	ND(8.0)	ND(8.)	ND(8)	ND(8)
Cyanide, Free	7(5)	ND(5)	NA	NA	NA	NA
Lead	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.)	ND(2.)	2.4(2.0)
Nickel	8.5(2)	8.1(2)	17(8)	35(8)	21(8)	17(8)
Selenium	ND(2.0)	2.1(2.1)	ND(4.0)	ND(4.0)	ND(4.)	ND(4.0)
Strontium	1330(30)	1520(30)	NA	NA	NA	NA
Zinc	43(10)	41(10)	41(10)	131(10)	47(10)	32(10)
Iron	152(50)	115(50)	NA	NA	NA	NA
Manganese	19(10)	38(10)	NA	NA	NA	NA
Mercury	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
Total Phosphorus, mg/l	3.03	3.23	NA	NA	NA	NA
Chloride, mg/l	155	194	NA	NA	NA	NA
Bromodichloromethane	ND(0.5)	ND(0.5)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Chloroform	1.27(0.5)	1.06	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Phenol	2.1(2.1)	ND(2.1)	ND(5.0)	ND(10.0)	ND(10.0)	ND(10.0)

Table C. Unaltered
Discharge Monitoring Report

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
<u>Outfall 001</u>								
Water Temperature	Annual	C	-	-	2081	18.2	25	9-28.3
Dissolved Oxygen	Summer	mg/l	-	Min. 6.0	1041	7.3	7.9	5-9.7
Dissolved Oxygen	Winter	mg/l	-	Min. 6.0	1010	8	8.8	5.6-9.8
Residue, Total Dissolved	Annual	mg/l	-	-	69	750	883	576-984
Total Suspended Solids	Annual	mg/l	-	-	844	4.4	10.8	1.3-28.8
Oil and Grease, Total	Annual	mg/l		10 Max.	90	0	5.17	0-11
Nitrogen, Ammonia (NH3)	Summer	mg/l	2.0	3.0	442	0.4	2.56	0.05-16.3
Nitrogen, Ammonia (NH3)	Winter	mg/l	14.0	21.0	408	0.18	4.03	0-17.3
Nitrogen Kjeldahl, Total	Annual	mg/l	-	-	69	2.28	4.75	1.25-5.75
Nitrite Plus Nitrate, Total	Annual	mg/l	-	-	69	7.35	13.1	0.82-21.4
Phosphorus, Total (P)	Annual	mg/l	-	-	274	2.43	5.57	0.06-10.4
Cyanide, Free	Annual	mg/l	-	-	36	0	0	0-0
Thallium, Total Recoverable	Annual	ug/l	-	-	19	0	0	0-0
Nickel, Total Recoverable	Annual	ug/l	-	-	23	14	28.9	0-35
Silver, Total Recoverable	Annual	ug/l	-	-	69	0	0	0-5
Zinc, Total Recoverable	Annual	ug/l	-	-	23	46	65.9	24-131
Cadmium, Total Recoverable	Annual	ug/l	-	-	23	0	2.7	0-5
Lead, Total Recoverable	Annual	ug/l	-	-	23	0	0	0-0
Chromium, Total Recoverable	Annual	ug/l	-	-	23	0	0	0-0
Copper, Total Recoverable	Annual	ug/l	-	-	23	0	9.8	0-26
Chromium, Dissolved Hexavalent	Annual	ug/l	-	-	23	0	0	0-0
Manganese, Total Recoverable	Annual	ug/l	-	-	7	13	110	0-127
Fecal Coliform	Annual	#/100 ml	1000	2000	430	55	991	0-131000
Flow Rate	Summer	MGD	-	-	1059	4.56	7.58	2.75-20
Flow Rate	Winter	MGD	-	-	1023	5.63	11.5	2.69-28.1
Flow Rate	Annual	MGD	-	-	2082	4.99	9.98	2.69-28.1
Chlorine, Total Residual	Annual	mg/l	-	0.038	997	0	0	0-0.168
Mercury, Total (Low Level)	Annual	ng/l	12	1700	23	0.939	3.31	0-65
pH, Maximum	Annual	S.U.	-	9.0	2068	7.3	7.7	6.7-9
pH, Minimum	Annual	S.U.	-	6.5	2078	7.1	7.6	6.2-7.7
CBOD 5 day	Summer	mg/l	10.7	16.4	421	2.9	6	0-14.5
CBOD 5 day	Winter	mg/l	17.9	28.6	413	3.1	7.14	0-23.5

