

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for City of Delphos Wastewater Treatment Plant (WWTP)

Public Notice No.: 12-08-049
Public Notice Date: August 20, 2012
Comment Period Ends: September 19, 2012

Ohio EPA Permit No.: 2PD00029*RD
Application No.: OH0024929

Name and Address of Applicant:

City of Delphos
608 North Canal Street
Delphos, Ohio 45833

Name and Address of Facility Where

Discharge Occurs:

Delphos WWTP
24793 Pohlman Road
Delphos, Ohio 45833
Van Wert County

Receiving Water: Jennings Creek

Subsequent
Stream Network: Auglaize River
Maumee River
Lake Erie

Introduction

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations (CFR), 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 (Ohio EPA), 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 (Ohio Revised Code [ORC] 6111). Decisions to award variances to Water Quality Standards (WQS) 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 United States EPA (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 (WLAs) 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,

Fact Sheet for NPDES Permit Renewal, City of Delphos WWTP, 2012

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 WLA for a pollutant to a measure of the effluent quality. The measure of effluent quality is called projected effluent quality (PEQ). 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

A summary of current permit limits can be found on Table 1. A summary of proposed permit limits can be found on Table 9.

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the current permit, although some monitoring frequencies may have changed: flow, temperature, dissolved oxygen, five-day carbonaceous biochemical oxygen demand (CBOD₅), total suspended solids (TSS), total phosphorus, nitrite+nitrate-nitrogen, total Kjeldahl nitrogen (TKN), oil and grease, pH, cadmium, chromium, dissolved hexavalent chromium, lead, nickel, zinc, silver, and chronic toxicity for *Ceriodaphnia dubia*.

Final effluent limits are proposed for *Escherichia coli*. New WQS for *E. coli* became effective in March 2010. Information provided by the facility indicates it will be able to meet the new standards as soon as they go into effect; therefore no interim limits or schedule of compliance is proposed.

New or lower water-quality-based limits are needed for ammonia (summer season), copper, mercury, and chronic toxicity. An overall increase in the temperature and pH of the receiving stream has lowered the stream's assimilative capacity for ammonia; therefore the limit will be lowered. New data shows that copper has the reasonable potential to contribute to exceedances of WQS. A limit is proposed with a sampling frequency of one sample per month, which is an increase from the monitoring frequency of one sample per quarter. In November 2010, the use of mixing zones to determine the WLA for bioaccumulative chemicals of concern (BCCs) was no longer allowed; therefore the limits for BCCs must meet WQS with no allowances for dilution. Since mercury is considered a BCC, discharges must comply with current WQS.

Limits are proposed to be removed for total filterable residue (total dissolved solids [TDS]) and bis(2-ethylhexyl) phthalate because they no longer have the reasonable potential to contribute to exceedances of WQS. Limits and monitoring is proposed to be removed for strontium it no longer has reasonable potential and the source of strontium has been removed.

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

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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 Ohio EPA 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 Sara Hise, (614) 644-4824, sara.hise@epa.state.oh.us.

Location of Discharge/Receiving Water Use Classification

The Delphos WWTP discharges to the Jennings Creek at River Mile 5.1 in the eastern edge of Van Wert County. Figure 1 shows the approximate location of the facility.

This segment of the Jennings Creek is described by Ohio EPA River Code 04-230, U.S. EPA River Reach # 04100007 09, Van Wert County, Huron/Erie Lake Plain ecoregion. The Jennings Creek is designated for the following uses under Ohio's WQS (Ohio Administrative Code [OAC] 3745-1-07): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Class B Primary Contact Recreation (PCR).

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 WQS 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 AWS and IWS.

Facility Description

The City of Delphos constructed a new WWTP in 2006 with an average design flow of 3.83 million gallons per day (MGD) and a peak hydraulic capacity of 12 MGD. The WWTP includes the following treatment processes and/or equipment:

- Bar screen;
- Influent pumping;
- Grit removal;
- Primary treatment;
- Activated sludge;
- Secondary treatment;
- Ultra-violet disinfection; and
- Post-aeration.

Preliminary processing of wastewater involves screening followed by grit removal. Wastewater is then sent to a membrane bioreactor (MBR) for further treatment. This is followed by ultra-violet disinfection and then post-aeration.

Sludge processing includes a belt press, gravity belt thickener, and an autothermal thermophilic digester system. For 2010, Delphos reported that 320.5 tons of exceptional quality sludge was removed from the WWTP for land application.

All wastewater from the collection system enters a diversion chamber located prior to the influent pump station. When flows in the diversion chamber reach a set elevation (approximately 18 inches or a flow rate of 12 MGD), excess flow is diverted to “storm” pumps tributary to a 9.8 million gallon equalization basin. If the wastewater elevation in the diversion chamber continues to rise and reaches approximately six feet, excess flow overflows a baffle and is discharged directly to Jennings Creek via Station 2PD00029002. When flows subside, wastewater that was stored in the equalization basin is returned to the collection system ahead of the diversion chamber to mix with the incoming flow that is directed to the influent pump station.

The Delphos WWTP serves only the City of Delphos. The water supply source was formerly groundwater. In October 2007, the city switched to using surface water for the water supply source.

Collection System

The collection system consists of 30 percent separate sanitary sewers and 70 percent combined sanitary and storm sewers. There are ten separate sanitary lift stations and six combined lift stations. The collection system also includes seven combined sewer overflows (CSOs).

The inflow and infiltration rate is estimated to be 940,500 gallons per day (gpd).

Description of Existing Discharge

The Delphos WWTP has been operational since October 2006. Data from January 2007 to December 2011 shows a relatively steady flow rate. The annual flow rate 50th percentile value for these years is 1.56 MGD, which is below the standard design capacity. There have been no recorded flows that exceeded the 12 MGD capacity of the WWTP.

According to the permit renewal application, there are four non-categorical significant industrial users (defined as any industry discharging more than 25,000 gpd, industries subject to federal categorical standards for wastewater discharges, or any other industry classified as “significant” by the local pretreatment program due to the nature of the effluent from the industry) which discharge into the City’s sewage collection system and one categorical industrial user. The flow from non-categorical significant industrial users is estimated to be 0.269 MGD while the flow from all industrial users is reported to be 0.27 MGD. Delphos operates an Ohio EPA-approved pretreatment program to manage the industrial discharges to the collection system.

