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 Xenia Glady Run Wastewater Treatment Plant (WWTP)

Public Notice No.: 13-10-066
Public Notice Date: October 30, 2013
Comment Period Ends: November 30, 2013

Ohio EPA Permit No.: 1PD00016*MD
Application No.: OH0028207

Name and Address of Applicant:
City of Xenia
101 North Detroit Street
Xenia, Ohio 45385

Name and Address of Facility Where Discharge Occurs:
Glady Run Wastewater Treatment Plant
2381 Bellbrook Avenue
Xenia, Ohio 45385
Greene County

Receiving Water: Glady Run

Subsequent Stream Network: Little Miami River to Ohio River

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 (CWA) and Ohio Water Pollution Control Law, Chapter 6111 of the Ohio Revised Code (ORC). 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 the United States Environmental Protection Agency (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, 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

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the current permit, although some monitoring frequencies have changed: flow, temperature, dissolved oxygen, 5-day carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), ammonia, total filterable residue (total dissolved solids), nitrate+nitrite, total Kjeldahl nitrogen (TKN), oil and grease, pH, free cyanide, cadmium, chromium, dissolved hexavalent chromium, copper, lead, mercury, nickel, and zinc.

Final effluent limits are proposed for *Escherichia coli.* New WQS for *E. coli* became effective in March 2010. These limits will take the place of fecal coliform limits.

The proposed phosphorus limits for Xenia Glady Run WWTP are consistent with the steps that have been taken in the upper Little Miami River basin to implement the findings of the Total Maximum Daily Load (TMDL) for the Upper Little Miami River - Final Report (Ohio EPA, April 2002).

Annual chronic toxicity monitoring with the determination of acute endpoints is proposed for the life of the permit. This satisfies the minimum testing requirements of rule 3745-33-07(B)(11) of the Ohio Administrative Code (OAC) and will adequately characterize toxicity in the plant's effluent.

New monitoring requirements are proposed for dissolved hexavalent chromium. The current method detection limit (MDL), the minimum concentration at which one can be confident that the effluent concentration is greater than zero, for this parameter is too high to accurately evaluate concentrations of this parameter in the receiving water and new MDLs are proposed.

New monitoring requirements for bis(2-ethylhexyl)phthalate are being proposed for this permit because this parameter was reported at levels higher than limits to maintain applicable water quality criteria twice in the pretreatment data.

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

Table of Contents

List of Figures

List of Tables

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 Processing Unit
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 Michelle Waller (937)285-6028, michelle.waller@epa.ohio.gov, or Andy Bachman, (614)644-3075, andrew.bachman@epa.ohio.gov.

Location of Discharge/Receiving Water Use Classification

Xenia Glady Run WWTP discharges to Glady Run at river mile 4.93. Figure 1 shows the approximate location of the facility.

This segment of Glady Run is described by Ohio EPA River Code: 11-032, U.S. EPA River Reach #: 05090202-037, County: Greene, Ecoregion: Eastern Corn Belt Plains. Glady Run is designated for the following uses under Ohio's water quality standards (OAC 3745-1): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Primary Contact Recreation (PCR) Class A. Although Glady Run is a stream designated as "Class B," the Xenia Glady Run discharge dominates the stream it discharges to and the Little Miami River, which is designated "Class A" is less than ten miles downstream. Without a Class A designation to Xenia Glady Run, TMDL goals for impaired streams could not be met at the Little Miami River and thus a "Class A" designation has been proposed for the Xenia Glady Run discharge. The approximate location is shown in Figure 1.

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 CWA. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the CWA 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 Xenia Glady Run WWTP was originally constructed in 1959, and upgraded in 1999. Xenia Glady Run WWTP is an advanced treatment facility with an average design flow of 4.0 million gallons per day (MGD), and a peak hydraulic capacity of 12.0 MGD. The treatment plant includes the following equipment and/or wet processes:

- Influent pumping
- Bar screen/fine screen
- Flow equalization
- Grit removal
- Biological phosphorus removal
- Aerobic Sludge Digestion
- Secondary clarification
- Ultraviolet disinfection

Table 1: Sludge Removed from Xenia-Glady Run WWTP 2008-2012

Year	Dry Tons Removed
2008	365.21
2009	501.67
2010	289.4
2011	327.89
2012	349.05

Sludge processing includes aerobic digestion. Sludge is then hauled to the nearby Xenia Ford Rd WWTP facility. The process design capacity of the sewage sludge treatment system is 685 dry tons per year. Table 1 shows the total tons of sludge removed from the WWTP from 2008 through 2012, based upon discharge monitoring reports (DMR) data.
Xenia Glady Run WWTP has the ability to divert influent flow at the head of the plant to a flow equalization (EQ) basin. In general, influent is diverted to the EQ basin when the flow exceeds plant design flows. When the EQ basin becomes full, wastewater discharges through an emergency overflow (outfall 002) directly to the Glady Run without treatment.

The plant serves the southern side of Xenia. The total population served is estimated to be 12,000. Xenia's collection system which is served by Xenia Glady Run WWTP is 100 percent separate sanitary sewers. The inflow/infiltration rate for the collection system is estimated to be 0.50 MGD. Xenia's pretreatment program was approved on August 1, 1997. According to the permit renewal application, one non-categorical and two categorical users discharge to the Glady Run treatment plant. This totals to 0.07 MGD of non-categorical wastewater and 0.028 MGD of categorical wastewater entering Xenia Glady Run WWTP.

Description of Existing Discharge

Table 2 shows the annual effluent flow rates for the Xenia Glady Run WWTP based upon DMR data. The flow rates have been very variable across this period. Heavy rains in 2008 and 2011 caused flow rates to increase in these years.

Table 2: Effluent Flow Rates for Outfall 001 2008-2012

Year	Annual Flow in MGD		
	50th Percentile	95th Percentile	Maximum
2008	2.11	3.78	12.00
2009	1.71	2.35	3.50
2010	1.66	2.61	6.00
2011	1.94	4.52	11.58
2012	1.58	2.57	6.58

Table 3 shows a summary of the aquatic life use attainment status of Glady Run near where the Xenia Glady Run WWTP discharges.

Table 4 presents the calculated phosphorus loadings from Xenia Glady Run WWTP.

Table 5 presents chemical specific data compiled from data reported in annual pretreatment reports and data collected by Ohio EPA.

Table 6 presents a summary of unaltered DMR data for outfall 1PD00016001. Data are presented for the period from January, 2008 through December 2012, and current permit limits are provided for comparison.

Table 7 summarizes the chemical specific data for outfall 1PD00016001 by presenting the average and maximum Projected Effluent Quality values.

Table 8 summarizes the results of acute and chronic whole effluent toxicity tests of the final effluent.

Xenia Glady Run WWTP reports sanitary sewer overflow (SSO) occurrences under station 300 in its NPDES permit. There were two overflow occurrences in 2009, one occurrence in 2010, and one occurrence in 2011.