Table 1. Effluent Data for Sidney WWTP

Parameter	Units	# of Samples	# > MDL	Average PEQ	Maximum PEQ
<u>Self-Monitoring (MOR) Data</u>					
Ammonia - S	mg/l	310	310	1.387	2.988
Ammonia - W	mg/l	204	203	2.32	4.447
Cadmium - TR	µg /l	22	2	4.745	6.5
Chlorine - TRes	mg/l	896	19	0.074	0.101
Chromium - TR	µg /l	23	0	--	--
Chromium VI - Diss	µg /l	23	0	--	--
Copper - TR	µg /l	22	3	24.67	33.8
Cyanide - free	mg/l	36	0	--	--
TDS	mg/l	70	70	829.5	915.5
Lead - TR	µg /l	23	0	--	--
Manganese - TR	µg /l	7	5	185.	254.
Mercury - TR	ng/l	22	20	2.765	4.634
Nickel - TR	µg /l	23	21	25.14	36.59
NO ₂ +NO ₃	mg/l	70	70	15.	22.
Phosphorus	mg/l	278	278	4.73.	6.76
Silver	µg /l	69	1	3.65	5.0
Thallium	µg /l	19	0	--	--
Zinc - TR	µg /l	23	23	70.82	99.18
<u>Ohio EPA and Pretreatment Data</u>					
Arsenic - TR	µg /l	6	2	7.67	10.5
Barium	µg /l	2	2	72.12	98.8
Chloroform	µg /l	6	2	3.52	4.83
Chlorides	mg/l	2	2	538.	737.
Iron - TR	µg /l	2	2	422.	578.
Phenol	µg /l	6	1	5.825	7.98
Selenium - TR	µg /l	6	1	5.825	7.98
Strontium	µg /l	2	2	4217.	5776.

Table 2. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria					
		Average				Inside Maximum Aquatic Life	Mixing Zone Max
		Human Health Drinking ^D	Human Health Non-Drink ^D	Agri- culture	Aquatic Life		
Aldrin ^C	µg/l	0.0013	0.0014	--	--	--	--
Ammonia – S	mg/l	--	--	--	0.5	--	--
Ammonia - W	mg/l	--	--	--	1.9	--	--
Antimony	µg/l	6.	4300.	--	190.	900.	1800.
Arsenic - TR	µg/l	10.	--	100.	150.	340.	680.
Barium	µg/l	2000.	--	--	220.	2000.	4000.
Bis (2-EHP) ^C	µg/l	6.	59.	--	8.4	1100.	2100.
Bromodichloromethane ^C	µg/l	5.6	--	--	--	--	--
Cadmium - TR	µg/l	5.	--	50.	5.8	16.	31.
Chlorides	mg/l	250.	--	--	--	--	--
Chlorine - TRes	mg/l	4.	--	--	0.011	0.019	0.038
Chloroform ^C	µg/l	57.	4700.	--	140.	1300.	2600.
Chromium - TR	µg/l	100.	--	100.	210.	4400.	8900.
Chromium ⁺⁶ – Diss	µg/l	--	--	--	11.	16.	31.
Copper - TR	µg/l	--	1300.	500.	24.	39.	79.
Cyanide - free	mg/l	0.2	220.	--	0.012	0.046	0.092
Dieldrin ^{A,C}	µg/l	0.0014	0.0014	--	0.056	0.24	0.47
Dissolved solids, total	mg/l	500.	--	--	1500.	--	--
Endosulfan	µg/l	110.	240.	--	--	--	--
Heptachlor epoxide ^C	µg/l	0.001	0.0011	--	--	--	--
Iron - TR	µg/l	--	--	5000.	--	--	--
Lead - TR	µg/l	--	--	100.	26.	500.	990.
Lindane ^{A,C}	µg/l	0.19	0.63	--	0.057	0.95	1.9
Manganese - TR	µg/l	--	--	--	--	--	--
Mercury - TR ^A	ng/l	12.	12.	10000.	910.	1700.	3400.
Molybdenum	µg/l	--	--	--	20000.	190000.	370000.
Nickel - TR	µg/l	610.	4600.	200.	130.	1200.	2400.
NO ₂ +NO ₃	mg/l	10.	--	100.	--	--	--
Phenol	µg/l	1.	4600000.	--	400.	4700.	9400.
Selenium - TR	µg/l	50.	11000.	50.	5.	--	--
Silver	µg/l	50.	--	--	1.3	11.	21.
Strontium	µg/l	--	--	--	21000.	40000.	81000.
Tetrachloroethylene	µg/l	5.	89.	--	53.	430.	850.
Thallium	µg/l	1.7	6.3	--	17.	79.	160.
Zinc - TR	µg/l	9100.	69000.	25000.	300.	300.	610.