From October 2008 to April 2010, Delphos reported several sample results which are violations of permit limits. The majority of these violations (25) were for ammonia concentrations and loadings. Two violations were reported of the minimum pH value, two for dissolved oxygen (DO), and two for chronic toxicity (*Ceriodaphnia dubia*).

Overflow Reporting

From January 2007 to December 2011, the facility reported 28 overflow events at the six CSOs (20 of these were at Station 2PD00029002).

The WWTP has one station, Station 2PD00029300, for reporting sanitary sewer overflows (SSOs). SSO discharges are violations of the permit. In 2010, nine SSOs were reported and in 2011, 12 SSOs were reported. In March 2010, the City of Delphos was issued a Notice of Violation (NOV) regarding 22 days of discharge from Station 2PD00029002 that resulted in 46.39 million gallons of untreated sewage being discharged into Jennings Creek. The discharges were the result of equipment failure and considered SSOs, not CSOs. The equipment was subsequently replaced and there have been no further violations.

Table 1 presents chemical specific data compiled from annual pretreatment reports and data collected by Ohio EPA.

Table 2 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfall 2PD00029001. Data are presented for the period January 2007 to December 2011, and current permit limits are provided for comparison.

Table 3 presents the average and maximum PEQ values for outfall 2PD00029001.

Table 4 summarizes the results of acute and chronic whole effluent toxicity tests of the final effluent.

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

The most recent biological data for the Jennings Creek watershed was collected in 2000 as part of the Total Maximum Daily Load (TMDL) assessment of the upper Auglaize River basin. This data was incorporated into the "Total Maximum Daily Loads for the Upper Auglaize River Watershed" which was approved by the United States EPA in 2004. Several recommendations were made to limit the discharge of certain water quality parameters. The document can be found on this website:

<http://www.epa.ohio.gov/dsw/tmdl/AuglaizeRiverUpperTMDL.aspx>

Since sampling was conducted in 2000, the findings reflect the discharge from the old Delphos WWTP. Further sampling in this watershed is not planned until 2020.

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 Delphos WWTP were used to determine what parameters should undergo WLA. The parameters discharged are identified by the data available to Ohio EPA - 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 2007 through December 2011
NPDES Application data / Pretreatment data	October 2007 through October 2010
Ohio EPA compliance sampling data	March 2007, April 2007, September 2011, October 2011

Outliers

The data were examined, and the following values were removed from the evaluation to give a more reliable projection of effluent quality: bis(2-ethylhexyl) phthalate (3/23/07); strontium results from February 2007 to October 2007 (a total of nine results). The city of Delphos switched the source of the public water supply from

groundwater, which had been suspected as the main source of strontium at the WWTP, to surface water in October 2007. The subsequent drop in strontium concentrations after October 2007 corresponds with this change.

This data is evaluated statistically, and 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 3.

The PEQ values are used according to Ohio rules to compare to applicable WQS and allowable 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 WLA is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Table 8 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 WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. WLAs 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 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
Wildlife		Annual 90Q10
AWS		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 6, and allocations cannot exceed the Inside Mixing Zone Maximum criteria.

Ohio's WQS implementation rules [OAC 3745-2-05(A)(2)(d)(iv)] required a phase out of mixing zones for 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 WQS at the end-of-pipe (1.3 ng/L monthly average discharge in the Lake Erie basin).

The data used in the WLA are listed in Tables 5 and 6. The WLA results to maintain all applicable criteria are presented in Table 7. The current ammonia limits have been evaluated using the WLA procedures and the limit for the summer is not protective of WQS for ammonia toxicity. Limits for the rest of the year are protective of WQS 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.

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

The WLA 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 Delphos WWTP, the WLA values are 0.3 TU_a and 1.01 TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the estimate of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms (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):

$$TU_c = 100/\text{geometric mean of no observed concentration effect (NOEC) and lowest observation concentration effect (LOEC)}$$

The acute toxicity unit (TU_a) is defined as 100 divided by the concentration in water having 50% chance of causing death to aquatic life (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.

When the acute WLA is less than 1.0 TU_a, it may be defined as:

<u>Dilution Ratio</u> <u>(downstream flow to discharger flow)</u>	<u>Allowable Effluent Toxicity (AET)</u> <u>(percent effects in 100% effluent)</u>
up to 2 to 1	30
greater than 2 to 1 but less than 2.7 to 1	40
2.7 to 1 to 3.3 to 1	50

The AET is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1 to 1.

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA 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 WLA are selected from Table 7. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 3, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value

$[(PEQ_{avg} \div PEL_{avg}) \times 100, \text{ or } (PEQ_{max} \div PEL_{max}) \times 100]$, the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 8.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 9 presents the final effluent limits and monitoring requirements proposed for Delphos WWTP outfall 2PD00029001 and the basis for their recommendation.

Oil and Grease and pH

Limits proposed for oil and grease and pH are based on WQS (OAC 3745-1), and are a continuation of existing permit limits.

TSS and DO

Limits proposed for TSS and DO are a continuation of existing permit limits. Limits for DO are based on the TMDL study.

CBOD₅

Limits proposed for CBOD₅ are a continuation of existing permit limits and are based on the TMDL study.

Chromium, Zinc, Lead, and Nickel

The Ohio EPA risk assessment (Table 8) places chromium and nickel in Group 2 and lead and zinc in Group 3. This placement as well as the data in Tables 1, 2, and 3, support that these parameters should not pose environmental hazards and limits are not necessary to protect water quality. However, all of these parameters continue to be detected in the effluent and monitoring is proposed to continue to ensure concentrations remain at low levels.

Strontium

The Ohio EPA risk assessment (Table 8) places strontium in Group 2. This placement, data in Tables 1, 2 and 3, and the public water supply's change from groundwater to surface water, support that this parameter should not pose environmental hazards and limits are not necessary to protect water quality. In addition, discontinuing the use of groundwater as a drinking water source removed the most likely source of strontium contamination in the Delphos WWTP. Monitoring is proposed to be discontinued.