Bypasses from the equalization basin occur under station 002 in the NPDES permit. From 2008 to 2012 there were no overflow occurrences.

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 Ohio EPA.

Assessment of Impact on Receiving Waters

The most recent Ohio EPA survey of the upper Little Miami River basin, including Glady Run, was conducted during the summer of 1998. The results of that study are included in the report, Biological and Water Quality Study of the Little Miami River Basin, 1998. Clark, Greene, Montgomery, Warren, Clermont and Hamilton Counties (Ohio EPA; report MAS/1999-12-3). The report is available at the following Internet site: http://www.epa.state.oh.us/portals/35/documents/LMR_Tsd.pdf

The following is an excerpt from that report: "Status of Aquatic Life Uses: Of the 3.7 miles of Glady Run assessed, 0.5 miles fully attained, 1.4 miles partially attained, and 1.8 miles did not attain WWH. Glady Run was impaired by the Xenia Glady Run WWTP due to organic enrichment and chronic toxicity. (Page 7)" The following table shows the attainment status of Glady Run:

Table 3. Glady Run Use Designation Status and Causes and Sources.

Location	River Mile	Use Desig.	Status (2011-12)	Causes	Sources
Glady Run @ Hedges Rd. nr Xenia	4.08	WWH	PARTIAL	Other*	Unspecified urban stormwater Urban runoff/storm sewers
Glady Run @ Schnebly Rd. south crossing	1.10	WWH	PARTIAL	Other*	Unspecified urban stormwater Urban runoff/storm sewers

* "Other" as a cause refers to not readily identified impacts associated with runoff from impervious surfaces and lawns in urban settings.

In July 2002, U.S. EPA approved the Ohio EPA report Total Maximum Daily Loads for the Upper Little Miami River, Final Report (TMDL). The complete report is available at the following internet site: http://www.epa.state.oh.us/portals/35/tmdl/ULMR_finalreport.pdf.

The implementation recommendations from the TMDL report for point source dischargers such as the Xenia Glady Run WWTP were incorporated into the existing and past permits for this facility, which became effective in 2008. To comply with the TMDL, the permit requires the City to reduce the total phosphorus summer loading from Xenia Glady Run WWTP to 7.6 kg/day and have a monthly concentration less than 1.0 mg/L.

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 Glady Run WWTP was 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 2008 through December 2012
NPDES Application data / Pretreatment data	1/7/08, 1/5/09, 3/29/10, and 5/10/11

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 7.

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 12 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 following dischargers in the upper Little Miami River segment were considered interactive:

- Xenia-Ford Road WWTP
- Xenia-Glady Run WWTP
- Montgomery County Eastern Regional WWTP
- Greene County Beavercreek Water Resource Reclamation Facility
- Greene County Sugarcreek Water Resource Reclamation Facility

The available assimilative capacity was distributed among them using the CONSWLA water quality model for conservative parameters.

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 10, 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, which are 12 ng/l (average) and 1700 ng/l (maximum) in the Ohio River basin.

The data used in the WLA are listed in Tables 9 and 10. The WLA results to maintain all applicable criteria are presented in Table 11. Current ammonia limits were not found to be protective of aquatic life. The winter ammonia limits are proposed to decrease to 9.3 mg/L using the WLA procedures and are protective of WQS for ammonia toxicity.

Whole Effluent Toxicity WLA

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 Xenia Glady Run WWTP, the WLA values are 0.3 TU_a and 1.02 TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the concentration of effluent which has an inhibitory effect on 25% of the test organisms for the monitored effect, as compared to the control (IC_{25}):

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

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):

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

Where NOEC is No Observable Effect Concentration and LOEC is Lowest Observable Effect Concentration

The acute toxicity unit (TU_a) is defined as 100 divided by the concentration of effluent that is lethal to 50 percent of the exposed organisms (LC_{50}) 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 wasteload allocation is less than 1.0 TU_a, it may be defined as:

Dilution Ratio (downstream flow to discharger flow)	Wasteload Allocation (percent effects in 100% effluent)
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 acute wasteload allocation for Xenia Glady Run WWTP is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.02 to 1.

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 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 WLAs are selected from Table 11. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 7, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [($PEQ_{avg} \div PEL_{avg}$) X 100, or ($PEQ_{max} \div PEL_{max}$) X 100)], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 12.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 13 presents the final effluent limits and monitoring requirements proposed for Xenia Glady Run WWTP outfall 1PD00016001 and the basis for their recommendation.

Oil and Grease, pH, and Dissolved Oxygen

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

Escherichia coli

Effluent limits are being proposed for Escherichia coli. WQS for *E. coli* became effective in March 2010 and take the place of fecal coliform testing. The facility should not anticipate problems meeting the proposed monthly and weekly geometric mean concentrations of 126 and 284 per 100 ml respectively, these limits have been recommended in the permit for final effluent tables. Class A Primary Contact Recreation *E. coli* standards apply to the Glady Run.

Ammonia, Total Suspended Solids, and $CBOD_5$

The limits for ammonia, total suspended solids, and $CBOD_5$ (5-day carbonaceous biochemical oxygen demand) that were approved for the treatment plant under the existing permit are proposed to continue. The concentration limits for these parameters are based upon the treatment technology associated with the plant design of Xenia Glady Run WWTP. The loading limits are based upon the plant design flow of 4.0 MGD.

Total Phosphorus and TMDL Compliance

The existing permit for the Xenia Glady Run WWTP included a compliance schedule to meet phosphorus reductions required by the *Total Maximum Daily Loads for the Upper Little Miami River, Final Report* (Ohio EPA; approved by U.S. EPA, July 2002). The Phase 1 reductions required the plant to meet average total phosphorus limits of 1.0 mg/L (monthly) and 1.5 mg/L (weekly) during the months of May through October no later than April 1, 2008.

Phase 2 reductions required Xenia Glady Run WWTP to meet an allowable total phosphorus load of 7.6 kg/day during the summer months beginning in May 2013. As defined in the permit, the plant's summer phosphorus load is calculated using the median plant flow (May – October) for the previous 5 calendar years and the median phosphorus concentration (May – October).

Table 4 shows that over the past four years Xenia Glady Run WWTP has produced phosphorus loads less than 7.6 kg/day. The loading limit of 7.6 kg/day is proposed to continue for this permit for the summer months of May through October as it is in the current permit to help maintain river attainment levels. Weekly limits of 1.5mg/L and monthly limits of 1.0mg/L will also continue in the summer.