^A Bioaccumulative Chemical of Concern (BCC)

^C Carcinogen

^D Human health drinking water criteria (dual route exposure) apply within 500 yards of the Piqua WTP intake at RM 118. These criteria were also applied in the vicinity of the Troy and Tipp City wellfields. Non-drinking (single route exposure) criteria apply elsewhere.

Table 3. Instream Conditions and Discharger Flow

Parameter	Units		Value	Basis	
Low Flows - Annual and Summer (cfs):					
	Q _{7,10}	Q _{1,10}	Q _{30,10}	HMQ	
GMR above Sidney	22.	17.	27.	111.	USGS gage #03261500, 1926-97
Loramie Creek	3.3	2.58	4.02		20.3 USGS gage #03262000, 1915-97
Rush Creek	0.75	0.58	0.92		19.53 USGS gage #03261500, 1926-97
Low Flows - Winter (cfs):					
GMR above Sidney	--	--	59.	--	USGS gage #03261500, 1926-97
Loramie Creek	--	--	10.1	--	USGS gage #03262000, 1915-97
Rush Creek	--	--	2.01	--	USGS gage #03261500, 1926-97
Effluent Flows (cfs) :					
Sidney WWTP (RM 128.7)			10.83		DSW
Barrett Paving Materials (RM 123.2)			3.9		DSW
Piqua Minerals - 002 (RM 114.5)			4.63		DSW
Piqua WWTP (RM 114.2)			6.96		DSW
Piqua Minerals - 001/004 (RM 114.1)			6.44		DSW
Troy WWTP (RM 105.6)			10.83		DSW
Withdrawal (cfs) :					
Piqua WTP (RM 118.5)			10.83		DSW
Mixing Assumption	%	average	100.		Stream-to-discharge ratio
	%	maximum	100.		Stream-to-discharge ratio
Instream Temperature oC					
		summer	24.		Sidney 901; 24 values, 2005-2010
		winter	5.		Sidney 901; 17 values, 2005-2010
Instream pH					
	S.U.	summer	8.3		Sidney 901; 24 values, 2005-2010
		winter	8.3		Sidney 901; 17 values, 2005-2010
Instream Hardness					
	mg/l	annual	300.		Piqua 901; 69 values, 2005-2010
Background Water Quality:					
Ammonia	mg/l	summer	0.04		Sidney 801; 24 values, 3<MDL,2005-2010
Ammonia	mg/l	winter	0.04		Sidney 801; 17 values, 1<MDL,2005-2010
Antimony	µg/l	annual	0.		No representative data available.
Arsenic	µg/l	annual	1.		STORET; 29 values, 20<MDL, 2007-2010
Barium	µg/l	annual	96.5		STORET; 26 values, 20<MDL, 2007-2010
Bis(2-EHP)	µg/l	annual	0.		No representative data available.
Cadmium - TR	µg/l	annual	0.		STORET; 29 values, 29<MDL, 2007-2010
Chlorine - TRes	mg/l	annual	0.		No representative data available.
Chromium - TR	µg/l	annual	1.		STORET; 29 values, 28<MDL, 2007-2010
Chromium ⁺⁶ - Diss	µg/l	annual	0.		No representative data available.
Copper - TR	µg/l	annual	1.		STORET; 29 values, 19<MDL, 2007-2010
Cyanide, free	µg/l	annual	0.		No representative data available.