Bis(2-ethylhexyl)phthalate, Cadmium, Hexavalent Chromium, TDS, and Silver

The Ohio EPA risk assessment (Table 8) places bis(2-ethylhexyl)phthalate, cadmium, hexavalent chromium, TDS, and silver in Group 4. This placement, as well as the data in Tables 1, 2 and 3 indicates the reasonable potential to exceed water quality exists. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC Rule 3745-33-07(A)(2). The monitoring frequency for cadmium and hexavalent chromium is proposed to be increased to once per month.

Copper

The Ohio EPA risk assessment (Table 8) places copper in Group 5. This placement as well as the data in Tables 1, 2 and 3 indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For copper, the PEQ is between 75 and 100 percent of the WLA. Pollutants that meet this requirement must have permit limits under OAC Rule 3745-33-07(A)(1). New maximum and average limits are proposed.

Ammonia

The current ammonia limits have been evaluated using the WLA procedures and the limit for the summer is not protective of WQS for ammonia toxicity (the Ohio EPA risk assessment [Table 8] places this parameter in Group 5). Limits for the rest of the year are protective of WQS for ammonia toxicity. The proposed summer limit is based on WLA (Table 7) and is protective of WQS.

Water Temperature, Flow Rate, TKN, Nitrite+Nitrate, and Phosphorus

Monitoring is proposed to continue for these parameters in order to assist in the evaluation of effluent quality and treatment plant performance in accordance with Ohio EPA guidance. Limits for phosphorus have been continued based on rule 3745-33-06 of the OAC. Also, monitoring for phosphorus and TKN is important to provide nutrient data for the implementation of the Auglaize River TMDL.

E. coli

WQS for *E. coli* became effective in March 2010. Based on information from the facility, it is anticipated that the facility should be able to meet these limits when the permit goes into effect. Therefore, no interim limits or a schedule of compliance are proposed.

Mercury

The Ohio EPA risk assessment (Table 8) places mercury in group 5. This placement as well as the data in Tables 1, 2 and 3 indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For this parameter, the PEQ is greater than 100 percent of the WLA. Pollutants that meet this requirement must have permit limits under OAC Rule 3745-33-07(A)(1).

Sludge

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

The facility has conducted several acute and chronic toxicity results per the requirements of the previous permit. The Ohio EPA has conducted three screening bioassays for acute toxicity (March 2007, April 2007, and September 2011) which indicated acute toxicity to *Ceriodaphna dubia*. Evaluating the toxicity data presented in Table 4 and other pertinent data under the provisions of OAC 3745-33-07(B) placed the Delphos WWTP in Category 2 with respect to whole effluent toxicity. Monitoring and limits for acute and chronic toxicity are proposed to continue.

Other Requirements

Schedule of Compliance

The City of Delphos believes it can meet the proposed mercury limit without applying for a variance. A schedule of compliance is included in Part I.C of the permit for the City to submit a mercury variance application, if necessary. A schedule of compliance is also included for meeting copper and summer-time ammonia limits.

Sanitary Sewer Overflow Reporting

Provisions for reporting sanitary sewer overflows (SSOs) are again 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 Delphos WWTP to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 2PD00029001.

Operator of Record

In December 2006, OAC 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 OAC. It requires the permittee to designate one or more operator of record to oversee the technical operation of the Delphos WWTP.

Pretreatment

The City of Delphos has an approved Ohio EPA pretreatment program. Pretreatment requirements are included in Part II, Item T of the permit.

Storm Water Compliance

Parts IV, V, and VI have been included with the draft permit in order to ensure that any storm water flows from the facility site are properly regulated and managed. As an alternative to complying with Parts IV, V, and VI, the Delphos WWTP may seek permit coverage under the general permit for industrial stormwater (permit # OHR000005) or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if: 1) the City of Delphos submits a Notice of Intent (NOI) for coverage under the general permit for industrial stormwater or submits a No Exposure Certification, 2) Ohio EPA determines that the facility is eligible for coverage under the general permit or meets the requirements for a No Exposure Certification, and 3) the determination by Ohio EPA can be made prior to the issuance of the final permit.

Outfall Signage

Part II of the permit includes requirements for the permittee to place a sign at each outfall to the Jennings Creek providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

Figure 1. Location of Delphos WWTP



Table 1. Effluent Data Based On Facility Pretreatment Data and Ohio EPA Bioassays

Summary of analytical results for Delphos WWTP outfall 001. Values in parentheses are the method detection limit (MDL). ND = below detection (detection limit). NA = not analyzed.

Parameter	Pretreatment Data				Ohio EPA Bioassay			
	10/25/2007	10/9/2008	10/16/2009	10/28/2010	3/5/2007	4/16/2007	9/26/2011	10/24/2011
Ammonia (mg/L)	NA	NA	NA	NA	0.09	0.214	ND (0.05)	0.278
Barium (ug/L)	NA	NA	NA	NA	20.0	29.0	16.0	28.0
Bis(2-ethylhexyl)phthalate (ug/L)	NA	NA	NA	NA	ND (10.5)	ND (10.6)	ND (10.2)	ND (10.8)
Calcium (mg/L)	NA	NA	NA	NA	101.0	108.0	65.0	71.0
Chloride (mg/L)	NA	NA	NA	NA	153.0	129.0	57.0	60.7
Chloroform (ug/L)	ND (5)	ND (5)	ND (5)	ND (5)	10.4	ND (0.5)	ND (0.5)	0.56
Chromium (ug/L)	ND (7)	ND (7)	ND (7)	ND (7)	ND (30)	ND (30)	ND (2)	ND (2)
Copper (ug/L)	ND (8)	ND (8)	ND (8)	ND (8)	ND (10)	ND (10)	2.0	2.1
Hardness, Total (mg/L)	NA	NA	NA	NA	380.0	410.0	232.0	256.0
Iron (ug/L)	NA	NA	NA	NA	ND (50)	ND (50)	ND (50)	ND (50)
Lead (ug/L)	11.0	ND (10)	ND (10)	ND (10)	ND (2)	ND (2)	ND (2)	ND (2)
Magnesium (mg/L)	NA	NA	NA	NA	31.0	34.0	17.0	19.0
Manganese (ug/L)	NA	NA	NA	NA	34.0	10.0	ND (10)	ND (10)
Nitrate+Nitrite (mg/L)	NA	NA	NA	NA	3.11	3.58	2.96	1.38
Phosphorus, total (mg/L)	NA	NA	NA	NA	0.049	0.02	0.143	0.109
Potassium (mg/L)	NA	NA	NA	NA	10.0	11.0	10.0	13.0
Sodium (mg/L)	NA	NA	NA	NA	103.0	100.0	48.0	40.0
Strontium (mg/L)	NA	NA	NA	NA	1660.0	1860.0	286.0	291.0
TKN (mg/L)	NA	NA	NA	NA	1.22	1.1	0.54	0.54
TDS (mg/L)	NA	NA	NA	NA	712.0	754.0	486.0	404.0
Zinc (ug/L)	ND (10)	36.0	ND (10)	19.0	22.0	23.0	ND (10)	11.0