Table 4: Calculated Phosphorus Loadings from Xenia Glady Run WWTP 2008-2012					
Median Flows for May through October		Median Daily P Concentration for May through October		Calculated Loading	
Range	Flow (MGD)	Year	Phosphorus (mg/L)	Year	Loading (kg/day)
'03-'07	1.8435	2008	0.26	2008	1.81
'04-'08	1.789	2009	0.345	2009	2.34
'05-'09	1.726	2010	0.645	2010	4.21
'06-'10	1.704	2011	0.535	2011	3.45
'07-'11	2.0432	2012	0.295	2012	2.28

Instruction on how to calculate phosphorus loadings is found in Part II, Item Z of the permit.

Nitrate+Nitrite and Total Kjeldahl Nitrogen (TKN)

The continuation of monitoring for nitrate+nitrite and TKN is proposed based on best engineering judgment. Monitoring nitrate+nitrite and TKN at the upstream and downstream stations is also proposed. The purpose of the monitoring is to maintain a data set tracking nutrient levels in the upper Little Miami River basin.

Free Cyanide, Cadmium, Chromium, Dissolved Hexavalent Chromium, Mercury, Nickel, Lead, Copper, and Zinc

Based on reasonable potential for requiring monitoring in NPDES permits [OAC 3745-33-07(A)], monitoring is proposed to continue for free cyanide, cadmium, chromium, dissolved hexavalent chromium, mercury, nickel, lead, copper and zinc. Because these contaminants were included in Group 2 and 3 under the risk assessment procedures (Table 12), monitoring at their current frequency is proposed to continue. The purpose of the monitoring is to maintain a current data base on the level of these contaminants in the plant effluent. This data will be used to assess reasonable potential at future permit renewals.

To ensure that data is obtained that allows Ohio EPA to make water quality-related decisions regarding dissolved hexavalent chromium; a special condition is proposed in Part II, Item V of the permit that provides guidance on the MDL the permittee should use in analyzing this contaminant.

Total Filterable Reside (Total Dissolved Solids)

Ohio EPA risk assessment (Table 12) places total filterable residue in group 4. This placement as well as the data in Tables 9 and 11 support that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for total dissolved solids is proposed to continue.

Bis(2-ethylhexyl) Phthalate

Bis(2-ethylhexyl) Phthalate is included in Group 5 under the risk assessment procedure (Table 12). However, using the discretion allowed in paragraph A(5) of Rule 3745-33-07, monitoring, rather than effluent limits, is proposed for this pollutant. The PEQ values calculated for this pollutant (Table 7) may not be representative of the actual levels in the plant effluent because they were based on limited data sets. There were two detections of Bis(2-ethylhexyl) Phthalate in annual pretreatment sampling. All other tests were measured to be under the MDL over the past five years. Quarterly monitoring for Bis(2-ethylhexyl) Phthalate is thus proposed.

Whole Effluent Toxicity Reasonable Potential

Based on evaluating the whole effluent toxicity data presented in Table 8 and other pertinent data under the provisions of OAC 3745-33-07(B), Xenia Glady Run WWTP is placed in Category 4 with respect to whole effluent toxicity. While this indicates that the plant's effluent does not currently pose a toxicity problem, annual toxicity testing is proposed consistent with the minimum monitoring requirements at OAC 3754-33-07(B)(11). The proposed monitoring will adequately characterize toxicity in the plant's effluent.

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.

Other Requirements

Compliance Schedule

A 6 month compliance schedule is proposed for Xenia Glady Run WWTP to submit a technical justification for either revising its local industrial user limits or retaining its existing local limits. If revisions to local limits are required, Xenia Glady Run WWTP must also submit a pretreatment program modification request.

Sanitary Sewer Overflow Reporting

Provisions for reporting 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 Xenia Glady Run WWTP to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 1PD00016001.

Operator of Record

In December 2006, 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 OAC 3745-7-02. It requires the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

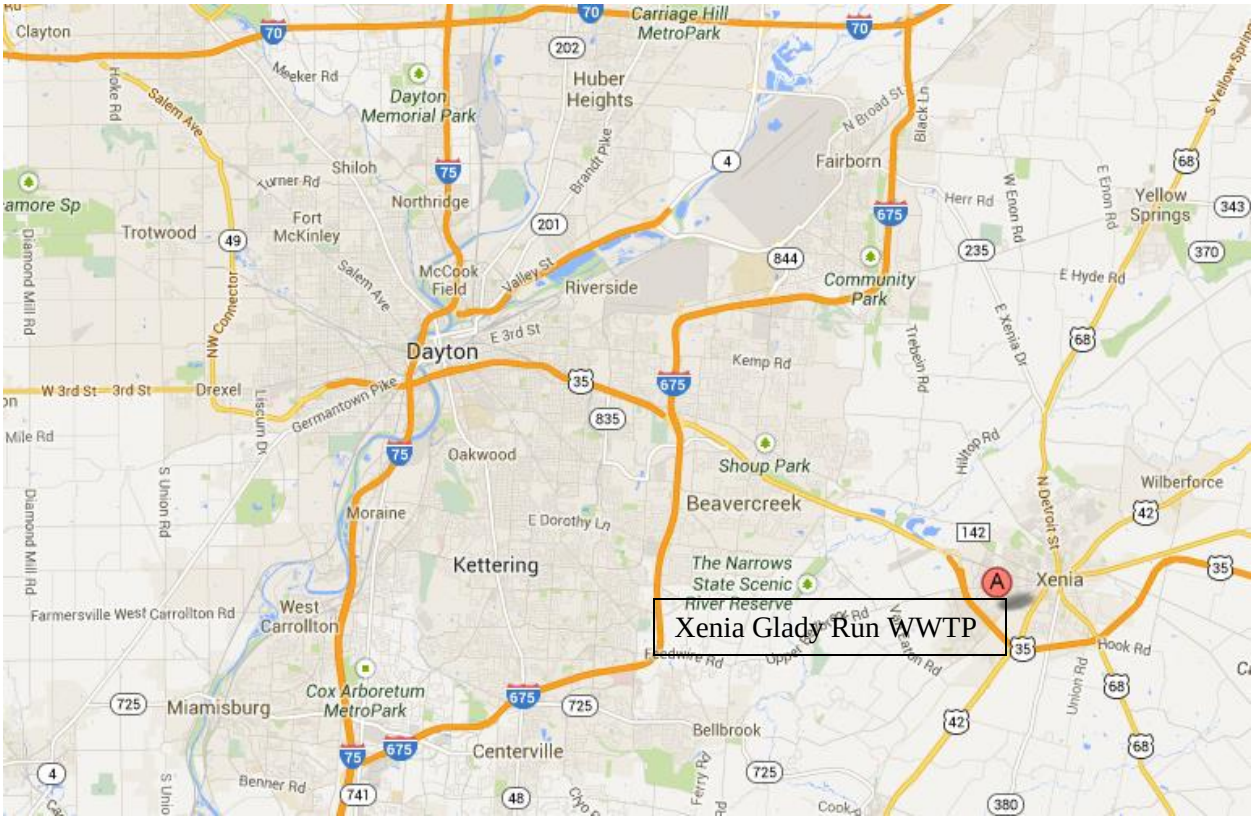
Storm Water Compliance

Parts IV, V, and VI have been included with the draft permit 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, Xenia Glady Run WWTP may seek permit coverage under the general permit for industrial storm water (permit # OHR000005) or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if: 1) the Xenia Glady Run WWTP submits a Notice of Intent (NOI) for coverage under the general permit for industrial storm water 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 Glady Run providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