Table 3. Instream Conditions and Discharger Flow – continued.

Parameter	Units		Value	Basis
Background Water Quality:				
Lead - TR	µg/l	annual	1.	STORET; 29 values, 23<MDL, 2007-2010
Mercury - TR ^A	ng/l	annual	0.	No representative data available.
Molybdenum	µg/l	annual	0.	No representative data available.
Nickel - TR	µg/l	annual	3.1	STORET; 29 values, 2<MDL, 2007-2010
NO ₂ +NO ₃	mg/l	annual	1.88	STORET; 40 values, 0<MDL, 2007-2010
Phenol	µg/l	annual	0.	STORET; 4 values, 4<MDL, 2008-2009
Selenium	µg/l	annual	0.	STORET; 29 values, 29<MDL, 2007-2010
Lead - TR	µg/l	annual	1.	STORET; 29 values, 23<MDL, 2007-2010
Silver	µg/l	annual	0.	No representative data available.
TDS	mg/l	annual	414.	STORET; 40 values, 16<MDL, 2007-2010
Zinc - TR	µg/l	annual	5.	STORET; 29 values, 16<MDL, 2007-2010

Table 4. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Average		Maximum Aquatic Life	Inside Aquatic Life	Mixing Zone Maximum
		Human Health ^c	Agri Supply			
Ammonia – S	mg/l	--	--	1.6	--	--
Ammonia - W	mg/l	--	--	12.	--	--
Arsenic	µg/l	63.	697. ^A	411.	864. ^A	680.
Barium	µg/l	13560. ^A	--	462.	4966. ^A	4000.
Cadmium - TR	µg/l	35. ^A	352. ^A	16.	41. ^A	31.
Chlorides	mg/l	2430. ^A	--	--	--	--
Chlorine - TR _{es}	mg/l	38. ^A	--	0.033	0.048 ^A	0.038
Chromium - TR ^B	µg/l	699.	699.	577.	11200. ^A	8900.
Chromium VI - Diss ^B	µg/l	--	--	30.	41. ^A	31.
Copper - TR	µg/l	--	3512. ^A	63.	97. ^A	79.
Lead - TR ^B	µg/l	--	699.	70.	1272. ^A	990.
Mercury - TR ^{B, D}	ng/l	12.	10000. ^A	910.	1700.	3400.
Molybdenum ^B	µg/l	--	--	55050.	483600. ^A	370000.
Nickel - TR ^B	µg/l	4279. ^A	1392.	354.	3051. ^A	2400.
NO ₂ +NO ₃	mg/l	57.	691.	--	--	--
Phenol	µg/l	11.	--	1213.	12080. ^A	9400.
Selenium	µg/l	352.	352.	14.	--	--
Silver	µg/l	352. ^A	--	3.6	28. ^A	21.
TDS	mg/l	1062.	--	3422.	--	--
Zinc - TR	µg/l	64050. ^A	176000. ^A	816. ^A	755. ^A	610.

^A Allocation must not exceed the Inside Mixing Zone Maximum.

^B Parameter would not require a WLA based on reasonable potential procedures, but allocation requested by permit staff.

^c Allocation to meet HH drinking water criteria.

^D BCC: no mixing zone allowed unless the requirements for an exclusion are met as listed in 3745-2-08(L).

Table 6. Interim effluent limits and monitoring requirements for Sidney outfall 1PD00009001 and the basis for their recommendation.