Table 2. Effluent Characterization Based on Self Monitoring Data

Summary of current permit limits and unaltered monthly operating report (MOR) data for the Delphos WWTP outfalls 001, 002, 005, 006, 007, 008, 300, 584, 601, 602, 801, 901, 902, AND 903. All values are based on annual records unless otherwise indicated. * = For pH, 5th percentile shown in place of 50th percentile; ** = For dissolved oxygen, 5th percentile shown in place of 95th percentile.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Outfall 001								
Water Temperature	Annual	°C	MONITOR		1740	18.2	26.7	6.7-29.9
Dissolved Oxygen	Summer	mg/L	7.0 MINIMUM		844	8.44	9.75	6-11.2
Dissolved Oxygen	Winter	mg/L	5.0 MINIMUM		864	9.65	12.9	6.2-14
Residue, Total Dissolved	Annual	mg/L	1509	--	65	627	840	404-1570
Total Suspended Solids	Annual	mg/L	12	18	744	0.2	24	0-24
Oil and Grease, Hexane Extr Method	Annual	mg/L	10 MAXIMUM		143	0	0	0-8
Nitrogen, Ammonia	Summer	mg/L	1.5	2.3	369	0	4.88	0-16
Nitrogen, Ammonia	Winter	mg/L	2.2/3.8	3.3/5.7	365	0	4.46	0-14.9
Nitrogen Kjeldahl, Total	Annual	mg/L	MONITOR		61	1.28	3.35	0-5.38
Nitrite Plus Nitrate, Total	Annual	mg/L	MONITOR		59	3.14	17	0-23.7
Phosphorus, Total	Annual	mg/L	1.0	1.5	266	0	0.438	0-5.17
Selenium, Total Recoverable	Annual	µg/L	--	--	13	0	0	0-0
Nickel, Total Recoverable	Annual	µg/L	MONITOR		48	0	0	0-8
Silver, Total Recoverable	Annual	µg/L	MONITOR		67	0	0	0-1.3
Strontium, Total Recoverable	Annual	µg/L	MONITOR		61	350	2270	241-5660
Zinc, Total Recoverable	Annual	µg/L	MONITOR		50	23.5	95.3	0-122
Cadmium, Total Recoverable	Annual	µg/L	MONITOR		50	0	2.85	0-4
Lead, Total Recoverable	Annual	µg/L	MONITOR		50	0	11	0-18
Chromium, Total Recoverable	Annual	µg/L	MONITOR		48	0	0	0-9
Copper, Total Recoverable	Annual	µg/L	MONITOR		50	0	11	0-48
Chromium, Dissolved Hexavalent	Annual	µg/L	MONITOR		74	0	0	0-10
Fecal Coliform	Annual	#/100 mL	1000	2000	360	1	67	0-700
Bis(2-ethylhexyl) Phthalate	Annual	µg/L	8.5	1124 MAX	71	0	6.77	0-30.7
Flow Rate	Summer	MGD	MONITOR		908	1.2	4.42	0-10.5
Flow Rate	Winter	MGD	MONITOR		906	2	5.7	0.33-8.48
Flow Rate	Annual	MGD	MONITOR		1814	1.56	5.18	0-10.5
Mercury, Total (Low Level)	Annual	ng/L	MONITOR		68	0	3.01	0-34.8

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Acute Toxicity, <i>Ceriodaphnia dubia</i>	Annual	TU _a	1.0 MAXIMUM		22	0	0.19	0-0.3
Chronic Toxicity, <i>Ceriodaphnia dubia</i>	Annual	TU _c	1.01	--	22	0	1.1	0-1.3
Acute Toxicity, <i>Pimephales promelas</i>	Annual	TU _a	MONITOR		11	0	0	0-0
Chronic Toxicity, <i>Pimephales promelas</i>	Annual	TU _c	MONITOR		11	0	0	0-0
pH, Maximum	Annual	S.U.	--	9.0	1811	7.7	8.5	7.1-9
pH, Minimum	Annual	S.U.	--	6.5	1811	7.5	8.4	4.4-8.7
CBOD 5 day	Summer	mg/L	6.0	9.0	371	0.44	3.08	0-21.9
CBOD 5 day	Winter	mg/L	10	15	361	0.76	3.7	0-13.7
Outfall 002								
Total Suspended Solids	Annual	mg/L	MONITOR		14	81.3	263	13-307
Overflow Occurrence	Annual	No./Month	MONITOR		20	1	1.05	1-2
Overflow Volume	Annual	Million Gallons	MONITOR		62	1.29	5.86	0.01-11
CBOD 5 day	Summer	mg/L	MONITOR		5	41	65.8	0-67
CBOD 5 day	Winter	mg/L	MONITOR		10	90	334	0-359
Outfall 005								
Bypass Occurrence	Annual	No./Day	MONITOR		4	1	1	1-1
Bypass Total Hours Per Day	Annual	Hrs/Day	MONITOR		4	19.5	24	1-24
Total Suspended Solids	Annual	mg/L	MONITOR		8	17	50.1	8.4-62
Flow Rate	Summer	MGD	MONITOR		3	0.014	0.014	0.007-0.014
Flow Rate	Winter	MGD	MONITOR		1	0.001	0.001	0.001-0.001
Flow Rate	Annual	MGD	MONITOR		4	0.0105	0.014	0.001-0.014
Overflow Occurrence	Annual	No./Month	MONITOR		6	1	1	1-1
Overflow Volume	Annual	Million Gallons	MONITOR		7	0.05	0.288	0.0045-0.288
CBOD 5 day	Summer	mg/L	MONITOR		2	10.4	16.1	4.02-16.7
CBOD 5 day	Winter	mg/L	MONITOR		6	26.5	118	0-141
Outfall 006								
Bypass Occurrence	Annual	No./Day	MONITOR		2	1	1	1-1