Figure 1. Location of Xenia Glady Run WWTP



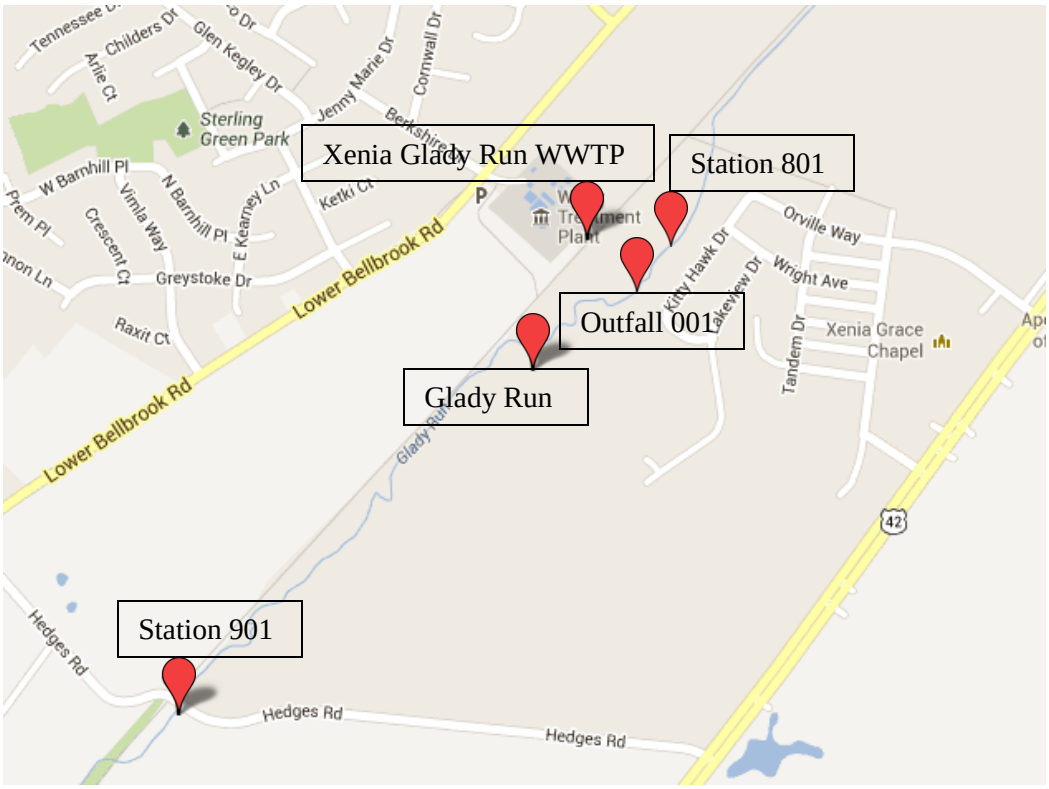


Figure 2. Little Miami River Study Area

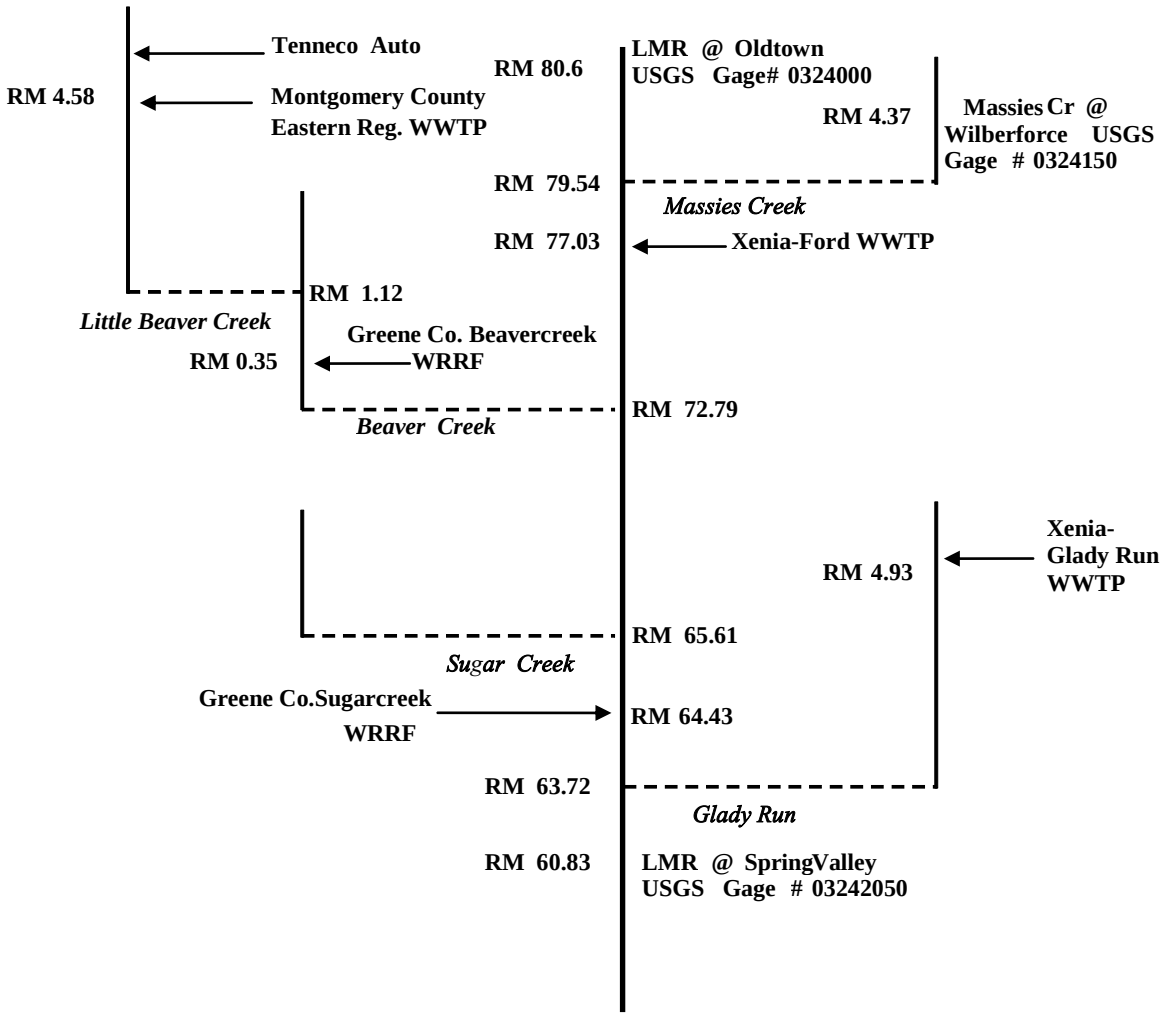


Table 5. Effluent Characterization Using Pretreatment Data

Summary of analytical results for Xenia Glady Run WWTP outfall 1PD00016001. Units µg/L unless otherwise noted; PT = data from pretreatment program reports; AA = not detected (detection limit).