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day) ^a		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	----- Monitor -----				M ^c
Temperature	^o C	----- Monitor -----				M ^c
Dissolved Oxygen	mg/l	----- Not less than 6.0 at any time -----				EP
CBOD ₅						
Summer	mg/l	10.7	16.4 ^d	284	435 ^d	PD, EP
Winter	mg/l	17.9	28.6 ^d	473	757 ^d	PD, EP
Suspended Solids						
Summer	mg/l	14.3	21.4 ^d	379	568 ^d	PD, EP
Winter	mg/l	21.4	32.1 ^d	568	852 ^d	PD, EP
Ammonia-N						
Summer	mg/l	2.0	3.0 ^d	53	79.5 ^d	PD, EP
Winter	mg/l	14.0	21.0 ^d	371	556 ^d	PD, EP
Oil and Grease	mg/l	----- Not to exceed 10 at any time -----				WQS
pH	S.U.	----- 6.5 to 9.0 -----				WQS
Fecal Coliform						
Summer Only	#/100ml	1000	2000 ^d	--	--	WQS
E. coli	#/100ml	----- Monitor -----				BPJ
Chlorine Residual						
Summer Only	mg/l	--	0.038	--	--	WLA
Phosphorus	mg/l	----- Monitor -----				EP, M ^c
Nitrate(N) + Nitrite(N)	mg/l	----- Monitor -----				EP, M ^c
TKN	mg/l	----- Monitor -----				EP, M ^c
Cyanide, Free	mg/l	----- Monitor -----				BPJ
Cadmium, T. R.	µg/l	----- Monitor -----				EP
Chromium, T. R.	µg/l	----- Monitor -----				EP
Hex. Chromium (Dissolved)	µg/l	----- Monitor -----				EP
Copper, T. R.	µg/l	----- Monitor -----				EP
Lead, T. R.	µg/l	----- Monitor -----				EP
Mercury, T. R.	µg/l	----- Monitor -----				WLA
Nickel, T. R.	µg/l	----- Monitor -----				EP
Zinc, T. R.	µg/l	----- Monitor -----				EP
Silver, T.R.	µg/l	----- Monitor -----				BPJ/WLA
Dissolved Solids, Tot	mg/l	----- Monitor -----				BPJ
Acute Toxicity	TUa	----- Monitor -----				FAR
Chronic Toxicity	TUc	----- Monitor -----				FAR

^a Effluent loadings are based on average design discharge flow of 7.0 MGD.

^b Definitions: EP = Existing Permit; M = Monitoring; PD = Plant Design Criteria; RP = Reasonable Potential for requiring water quality-based effluent limits/monitoring requirements in NPDES permits (3745-33-07(A)); BPJ = Best Professional Judgment; WLA = Wasteload Allocation rule (OAC 3745-2); WQS = Ohio Water Quality Standards (OAC 3745-1); Mixing Zone = Mixing zone phase out rule (OAC 3745-2-05(A)(1)(d)(iv)); FAR = Federal Application Requirement; M= Monitoring

^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

^d 7 day average limit.

Table 7. Final effluent limits and monitoring requirements for Sidney outfall 1PD00009001 and the basis for their recommendation.

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day) ^a		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	----- Monitor -----				M ^c
Temperature	°C	----- Monitor -----				M ^c
Dissolved Oxygen	mg/l	----- Not less than 6.0 at any time -----				EP
CBOD ₅						
Summer	mg/l	10.7	16.4 ^d	284	435 ^d	PD, EP
Winter	mg/l	17.9	28.6 ^d	473	757 ^d	PD, EP
Suspended Solids						
Summer	mg/l	14.3	21.4 ^d	379	568 ^d	PD, EP
Winter	mg/l	21.4	32.1 ^d	568	852 ^d	PD, EP
Ammonia-N						
Summer	mg/l	1.6	2.4 ^d	42.4	63.6 ^d	WLA
Winter	mg/l	12	18 ^d	318	477 ^d	WLA
Oil and Grease	mg/l	----- Not to exceed 10 at any time -----				WQS
pH	S.U.	----- 6.5 to 9.0 -----				WQS
E.coli						
Summer Only	#/100ml	126	284 ^d	--	--	WQS
Chlorine Residual						
Summer Only	mg/l	--	0.038	--	--	WLA
Phosphorus	mg/l	----- Monitor -----				EP, M ^c
Nitrate(N) + Nitrite(N)	mg/l	----- Monitor -----				EP, M ^c
TKN	mg/l	----- Monitor -----				EP, M ^c
Cyanide, Free	mg/l	----- Monitor -----				BPJ
Cadmium, T. R.	µg/l	----- Monitor -----				EP
Chromium, T. R.	µg/l	----- Monitor -----				EP
Hex. Chromium, (Dissolved)	µg/l	----- Monitor -----				EP
Copper, T. R.	µg/l	----- Monitor -----				EP
Lead, T. R.	µg/l	----- Monitor -----				EP
Mercury, T. R.	µg/l	----- Monitor -----				WLA
Nickel, T. R.	µg/l	----- Monitor -----				EP
Zinc, T. R.	µg/l	----- Monitor -----				EP
Silver, T.R.	µg/l	----- Monitor -----				BPJ/WLA
Dissolved Solids, Tot	µg/l	----- Monitor -----				BPJ
Acute Toxicity	TUa	----- Monitor -----				FAR
Chronic Toxicity	TUc	----- Monitor -----				FAR