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Bypass Total Hours Per Day	Annual	Hrs/Day	MONITOR		2	19	23.5	14-24
Total Suspended Solids	Annual	mg/L	MONITOR		1	14.8	14.8	14.8-14.8
Flow Rate	Summer	MGD	MONITOR		2	0.0167	0.0243	0.0081-0.0252
Flow Rate	Winter	MGD	MONITOR		0	0	0	0-0
Flow Rate	Annual	MGD	MONITOR		2	0.0167	0.0243	0.0081-0.0252
CBOD 5 day	Summer	mg/L	MONITOR		1	18	18	18-18
CBOD 5 day	Winter	mg/L	MONITOR		0	0	0	0-0
Outfall 007								
Bypass Occurrence	Annual	No./Day	MONITOR		1	1	1	1-1
Bypass Total Hours Per Day	Annual	Hrs/Day	MONITOR		1	8	8	8-8
Total Suspended Solids	Annual	mg/L	MONITOR		1	8	8	8-8
Flow Rate	Summer	MGD	MONITOR		1	0	0	0-0
Flow Rate	Winter	MGD	MONITOR		0	0	0	0-0
Flow Rate	Annual	MGD	MONITOR		1	0	0	0-0
CBOD 5 day	Summer	mg/L	MONITOR		1	34	34	34-34
CBOD 5 day	Winter	mg/L	MONITOR		0	0	0	0-0
Outfall 008								
Total Suspended Solids	Annual	mg/L	MONITOR		1	127	127	127-127
Overflow Occurrence	Annual	No./Month	MONITOR		1	1	1	1-1
Overflow Volume	Annual	Million Gallons	MONITOR		2	0.125	0.148	0.1-0.15
CBOD 5 day	Summer	mg/L	MONITOR		0	0	0	0-0
CBOD 5 day	Winter	mg/L	MONITOR		1	9.1	9.1	9.1-9.1
Outfall 300								
Overflow Occurrence	Annual	No./Month	MONITOR		21	0	0	0-0
Outfall 584								
Ammonia (NH3) In Sludge	Annual	mg/kg	MONITOR		13	3180	6770	186-8000
Nitrogen Kjeldahl, Total In Sludge	Annual	mg/kg	MONITOR		13	30800	46900	5390-47700

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Arsenic, Total In Sludge	Annual	mg/kg	41	--	13	8.54	12.6	5.78-13.4
Cadmium, Total In Sludge	Annual	mg/kg	39	--	13	5.81	11.2	3.62-12.4
Copper, Total In Sludge	Annual	mg/kg	1500	--	13	224	405	146-470
Lead, Total In Sludge	Annual	mg/kg	300	--	13	70.4	94.8	18-95.8
Nickel, Total In Sludge	Annual	mg/kg	420	--	13	34.8	38.9	27.4-42.8
Zinc, Total In Sludge	Annual	mg/kg	2800	--	13	672	867	403-883
Selenium, Total In Sludge	Annual	mg/kg	100	--	13	0	2.71	0-3.03
Fecal Coliform in Sludge	Annual	MPN/G	1000	--	13	14.1	330	0-570
Sludge Fee Weight	Annual	dry tons	MONITOR		13	155	315	8.4-495
Sludge Weight	Annual	Dry Tons	MONITOR		13	155	315	8-495
Mercury, Total In Sludge	Annual	mg/kg	17	--	13	0	0.981	0-1.06
Molybdenum In Sludge	Annual	mg/kg	75	--	13	16.9	20.6	14-21.1
Outfall 601								
pH	Annual	S.U.	MONITOR		1792	6.87	7.5	4.57-9.94
Total Suspended Solids	Annual	mg/L	MONITOR		739	150	469	0.75-2350
Selenium, Total Recoverable	Annual	µg/L	MONITOR		4	0	0	0-0
Nickel, Total Recoverable	Annual	µg/L	MONITOR		37	0	10	0-23
Silver, Total Recoverable	Annual	µg/L	MONITOR		67	0	0	0-6
Strontium, Total Recoverable	Annual	µg/L	MONITOR		57	373	680	49-5950
Zinc, Total Recoverable	Annual	µg/L	MONITOR		37	76	192	34-399
Cadmium, Total Recoverable	Annual	µg/L	MONITOR		37	0	0	0-3
Lead, Total Recoverable	Annual	µg/L	MONITOR		37	0	20	0-38
Chromium, Total Recoverable	Annual	µg/L	MONITOR		37	0	1.8	0-9
Copper, Total Recoverable	Annual	µg/L	MONITOR		37	20	68.4	0-93
Chromium, Dissolved Hexavalent	Annual	µg/L	MONITOR		74	0	10.4	0-24
Mercury, Total (Low Level)	Annual	ng/l	MONITOR		70	39	269	0-367
CBOD 5 day	Summer	mg/L	MONITOR		376	307	746	0-2160
CBOD 5 day	Winter	mg/L	MONITOR		366	256	669	0-1100
Outfall 602								
Bypass Occurrence	Annual	No./Day	MONITOR		34	1	1	1-1
Bypass Total Hours Per Day	Annual	Hrs/Day	MONITOR		35	13	24	1-24
Total Suspended Solids	Annual	mg/L	MONITOR		10	116	403	13.6-460