Parameter	PT 1/7/2008	PT 1/5/2009	PT 3/29/2010	PT 5/10/2011
Copper	6	8	6.88	8.2
Nickel	9	AA (4)	AA (4)	AA (4)
Zinc	57	38	44.3	65.2
Bis(2-ethylhexyl)phthalate	AA (5)	8.6	21.5	AA(6)

Table 6. Effluent Characterization Using Self-Monitoring Data

Summary of current permit limits and unaltered discharge monitoring report data for Xenia Glady Run WWTP outfall 1PD00016001 (January 2008 - December 2012). All values are based on annual records unless otherwise indicated. * = For minimum pH, 5th percentile shown in place of 50th percentile; ** = For dissolved oxygen, 5th percentile shown in place of 95th percentile; a = weekly average.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50th	95th	
Outfall 001								
Water Temperature	Annual	ºC	- - - - Monitor - - - -		1729	16.3	22	9-24
Dissolved Oxygen	Annual	mg/l	No less than 6.0		1703	9.4	11.5	6-12.9
Total Dissolved Residue	Annual	mg/l	- - - - Monitor - - - -		60	830	921	2-1010
Total Suspended Solids	Summer	mg/l	13	20[a]	251	4	10	0-22
Total Suspended Solids	Winter	mg/l	20	29[a]	165	6	10	0-20
Oil and Grease	Annual	mg/l	- - - - Monitor - - - -		60	0	2.81	0-11.5
Ammonia	Summer	mg/l	0.65	1.0[a]	375	0.09	0.326	0-1.25
Ammonia	Winter	mg/l	2.0	2.9[a]	362	0	0.52	0-2.96
Total Kjeldahl Nitrogen	Annual	mg/l	- - - - Monitor - - - -		79	1.05	2.65	0-3.92
Nitrite Plus Nitrate	Annual	mg/l	- - - - Monitor - - - -		79	9.01	11.1	4.14-12.1
Phosphorus	Summer	mg/l	1.0	1.5[a]	80	0.445	0.901	0.16-1.2
Phosphorus	Winter	mg/l	- - - - Monitor - - - -		57	0.24	0.404	0.13-0.58
Free Cyanide	Annual	mg/l	- - - - Monitor - - - -		20	0	0	0-0
Nickel	Annual	µg/L	- - - - Monitor - - - -		20	0	9.64	0-12.7
Zinc	Annual	µg/L	- - - - Monitor - - - -		20	43.8	129	17.4-133
Cadmium	Annual	µg/L	- - - - Monitor - - - -		31	0	0	0-0.259
Lead	Annual	µg/L	- - - - Monitor - - - -		20	0	0	0-0
Chromium	Annual	µg/L	- - - - Monitor - - - -		20	0	0	0-0
Copper	Annual	µg/L	- - - - Monitor - - - -		31	7.58	15.1	0-16.4
Dissolved Hexavalent Chromium	Annual	µg/L	- - - - Monitor - - - -		20	0	0	0-0
Fecal Coliform	Summer	#/100 ml	1000	2000[a]	388	21	211	1-1420
Bis(2-ethylhexyl) Phthalate	Annual	ug/L			5	0	0	0-0
Flow Rate	Annual	MGD	- - - - Monitor - - - -		1827	1.77	3.34	1.14-12
Mercury	Annual	ng/L	- - - - Monitor - - - -		32	1.01	6.58	0-12.9
Acute Toxicity, *Ceriodaphnia dubia*	Annual	TUa	- - - - Monitor - - - -		4	0.1	0.2	0-0.2
Chronic Toxicity, *Ceriodaphnia dubia*	Annual	TUc	- - - - Monitor - - - -		4	0	1.19	0-1.4
Acute Toxicity, *Pimephales promelas*	Annual	TUa	- - - - Monitor - - - -		4	0	0	0-0
Chronic Toxicity, *Pimephales promelas*	Annual	TUc	- - - - Monitor - - - -		4	0	0	0-0
pH, Maximum	Annual	S.U.	No more than 9.0		1722	8.1	8.43	7.14-8.99
pH, Minimum	Annual	S.U.	No less than 6.5		1723	7.9	8.22	6.52-8.72
CBOD 5 day	Summer	mg/L	10	15[a]	376	3	5	0-11
CBOD 5 day	Winter	mg/L	16	26[a]	362	3	6	0-12

Table 7. Effluent Data for the Xenia-Glady Run WWTP

Parameter	Units	# of Samples	# > MDL	Average PEQ	Maximum PEQ
Self-Monitoring (DMR) Data					
Total Dissolved Solids	mg/L	60	60	737.3	1010.
Ammonia-Summer	mg/L	251	184	0.205	0.428
Ammonia-Winter	mg/L	188	75	0.318	0.582
Nitrate + Nitrite	mg/L	80	80	7.95	10.89
Phosphorus	mg/L	245	245	0.643	0.921
Free Cyanide	µg/L	20	0	--	--
Barium	µg/L	5	5	160.2	219.4
Nickel [A]	µg/L	25	8	8.691	13.88
Strontium	µg/L	5	5	622.9	853.3
Zinc [A]	µg/L	25	25	84.78	125.1
Cadmium	µg/L	18	1	0.265	0.363
Lead	µg/L	20	0	--	--
Chromium	µg/L	20	0	--	--
Copper [A]	µg/L	36	35	11.04	14.13
Dissolved Hexavalent Chromium	µg/L	20	0	--	--
Bis(2-ethylhexyl)phthalate [A]	µg/L	10	2	26.68	36.55
Mercury	ng/L	32	30	3.83	6.314

[A.] Pretreatment data were combined with the DMR data.