^a Effluent loadings are based on average design discharge flow of 7.0 MGD.

^b Definitions: EP = Existing Permit; M = Monitoring; PD = Plant Design Criteria; RP = Reasonable Potential for requiring water quality-based effluent limits/monitoring requirements in NPDES permits (3745-33-07(A)); BPJ = Best Professional Judgment; WLA = Wasteload Allocation rule (OAC 3745-2); WQS = Ohio Water Quality Standards (OAC 3745-1). Mixing Zone = Mixing zone phase out rule (OAC 3745-2-05(A)(1)(d)(iv)); FAR = Federal Application Requirement; M = Monitoring

^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

^d 7 day average limit.

Table 8.

Aquatic Life use attainment from the Middle Great Miami River, 2009.								
River Miles Fish/Invert	IBI	MIwb	ICI ^a	QHEI	Landmark	Attainment Status ^b	Cause (s)	Source (s)
Great Miami River (14-001)								
Aquatic Life Use Designation EWH(+)								
130.0 ^{B.c.REF}	56	10.2	46	70.0	SR 47, North St.	FULL		
127.7 ^B	59	10.4	44 ^{ns}	79.0	Dst. Sidney WWTP	FULL		
123.9 ^B	57	9.8	50	73.5	Kuther Rd.	FULL		
120.0 ^W	54	10.3	44 ^{ns}	83.0	Locking Ham Rd	FULL		
118.5 ^{B.REF}	57	10.2	52	70.0	Adj. SR 66	FULL		
Aquatic Life Use Designation ExistingWWH(+)/Recommended EWH(+)								
115.4 ^B	58	10.5	52	76.5	DERR Site	FULL		
Aquatic Life Use Designation EWH(+)								
114.0 ^B	54	10.2	48	74.0	Dst. Piqua Dam/WWTP	FULL		
112.4 ^B	54	10.8	54	80.0	Peterson Rd.	FULL		
110.1 ^{B.c}	56	10.0	52	76.0	Eldean Rd.	FULL		
106.0 ^{B.REF}	52	10.3	44 ^{ns}	70.5	SR 41	FULL		
104.7 ^B	53	10.3	48	83.0	Dst. Troy WWTP	FULL		
100.8 ^{B.REF}	53	10.4	44 ^{ns}	88.0	Tipp-Elizabeth Rd.	FULL		
98.5 ^{B.c}	54	10.2	52	89.5	SR 571	FULL		
95.6 ^B	54	10.6	46	80.5	Ross Rd.	FULL		
92.5 ^B	54	10.2	48	78.5	Dst. Taylorsville Dam	FULL		
88.7 ^B	53	10.2	42 ^{ns}	86.0	Rip-Rap Rd.	FULL		
87.0 ^B	54	10.1	44	76.0	Ust. Tri-City WWTP	FULL		
85.9 ^B	52	10.8	38*	70.5	Dst. Tri-City WWTP	PARTIAL	Modest ammonia-N toxicity	Tri-City WWTP
Ecoregional Criteria (OQC 3745-1-07, Table 7-14)								
Eastern Corn Belt Plain (ECBP) Ecoregion								
Index-Site Type				WWH	EWH	MWH^d		
IBI-Boat				42	48	24		
MIwb-Boat				8.2	9.6	5.8		
ICI				36	46	22		
MIwb-Boat				8.2	9.6	5.8		