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Flow Rate	Summer	MGD	MONITOR		17	1.87	14.7	0.04-19.6
Flow Rate	Winter	MGD	MONITOR		18	0.43	5.96	0-12.7
Flow Rate	Annual	MGD	MONITOR		35	0.73	13.3	0-19.6
CBOD 5 day	Summer	mg/L	MONITOR		4	116	967	0-1110
CBOD 5 day	Winter	mg/L	MONITOR		6	39.9	97.8	10.8-108
Outfall 801								
Water Temperature	Annual	°C	MONITOR		94	12.9	27.6	0.6-30.3
Dissolved Oxygen	Summer	mg/L	MONITOR		47	8.3	11.2	3.3-14.3
Dissolved Oxygen	Winter	mg/L	MONITOR		47	11	14.9	6.7-19.2
pH	Annual	S.U.	MONITOR		94	7.79	8.46	3.6-8.64
Nitrogen, Ammonia	Summer	mg/L	MONITOR		31	0	0.72	0-0.93
Nitrogen, Ammonia	Winter	mg/L	MONITOR		29	0	0.334	0-0.69
Fecal Coliform	Annual	#/100 mL	MONITOR		48	772	6220	0-12000
48-Hr. Acute Toxicity <i>Ceriodaphnia dubia</i>	Annual	% Affected	MONITOR		22	0	9.5	0-10
96-Hr. Acute Toxicity <i>Pimephales promelas</i>	Annual	% Affected	MONITOR		11	0	3.5	0-5
7-Day Chronic Toxicity <i>Ceriodaphnia dubia</i>	Annual	% Affected	MONITOR		22	0	10	0-20
7-Day Chronic Toxicity <i>Pimephales promelas</i>	Annual	% Affected	MONITOR		11	0	6.25	0-7.5
Outfall 901								
Water Temperature	Annual	°C	MONITOR		95	15.4	27	4.8-30.3
Water Temperature	Annual	°F	MONITOR		3	26.9	30	26.6-30.3
Dissolved Oxygen	Summer	mg/L	MONITOR		47	8.51	10.7	3.4-12
Dissolved Oxygen	Winter	mg/L	MONITOR		48	10.3	12.7	6.5-13.3
pH	Annual	S.U.	MONITOR		95	7.8	8.23	3.3-8.54
Nitrogen, Ammonia	Summer	mg/L	MONITOR		31	0	0.625	0-2.06
Nitrogen, Ammonia	Winter	mg/L	MONITOR		30	0	1.54	0-2.63
Hardness, Total	Annual	mg/L	MONITOR		55	280	505	170-792
Selenium, Total Recoverable	Annual	µg/L	MONITOR		10	0	0	0-0
Cadmium, Total	Annual	µg/L	MONITOR		1	0	0	0-0

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Nickel, Total Recoverable	Annual	µg/L	MONITOR		36	0	0	0-0
Silver, Total Recoverable	Annual	µg/L	MONITOR		61	0	0	0-0
Strontium, Total Recoverable	Annual	µg/L	MONITOR		56	445	3290	266-4830
Zinc, Total Recoverable	Annual	µg/L	MONITOR		37	19	77.6	0-540
Cadmium, Total Recoverable	Annual	µg/L	MONITOR		35	0	3	0-5
Chromium, Total Recoverable	Annual	µg/L	MONITOR		35	0	0	0-8
Copper, Total Recoverable	Annual	µg/L	MONITOR		36	0	8	0-12
Chromium, Dissolved Hexavalent	Annual	µg/L	MONITOR		61	0	0	0-14
Fecal Coliform	Annual	#/100 mL	MONITOR		42	173	3600	0-18000
48-Hr. Acute Toxicity <i>Ceriodaphnia dubia</i>	Annual	% Affected	MONITOR		1	5	5	5-5
Outfall 902								
48-Hr. Acute Toxicity <i>Ceriodaphnia dubia</i>	Annual	% Affected	MONITOR		7	0	0	0-0
96-Hr. Acute Toxicity <i>Pimephales promelas</i>	Annual	% Affected	MONITOR		7	0	0	0-0
Outfall 903								
7-Day Chronic Toxicity <i>Ceriodaphnia dubia</i>	Annual	% Affected	MONITOR		7	0	0	0-0
7-Day Chronic Toxicity <i>Pimephales promelas</i>	Annual	% Affected	MONITOR		7	0	4.1	0-5

Table 3. Projected Effluent Quality Values for Delphos WWTP

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Aluminum	µg/L	4	0	--	--
Ammonia-Summer	mg/L	245	28	1.716157	2.3509
Ammonia-Winter	mg/L	180	77	4.132676	5.6612
Arsenic	µg/L	4	1	5.694	7.8
Barium	µg/L	4	4	55.042	75.4
Bis(2-ethylhexyl)phthalate	µg/L	71	6	5.986	8.2
Cadmium	µg/L	50	3	2.92	4
Chloroform (Trichloromethane)	µg/L	4	2	19.7392	27.04
Chromium	µg/L	48	1	7.227	9.9
Chromium ⁺⁶ (dissolved)	µg/L	74	1	6.57	9
Copper	µg/L	50	10	26.159	30.756
Dissolved solids (average)	mg/L	65	65	855.13	1071.9
Lead	µg/L	50	5	9.6656	14.958
Magnesium	mg/L	--	--	--	--
Manganese	µg/L	4	2	64.532	88.4
Mercury	ng/L	67	31	2.5413	3.8093
Nickel	µg/L	48	2	2.3287	3.19
Nitrate + Nitrite	mg/L	59	56	12.917	20.127
Phosphorus	mg/L	266	127	0.50791	0.58356
Selenium	µg/L	13	0	--	--
Silver	µg/L	62	3	0.949	1.3
Strontium	µg/L	56	56	422.6	497.81
Total Kjeldahl nitrogen	mg/L	57	40	2.9535	4.5268
Zinc	µg/L	50	41	55.194	86.745

Table 4. Acute and Chronic Toxicity Test Results

Summary of acute and chronic toxicity test results at the Delphos WWTP effluent (AA = below detection limit [0.2 TU_a, 1.0 TU_c]; NA = not analyzed):