Table 8. Summary of Acute and Chronic Toxicity Test Results for Xenia-Glady Run WWTP

Test Date	*Ceriodaphnia dubia 48*	*Fathead Minnows 96*	*Ceriodaphnia dubia 7 days*	*Fathead Minnows 7*
	TUa[b]	TUa[b]	TUc[b]	TUc[b]
9/1/09	0.2	BD	1.4	BD
9/1/10	BD	BD	BD	BD
9/1/11	0.2	BD	BD	BD
9/1/12	BD	BD	BD	BD

[a] BD= Below Detection
[b] TUa = acute toxicity units, TUc = chronic toxicity units

Table 9. Water Quality Criteria in the Glady Run Study Area

		Outside Mixing Zone Criteria			Inside	
		Average			Maximum	Mixing
Parameter	Units	Human Health	Agri-culture	Aquatic Life	Aquatic Life	Zone Maximum
Ammonia-Summer	mg/L	--	--	0.9	--	--
Ammonia-Winter	mg/L	--	--	1.9	--	--
Arsenic	µg/L	--	100.	150.	340.	680.
Barium	µg/L	--	--	220.	2000.	4000.
Bis(2-ethylhexyl)phthalate	µg/L	59. [C]	--	8.4	1100.	2100.
Cadmium	µg/L	--	50.	6.8	20.	39.
Chlorine	µg/L	--	--	11.	19.	38.
Chromium	µg/L	--	100.	250.	5200.	10000.
Dissolved Hexavalent Chromium	µg/L	--	--	11.	16.	31.
Copper	µg/L	1300.	500.	28.	48.	95.
Free Cyanide	µg/L	220000.	--	12.	46.	92.
Dieldrin	µg/L	0.0014 [C]	--	0.056	0.24	0.47
Total Dissolved Solids	mg/L	--	--	1500.	--	--
Iron	µg/L	--	5000.	--	--	--
Lead	µg/L	--	100.	34.	640.	1300.
gamma-BHC (Lindane) [B]	µg/L	0.63 [C]	--	0.057	0.95	1.9
Mercury [B]	ng/L	12.	10000.	910.	1700.	3400.
Molybdenum	µg/L	--	--	20000.	190000.	370000.
Nickel	µg/L	4600.	200.	160.	1400.	2800.
Nitrate + Nitrite	mg/L	--	100.	--	--	--
Phenol	µg/L	4600000.	--	400.	4700.	9400.
Selenium	µg/L	11000.	50.	5.0	--	--
Silver	µg/L	--	--	1.3	15.	30.
Strontium	µg/L	--	--	21000.	40000.	81000.
Zinc	µg/L	69000.	25000.	360.	360.	720.

[B.] Bioaccumulative Chemical of Concern (BCC)
[C.] Based on a carcinogenic endpoint.

Table 10. Instream Conditions and Discharger Flow

Note USGS= United States Geological Survey, RM=River Mile, cfs=cubic feet per second, STORET= EPA STOrage and RETrieval data management system, OEPA=Ohio Environmental Protection Agency, MDL=Method Detection Limit

Parameter	Season	Value	Basis
Stream Flows (cfs)			
Little Miami River (upstream of Xenia - Ford Rd. WWTP)			
1Q10	annual	8.65	USGS gage #03240000 & 03241500,
7Q10	annual	10.63	1952 to 1997 data.
30Q10	summer	12.88	"
	winter	29.09	"
Harmonic Mean Flow	annual	56.61	"
Little Beaver Creek (upstream of Eastern Reg. WWTP and Tenneco)			
1Q10	annual	0.19	USGS gage #03241500, 1952-97 data
7Q10	annual	0.22	"
30Q10	summer	0.32	"
	winter	1.01	"
Harmonic Mean Flow	annual	1.84	"
Incremental flow for L. Beaver Creek between Eastern Reg. WWTP and mouth			
1Q10	annual	0.31	USGS gage #03241500, 1952-97 data
7Q10	annual	0.36	"
30Q10	summer	0.52	"
	winter	1.66	"
Harmonic Mean Flow	annual	3.01	"
Beaver Creek (upstream of L. Beaver Cr. confluence)			
1Q10	annual	0.66	USGS gage #03241500, 1952-97 data
7Q10	annual	0.73	"
30Q10	summer	0.93	"
	winter	2.45	"
Harmonic Mean Flow	annual	4.23	"
Incremental Flow for Little Miami River between Xenia Ford WWTP and Sugarcreek WRRF			
1Q10	annual	1.87	USGS gage #03241500, 1952-97 data
7Q10	annual	2.07	"
30Q10	summer	2.66	"
	winter	7.04	"
Harmonic Mean Flow	annual	12.2	"
Sugar Creek (@ mouth)			
1Q10	annual	0.64	USGS gage #03241500, 1952-97 data
7Q10	annual	0.75	"
30Q10	summer	1.07	"
	winter	3.42	"
Harmonic Mean Flow	annual	6.20	"

Table 10. Instream Conditions and Discharger Flow (continued)

Parameter (Units)	Season	Value	Basis
Glady Run (upstream of Glady Run WWTP)			
1Q10	annual	0.09	USGS gage #03241500, 1952-97 data
7Q10	annual	0.10	"
30Q10	summer	0.15	"
	winter	0.47	"
Harmonic Mean Flow	annual	0.84	"
Discharger Flows (cfs)			
Xenia Ford Rd. WWTP		5.57	Ohio EPA Division of Surface Water
Mont. Co. East. Regional WWTP		20.11	Ohio EPA Division of Surface Water
Greene Co. Beaver creek WRRF		13.15	Ohio EPA Division of Surface Water
Greene Co. Sugarcreek WRRF		15.32	Ohio EPA Division of Surface Water
Xenia Glady Run WWTP		6.19	Ohio EPA Division of Surface Water
Mixing Assumption	% average	100	Stream-to-discharge ratio
	% maximum	100	Stream-to-discharge ratio
Instream Summer Temperature (^{o}C)			
L. Miami River (RM 77.0)		22.	Xenia-Ford 901Station; 19 values, 2008-12
L. Miami River (RM 64.0)		21.	Sugarcreek 901 Station; 20 values, 2008-12
Beaver Creek		21.	Beavercreek 901Station; 20 values, 2008-12
L. Beaver Creek		22.	East.Reg. 901Station; 20 values, 2008-12
Glady Run		19.	Xenia-Glady 901Station; 19 values, 2008-12
Instream Winter Temperature (^{o}C)			
L. Miami River (RM 77.0)		4.8	Xenia-Ford 901Station; 9 values, 2008-12
L. Miami River (RM 64.0)		6.1	Sugarcreek 901 Station; 14 values, 2008-12
Beaver Creek		8.0	Beavercreek 901Station; 14 values, 2008-12
L. Beaver Creek		8.9	East.Reg. 901Station; 14 values, 2008-12
Glady Run		7.2	Xenia-Glady 901Station; 9 values, 2008-12
Instream Summer pH (S.U.)			
L. Miami River (RM 77.0)		8.3	Xenia-Ford 901Station; 19 values, 2008-12
L. Miami River (RM 64.0)		8.1	Sugarcreek 901 Station; 20 values, 2008-12
Beaver Creek		8.0	Beavercreek 901Station; 20 values, 2008-12
L. Beaver Creek		7.9	East.Reg. 901Station; 20 values, 2008-12
Glady Run		8.2	Xenia-Glady 901Station; 19 values, 2008-12
Instream Winter pH (S.U.)			
L. Miami River (RM 77.0)		8.4	Xenia-Ford 901Station; 9 values, 2008-12
L. Miami River (RM 64.0)		8.3	Sugarcreek 901 Station; 14 values, 2008-12
Beaver Creek		8.4	Beavercreek 901Station; 14 values, 2008-12
L. Beaver Creek		7.9	East.Reg. 901Station; 14 values, 2008-12
Glady Run		8.3	Xenia-Glady 901Station; 9 values, 2008-12

Table 10. Instream Conditions and Discharger Flow (continued)

Parameter (Units)	Value	Basis
Instream Hardness (mg/L)		
L. Miami River dst Xenia-Ford WWTP	336.	Xenia-Ford 901; 18 values, 2008-12
L. Miami River dst Sugarcreek WWTP	331.	Sugarcreek 901; 60 values, 2008-12
Beaver Creek	347.	Beavercreek 901; 60 values, 2008-12
L. Beaver Creek	301.	East.Reg. 901; 61 values, 2008-12
Glady Run	367.	Xenia-Glady Run 901; 52 values, 2008-12
Background Water Quality (µg/L)		
Little Miami River		
Ammonia-Summer (mg/L)	0.025	DMRs; 19 values, 18<MDL, 2008-12 data
Ammonia-Winter (mg/L)	0.0	DMRs; 9 values, 9<MDL, 2008-12 data
Arsenic	0.	STORET; 3 values, 3<MDL, 2011 data
Barium	93.7	STORET; 3 values, 0<MDL, 2011 data
Bis (2-ethylhexyl) phthalate	0.	No representative data available
Cadmium	0.	STORET; 3 values, 3<MDL, 2011 data
Chlorine	0.	No representative data available
Chromium	0.	STORET; 3 values, 3<MDL, 2011 data
Dissolved Hexavalent Chromium	0.	No representative data available
Copper	1.8	STORET; 3 values, 1<MDL, 2011 data
Free Cyanide	0.	No representative data available
Dieldrin	0.	No representative data available
Gamma – BHC	0.	No representative data available
Iron	370.	STORET; 3 values, 0<MDL, 2011 data
Lead	0.	STORET; 3 values, 3<MDL, 2011 data
Mercury (ng/L)	0.	No representative data available
Molybdenum	0.	No representative data available
Nickel	3.4	STORET; 3 values, 0<MDL, 2011 data
Selenium	0.	STORET; 3 values, 3<MDL, 2011 data
Silver	0.	No representative data available
Total Dissolved Solids (mg/L)	408.	STORET; 6 values, 0<MDL, 2011 data
Zinc	16.3	STORET; 3 values, 1<MDL, 2011 data

Table 10. Instream Conditions and Discharger Flow (continued)

Parameter (µg/L)	Value	Basis
Beaver Creek		
Ammonia-Summer (mg/L)	0.08	DMRs; 20 values, 5<MDL, 2008 -12 data
Ammonia-Winter (mg/L)	0.08	DMRs; 14 values, 5<MDL, 2008 -12 data
Arsenic	0.	STORET; 11 values, 11<MDL, 2011-12
Barium	100.	STORET; 11 values, 0<MDL, 2011-12
Bis (2-ethylhexyl) phthalate	0.	No representative data available
Cadmium	0.	STORET; 11 values, 11<MDL, 2011-12
Chlorine	0.	No representative data available
Chromium	0.	STORET; 11 values, 11<MDL, 2011-12
Dissolved Hexavalent Chromium	0.	No representative data available
Copper	1.0	STORET; 11 values, 10<MDL, 2011-12
Free Cyanide	0.	No representative data available
Dieldrin	0.	No representative data available
Gamma – BHC	0.	No representative data available
Iron	438.	STORET; 11 values, 0<MDL, 2011-12
Lead	0.	STORET; 11 values, 11<MDL, 2011-12
Mercury (ng/L)	0.	No representative data available
Molybdenum	0.	No representative data available
Nickel	2.5	STORET; 11 values, 0<MDL, 2011-12
Selenium	0.	STORET; 11 values, 11<MDL, 2011-12
Silver	0.	No representative data available
Total Dissolved Solids (mg/L)	455.	STORET; 14 values, 0<MDL, 2011-12
Zinc	0.	STORET; 11 values, 11<MDL, 2011-12

Table 10. Instream Conditions and Discharger Flow (continued)

Parameter (µg/L)	Value	Basis
Little Beaver Creek		
Ammonia-Summer (mg/L)	0.07	DMRs; 20 values, 1<MDL, 2008-12 data
Ammonia,-Winter (mg/L)	0.05	DMRs; 15 values, 2<MDL, 2008-12 data
Arsenic	0.	STORET; 5 values, 5<MDL, 2011 data
Barium	93.	STORET; 5 values, 0<MDL, 2011 data
Bis (2-ethylhexyl) phthalate	0.	No representative data available
Cadmium	0.	STORET; 5 values, 5<MDL, 2011 data
Chlorine	0.	No representative data available
Chromium	0.	STORET; 5 values, 5<MDL, 2011 data
Dissolved Hexavalent Chromium	0.	No representative data available
Copper	1.6	STORET; 5 values; 2<MDL, 2011 data
Free Cyanide	0.	No representative data available
Dieldrin	0.	No representative data available
Gamma – BHC	0.	No representative data available
Iron	140.	STORET; 5 values, 0<MDL, 2011 data
Lead	0.	STORET; 5 values, 5<MDL, 2011 data
Mercury (ng/L)	0.	No representative data available
Molybdenum	0.	No representative data available
Nickel	1.8	STORET; 5 values, 2<MDL, 2011 data
Selenium	0.	STORET; 5 values, 5<MDL, 2011 data
Silver	0.	No representative data available
Total Dissolved Solids (mg/L)	443.	STORET; 10 values, 0<MDL,2011 data
Zinc	6.6	STORET; 5 values, 4<MDL, 2011 data

Table 10. Instream Conditions and Discharger Flow (continued)