Date	<i>Ceriodaphnia dubia</i>		<i>Pimephales Promelas</i>	
	TU _a	TU _c	TU _a	TU _c
2/27/2007	AA	AA	AA	AA
3/23/2007	AA	AA	AA	AA
4/20/2007	AA	AA	AA	AA
5/18/2007	AA	1.0	AA	AA
7/13/2007	AA	1.0	AA	AA
10/26/2007	AA	1.0	AA	AA
1/18/2008	AA	AA	AA	AA
4/11/2008	AA	AA	NA	NA
7/18/2008	AA	AA	AA	AA
10/17/2008	AA	AA	NA	NA
1/16/2009	AA	AA	NA	NA
4/17/2009	AA	AA	NA	NA
7/10/2009	0.2	1.1	AA	AA
10/16/2009	AA	AA	NA	NA
1/15/2010	AA	AA	NA	NA
4/16/2010	AA	AA	NA	NA
7/16/2010	AA	AA	AA	AA
10/11/2010	0.3	1.3	NA	NA
1/14/2011	AA	AA	NA	NA
4/15/2011	AA	AA	NA	NA
7/29/2011	AA	AA	AA	AA
10/14/2011	AA	AA	NA	NA

TU_a = acute toxicity units

TU_c = chronic toxicity units

Table 5. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Wildlife	Average			Maximum Aquatic Life	
			Human Health	Agri-culture	Aquatic Life		
Aluminum	µg/L	--	4500	--	--	--	--
Ammonia-Summer	mg/L	--	--	--	0.8	--	--
Ammonia-Winter	mg/L	--	--	--	4.3	--	--
Arsenic	µg/L	--	580	100	150	340	680
Barium	µg/L	--	160000	--	220	2000	4000
Bis(2-ethylhexyl) phthalate	µg/L	--	32	--	8.4	1100	2100
Cadmium	µg/L	--	730	50	5.5	14	29
Chloroform (Trichloromethane)	µg/L	--	1700	--	140	1300	2600
Chromium	µg/L	--	14000	100	200	4200	8400
Chromium ⁺⁶ (dissolved)	µg/L	--	14000	--	11	16	31
Copper	µg/L	--	64000	500	22	37	74
Dissolved solids (average)	mg/L	--	--	--	1500	--	--
Lead	µg/L	--	--	100	24	450	910
Magnesium	mg/L	--	--	--	--	--	--
Manganese	µg/L	--	61000	--	--	--	--
Mercury	ng/L	1.3	3.1	10000	910	1700	3400
Nickel	µg/L	--	43000	200	120	1100	2200
Nitrate + Nitrite	mg/L	--	--	100	--	--	--
Phosphorus	mg/L	--	--	--	--	--	--
Selenium	µg/L	--	3100	50	5	--	--
Silver	µg/L	--	11000	--	1.3	9.4	19
Strontium	µg/L	--	1400000	--	21000	40000	81000
Total Kjeldahl nitrogen	mg/L	--	--	--	--	--	--
Zinc	µg/L	--	35000	25000	290	290	570

Table 6. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
<i>Stream Flows</i>				
1Q10	cfs	annual	0.13	USGS Index Gage 04191500, Auglaize River at Defiance
7Q10	cfs	annual	0.22	USGS Index Gage 04191500, Auglaize River at Defiance
		summer	0	
		winter	0	
30Q10	cfs	summer	0.49	USGS Index Gage 04191500, Auglaize River at Defiance
		winter	1.18	USGS Index Gage 04191500, Auglaize River at Defiance
90Q10	cfs	annual	0.91	
Harmonic Mean	cfs	annual	2.09	USGS Index Gage 04191500, Auglaize River at Defiance
Mixing Assumption	%	average	25	
	%	maximum	100	
<i>Hardness</i>				
	mg/L	annual	280	MOR data, 901 monitoring station, n=55, 2007-2011
<i>pH</i>				
	S.U.	summer	8.02	MOR data, 901 monitoring station, n=29, 2007-2011
		winter	7.855	MOR data, 901 monitoring station, n= 20, 2007-2011
<i>Temperature</i>				
	°C	summer	26.9	MOR data, 901 monitoring station, n= 29, 2007-2011
		winter	10.05	MOR data, 901 monitoring station, n= 20, 2007-2011
<i>Delphos WWTP flow</i>				
	cfs	annual	5.93	Permit renewal application
<i>Background Water Quality</i>				
Aluminum	µg/L		588.25	STORET; 2000-2002; n=8; 2<MDL; Stations 500060, P03P07, P03W12, P03W18
Ammonia-Summer	mg/L		0	MOR; 2007-2011; n=31; 6<MDL; 801 monitoring station, 50th percentile
Ammonia-Winter	mg/L		0	MOR; 2007-2011; n=29; 4<MDL; 801 monitoring station, 50th percentile
Arsenic	µg/L		1.4	No representative data available.
Barium	µg/L		58.4	MOR; 2007-2011; n=9; 9<MDL; Stations 500060, P03P07, P03W12, P03W18
Bis(2-	µg/L		0	No representative data available.

ethylhexyl)phthalate				
Cadmium	µg/L		0	STORET; 2000-2002; n=9; 0<MDL; Stations 500060, P03P07, P03W12, P03W18
Chloroform (Trichloromethane)	µg/L		0	No representative data available.
Chromium	µg/L		20	STORET; 2000-2002; n=9; 7<MDL; Stations 500060, P03P07, P03W12, P03W18
Chromium ⁺⁶ (dissolved)	µg/L		0	No representative data available.
Copper	µg/L		0	STORET; 2000-2002; n=9; 9<MDL; Stations 500060, P03P07, P03W12, P03W18
Dissolved solids (average)	mg/L		546	STORET; 2000-2002; n=25; 0<MDL; Stations 500060, P03P07, P03W12, P03W18
Lead	µg/L		0	STORET; 2000-2002; n=9; 9<MDL; Stations 500060, P03P07, P03W12, P03W18
Magnesium	mg/L		47.2	STORET; 2000-2002; n=9; 0<MDL; Stations 500060, P03P07, P03W12, P03W18
Manganese	µg/L		37.5	STORET; 2000-2002; n=9; 1<MDL; Stations 500060, P03P07, P03W12, P03W18
Mercury	ng/L		0	No representative data available.
Nickel	µg/L		0	STORET; 2000-2002; n=9; 9<MDL; Stations 500060, P03P07, P03W12, P03W18
Nitrate + Nitrite	mg/L		3.85	STORET; 2000-2002; n=25; 0<MDL; Stations 500060, P03P07, P03W12, P03W18
Phosphorus	mg/L		0.0116	STORET; 2000-2002; n=25; 2<MDL; Stations 500060, P03P07, P03W12, P03W18
Selenium	µg/L		0	STORET; 2000-2002; n=9; 9<MDL; Stations 500060, P03P07, P03W12, P03W18
Silver	µg/L		0	No representative data available.
Strontium	µg/L		3150	STORET; 2000-2002; n=9; 0<MDL; Stations 500060, P03P07, P03W12, P03W18
Total Kjeldahl nitrogen	mg/L		0.75	STORET; 2000-2002; n=25; 0<MDL; Stations 500060, P03P07, P03W12, P03W18
Zinc	µg/L		7.78	STORET; 2000-2002; n=9; 6<MDL; Stations 500060, P03P07, P03W12, P03W18