Parameter (µg/L)	Value	Basis
Glady Run		
Ammonia-Summer (mg/L)	0.025	DMRs; 19 values,18<MDL, 2008-12 data
Ammonia-Winter (mg/L)	0.025	DMRs; 9 values, 8<MDL, 2008-12 data
Arsenic	0.	STORET; 11 values, 11<MDL, 2011-12
Barium	100.	STORET; 11 values, 0<MDL, 2011-12
Bis (2-ethylhexyl) phthalate	0.	No representative data available
Cadmium	0.	STORET; 11 values, 11<MDL, 2011-12
Chlorine	0.	No representative data available
Chromium	0.	STORET; 11 values, 11<MDL, 2011-12
Dissolved Hexavalent Chromium	0.	No representative data available
Copper	1.0	STORET; 11 values, 10<MDL, 2011-12
Free Cyanide	0.	No representative data available
Dieldrin	0.	No representative data available
Gamma – BHC	0.	No representative data available
Iron	438.	STORET; 11 values, 0<MDL, 2011-12
Lead	0.	STORET; 11 values, 11<MDL, 2011-12
Mercury (ng/L)	0.	No representative data available
Molybdenum	0.	No representative data available
Nickel	2.5	STORET; 11 values, 0<MDL, 2011-12
Selenium	0.	STORET; 11 values, 11<MDL, 2011-12
Silver	0.	No representative data available
Total Dissolved Solids (mg/L)	455.	STORET; 14 values, 0<MDL, 2011-12
Zinc	0.	STORET; 11 values, 11<MDL, 2011-12
Dissolved Metal Translators (Little Beaver Creek)		
Copper	1.072	OEPA; 5 samples, 0 < MDL, 1998
Lead	1.335	OEPA; 5 samples, 0 < MDL, 1998
Nickel	1.010	OEPA; 5 samples, 0 < MDL, 1998
Silver	2.034	OEPA; 5 samples, 0 < MDL, 1998
Dissolved Metal Translators (Little Miami River – apply to upper segment only)		
Copper	1.125	OEPA; 5 samples, 0 < MDL, 1998
Lead	3.456	OEPA; 5 samples, 0 < MDL, 1998
Zinc	1.059	OEPA; 5 samples, 0 < MDL, 1998

Table 11. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Average		Maximum		Inside
		Human Health	Agri Supply	Aquatic Life	Aquatic Life	Mixing Zone Maximum
Arsenic [C]	µg/L	--	114.	152.	345.	680.
Barium	µg/L	--	--	222.	2028.	4000.
Bis(2-ethylhexyl)phthalate	µg/L	67.	--	8.5	1116.	2100.
Cadmium [C]	µg/L	--	57. [A]	6.9	20.	39.
Chromium [C]	µg/L	--	114.	254.	5276.	10000.
Dissolved-Hexavalent Chromium [C]	µg/L	--	--	11.	16.	31.
Copper	µg/L	1476. [A]	568. [A]	28.	49.	95.
Free Cyanide [C]	µg/L	249800. [A]	--	12.	47.	92.
Total Dissolved Solids	mg/L	--	--	1517.	--	--
Lead [C]	µg/L	--	114.	35.	649.	1300.
Mercury [B]	ng/L	12.	10000. [A]	910.	1700.	3400.
Molybdenum [C]	µg/L	--	--	20320.	192800.	370000.
Nickel [C]	µg/L	5224. [A]	227.	163.	1420.	2800.
Selenium [C]	µg/L	12490.	57.	5.1	--	--
Silver [C]	µg/L	--	--	1.3	15.	30.
Zinc	µg/L	78360. [A]	28390. [A]	366.	365.	720

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

B. Bioaccumulative Chemical of Concern (BCC); no mixing zone allowed after 11/15/2010, WQS must be met at end-of-pipe, unless the requirements for an exception are met as listed in 3745-2-08(L).

C. Parameter would not require a WLA based on reasonable potential procedures, but allocation requested for use in pretreatment program.

Table 12. Parameter Assessment

Group 1: Due to a lack of criteria, the following parameters could not be evaluated at this time.

Phosphorus

Group 2: PEQ < 25% of WQS or all data below minimum detection limit; WLA not required. No limit recommended, monitoring optional.

Arsenic	Cadmium	Dissolved Hexavalent Chromium
Chromium	Free Cyanide	Lead
Nickel	Nitrate + Nitrite	Molybdenum
Selenium	Silver	Strontium

Group 3: PEQ_{max} < 50% of maximum PEL and PEQ_{avg} < 50% of average PEL. No limit recommended, monitoring optional.

Copper	Mercury	Zinc

Group 4: $PEQ_{max} \geq$ 50% but <100% of the maximum PEL or $PEQ_{avg} \geq$ 50% but < 100% of the average PEL. Monitoring is appropriate.

Total Dissolved Solids

Group 5: Maximum PEQ ≥ 100% of the maximum PEL or average PEQ ≥ 100% of the average PEL, or either the average or maximum PEQ is between 75 and 100% of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

Parameter	Units	Applicable Period	Recommended Effluent Limits Average	Maximum
Bis(2-ethylhexyl) phthalate	µg/L	annual	8.5	1116.

Table 13. Final Effluent Limits and Monitoring Requirements

		Effluent Limitations				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Basis[b]
Temperature	°C	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M
Dissolved Oxygen	mg/L	- - - - - - - - - No less than 6.0 - - - - - - - - -				WQS, EP
Total Dissolved Solids	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
Total Suspended Solids	mg/L					
Summer		13	20[c]	197	295[c]	PD, EP
Winter		20	29[c]	295	443[c]	PD, EP
Oil and Grease	mg/L	--	10	--	--	WQS, EP
Ammonia	mg/L					
Summer		0.65	1.0[c]	10	15[c]	PD, EP
Winter		2.0	2.9[c]	30	44[c]	WLA
Total Kjeldahl Nitrogen	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
Nitrate + Nitrite	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
Phosphorus	mg/L					
Summer		1.0	1.5[c]	--	--	TMDL, EP
Winter		- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
May-Oct Loading	kg/day	--	--	--	7.6	TMDL
Free Cyanide	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
Nickel	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
Zinc	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
Cadmium	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
Lead	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
Chromium	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
Copper	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
Dissolved Hexavalent Chromium	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M, EP
E. coli						
Summer Only	#/100ml	126	284[c]	--	--	WQS
Bis(2-ethylhexyl) phthalate	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				RP, BEJ
Flow	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M
Mercury	ng/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				RP
Whole Effluent Toxicity – *C. dubia* and *P. promelas*						
Acute	TUa	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				WET
Chronic	TUc	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				WET
pH	S.U.	- - - - - - - - - - - - 6.5 to 9.0 - - - - - - - - - - - -				WQS, EP
$CBOD_5$[d]	mg/L					
Summer		10	15[c]	148	226[c]	PD, EP
Winter		16	26[c]	246	394[c]	PD, EP

[a] Effluent loadings based on average design discharge flow of 4.0 MGD.

[b] Definitions: BEJ = Best Engineering Judgment;
EP = Existing Permit;
M = BEJ of Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges;
PD = Plant Design Criteria;

RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits [OAC 3745-33-07(A)];
TMDL= Phosphorus treatment required by the Total Maximum Daily Load for the receiving water;
WET = Minimum testing requirements for whole effluent toxicity [OAC 3745-33-07(B)(11)]
WLA = Wasteload Allocation procedures (OAC 3745-2);
WQS = Ohio Water Quality Standards (OAC 3745-1-07).

[c] Weekly average limit.

[d] $CBOD_5$ = 5-day chemical and biological oxygen