MDL = method detection limit

n = number of samples

STORET = United States Environmental Protection Agency water quality Storage and Retrieval database

Table 7. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Wildlife	Average			Maximum Aquatic Life	
			Human Health	Agri-culture	Aquatic Life		
Aluminum	µg/L	--	4845	--	--	--	--
Ammonia-Summer	mg/L	--	--	--	0.87	--	--
Ammonia-Winter	mg/L	--	--	--	--	--	--
Arsenic	µg/L	--	631	109	151	347	680
Barium	µg/L	--	174093	--	221	2043	4000
Bis(2-ethylhexyl)phthalate	µg/L	--	35	--	8.5	1124	2100
Cadmium	µg/L	--	794	54	5.6	14	29
Chloroform (Trichloromethane)	µg/L	--	1850	--	141	1328	2600
Chromium	µg/L	--	15232	107	202	4292	8400
Chromium ⁺⁶ (dissolved)	µg/L	--	15234	--	11	16	31
Copper	µg/L	--	69639	544	22	38	74
Dissolved solids (average)	mg/L	--	--	--	1509	--	--
Lead	µg/L	--	--	109	24	460	910
Magnesium	mg/L	--	--	--	--	--	--
Manganese	µg/L	--	66371	--	--	--	--
Mercury	ng/L	1.3	3.1	10000	910	1700	3400
Nickel	µg/L	--	46789	218	121	1124	2200
Nitrate + Nitrite	mg/L	--	--	108	--	--	--
Phosphorus	mg/L	--	--	--	--	--	--
Selenium	µg/L	--	3373	54	5	--	--
Silver	µg/L	--	11969	--	1.3	9.6	19
Strontium	µg/L	--	1523078	--	21166	40808	81000
Total Kjeldahl nitrogen	mg/L	--	--	--	--	--	--
Zinc	µg/L	--	38083	27202	293	296	570

Table 9. Final Effluent Limits and Monitoring Requirements for Outfall 2PD00029001

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						
Summer	mg/L	----- Not less than 7.0 mg/L -----				TMDL/M ^c
Winter	mg/L	----- Not less than 5.0 mg/L -----				TMDL/M ^c
CBOD ₅						
Summer	mg/L	6.0	9.0 ^d	86	130 ^d	EP/TMDL
Winter	mg/L	10	15 ^d	145	217 ^d	EP/TMDL
Suspended Solids	mg/L	12	18 ^d	174	261 ^d	EP
Total Filterable Residue (Dissolved Solids)	mg/L	----- Monitor -----				WLA
Ammonia-N	mg/L	----- Monitor -----				M ^c
Jun-Sep	mg/L	0.87	1.31 ^d	13	19 ^d	WLA
Mar-May & Oct-Nov	mg/L	2.2	3.3 ^d	32	48 ^d	EP/TMDL
Dec-Feb	mg/L	3.8	5.7 ^d	55	83 ^d	EP/TMDL
Total Kjeldahl Nitrogen	mg/L	----- Monitor -----				BPJ
Nitrite + Nitrate	mg/L	----- Monitor -----				BPJ
Phosphorus, total	mg/L	1.0	1.5	15	22	EP
Oil and Grease	mg/L	--	10	--	--	WQS
pH	S.U.	----- 6.5 to 9.0 -----				WQS
<i>E. coli</i>	#/100mL					
Summer		161	362 ^d	--	--	WQS
Chromium ⁺⁶ (Dissolved)	µg/L	----- Monitor -----				M ^c
Chromium	µg/L	----- Monitor -----				M ^c
Copper	µg/L	22	33	0.32	0.48	WLA/IMZM
Lead	µg/L	----- Monitor -----				M ^c
Mercury	ng/L	1.3	1700	0.00002	0.025	WLA
Zinc	µg/L	----- Monitor -----				M ^c
Nickel	µg/L	----- Monitor -----				M ^c
Silver	µg/L	----- Monitor -----				M ^c
Bis(2-ethylhexyl)phthalate	µg/L	----- Monitor -----				WLA
Whole Effluent Toxicity						
Acute						
<i>Ceriodaphnia dubia</i>	TU _a	1.0	--	--	--	WET
<i>Pimephales promelas</i>	TU _a	----- Monitor (w/o trigger) -----				WET
Chronic						
<i>Ceriodaphnia dubia</i>	TU _c	--	1.01	--	--	WET/WLA
<i>Pimephales promelas</i>	TU _c	----- Monitor (w/o trigger) -----				WET

- ^a Effluent loadings based on average design discharge flow of 3.83 MGD.
- ^b Definitions: **ABS** = Antibacksliding Rule (OAC 3745-33-05(E) and 40 CFR Part 122.44(l))
 BPJ = Best Professional Judgment
 EP = Existing Permit
 M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
 RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A))
 TMDL = Total Maximum Daily Load
 WET = Whole Effluent Toxicity (OAC 3745-33-07(B))
 WLA = Wasteload Allocation procedures (OAC 3745-2)
 WQS = Ohio Water Quality Standards (OAC 3745-1)
- ^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.