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 Girard Water Pollution Control Facility (WPCF)**

Public Notice No.: 187735
Public Notice Date: August 22, 2023
Comment Period Ends: September 21, 2023

Ohio EPA Permit No.: **3PD00010*RD**
Application No.: **OH0025364**

Name and Address of Applicant:

City of Girard
100 West Main Street
Girard, Ohio 44420

Name and Address of Facility Where Discharge Occurs:

City of Girard WPCF
945 South State Street
Girard, Ohio 44420
Trumbull County

Receiving Water: **Little Girard Creek**

Subsequent Stream Network: **Mahoning River, Beaver River, 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 (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.

Antidegradation provisions in Ohio Administrative Code (OAC) Chapter 3745-1 describe the conditions under which water quality may be lowered in surface waters. No antidegradation review was necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the CWA. 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/or monitoring requirements proposed for all parameters are the same as in the current permit, except those listed below.

The WLA placed free cyanide, selenium, mercury, and bis (2-ethlyhexyl) phthalate in Group 5. Based on this placement, new effluent limits and an associated 36-month compliance schedule are recommended for free cyanide and selenium.

New monthly monitoring and an associated tracking requirement are recommended for silver. In addition, monitoring for silver is being added to influent monitoring station 3PD00010601.

Limits are removed for copper based on the wasteload allocation. Monitoring is proposed to continue.

Monitoring free cyanide at influent monitoring station 3PD00010601 is being replaced with total cyanide.

Acute effluent toxicity limitations are recommended to continue in lieu of imposing ammonia effluent limitations. Semi-annual acute toxicity monitoring at downstream station 3PD00010901 is recommended to supplement final effluent monitoring.

The monitoring frequencies for *E. coli* have been changed from 1/month (Summer) to 1/ 2 weeks (June - August) at the upstream and downstream monitoring stations.

Schedules of compliance are included in the permit for pretreatment local limits and final effluent limitations.

The permittee has completed its long-term control plan to control CSO discharges. New Part II conditions are recommended to ensure the CSO level of control is maintained.

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; combined sewer overflow requirements; limits below quantification; satellite sewer discharge control program; whole effluent toxicity (WET) testing; tracking of silver; mercury PMP; method detection levels; pretreatment program requirements; outfall signage; and sludge monitoring.

This permit renewal is proposed for a term of approximately 5 years.

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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 emailed to HClerk@epa.ohio.gov or mailed 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 by email to epa.dswcomments@epa.ohio.gov (preferred method) or delivered 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 Allison Cycyk, 330-963-1132, Allison.cycyk@epa.ohio.gov or Rebecca Werner, 330-963-1106, Rebecca.werner@epa.ohio.gov.

INFORMATION REGARDING CERTAIN WATER QUALITY BASED EFFLUENT LIMITS

This draft permit may contain proposed water-quality-based effluent limits (WQBELs) for parameters that **are not** priority pollutants. (See the following link for a list of the priority pollutants: https://epa.ohio.gov/static/Portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf.) In accordance with ORC 6111.03(J)(3), the Director established these WQBELs after considering, to the extent consistent with the Federal Water Pollution Control Act, evidence relating to the technical feasibility and economic reasonableness of removing the polluting properties from those wastes and to evidence relating to conditions calculated to result from that action and their relation to benefits to the people of the state and to

accomplishment of the purposes of this chapter. This determination was made based on data and information available at the time the permit was drafted, which included the contents of the timely submitted NPDES permit renewal application, along with any and all pertinent information available to the Director.

This public notice allows the permittee to provide to the Director for consideration during this public comment period additional site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness for achieving compliance with the proposed final effluent limitations for these parameters. The permittee shall email to epa.dswcomments@epa.ohio.gov (preferred method) or deliver or mail this information to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

Should the applicant need additional time to review, obtain or develop site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness of achieving compliance with these limitations, a written request for any additional time shall be sent to the above address no later than 30 days after the Public Notice Date on Page 1.

Should the applicant determine that compliance with the proposed WQBELs for parameters other than the priority pollutants is technically and/or economically unattainable, the permittee may submit an application for a variance to the applicable WQS used to develop the proposed effluent limitation in accordance with the terms and conditions set forth in OAC 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.

Alternately, the applicant may propose the development of site-specific WQS pursuant to OAC 3745-1-39. The permittee shall submit written notification regarding their intent to develop site specific WQS for parameters that are not priority pollutants to the above address no later than 30 days after the Public Notice Date.

LOCATION OF DISCHARGE/RECEIVING WATER USE CLASSIFICATION

The City of Girard Water Pollution Control Facility (Girard WPCF) discharges to Little Girard Creek at River Mile (RM) 0.40 via outfall 3PD00010001. Figure 1 shows the approximate location of the facility.

Little Girard Creek is described by Ohio EPA River Code: 18-001-001, Hydrologic Unit Code: 05030103-07-05, County: Trumbull, Ecoregion: Erie/Ontario Lake Hills & Plains. Little Girard Creek discharges to the Mahoning River at River Mile 23.55. Little Girard Creek and this segment of the Mahoning River are both designated for the following uses under Ohio's WQS (OAC 3745-1-25): Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, and Primary Contact Recreation.

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 Recreation) and wading only (Secondary Contact which are generally waters too shallow for swimming or canoeing).

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

FACILITY DESCRIPTION

Girard WPCF was constructed in 1962 and last upgraded in 2020. The recent plant improvement project was completed in May 2020 to eliminate/minimize use of the secondary treatment system bypass (i.e., Station 3PD00010602) and provide the ability to treat a peak flow of 12 MGD through the primary and secondary treatment processes. The average design flow is 5.0 million gallons per day (MGD) and the peak hydraulic capacity is 12 MGD. Girard WPCF serves the City of Girard and surrounding unincorporated areas in Liberty, Vienna, and Weathersfield townships in Trumbull County. The total population within the service area is approximately 20,000. Girard WPCF has the following treatment processes (Figure 2):

- Coarse and Fine Screening (Bar screening if needed)
- Influent Pumping
- Flow Equalization
- Grit Removal
- Pre-aeration
- Primary Clarification
- Trickling Filter Biological Treatment
- Secondary Clarification

- Ultraviolet Disinfection with supplemental Peracetic Acid (PAA) addition and sodium bisulfite quench

Girard WPCF has one internal secondary bypass (i.e., Station 3PD00010602). The internal bypass is after primary clarification and is blended with fully treated flow at the point of disinfection prior to monitoring at Outfall 3PD00010001 and discharging to Little Girard Creek. The City completed the recommendations proposed in the 2015 No Feasible Alternatives Report to expand the WPCF secondary treatment hydraulic capacity to 12 MGD.

In order for a bypass to be authorized as an anticipated "CSO-related bypass", a publicly-owned treatment works (POTW) has to meet the following requirements of the bypass regulation at 40 C.F.R. 122.41(m)(4):

> *(A) Bypass was unavoidable to prevent loss of life, personal injury or severe property damage;*
>
> *(B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and*
>
> *(C) The permittee submitted notices as required under paragraph (m)(3) of this section*

Girard has demonstrated compliance with 40 CFR 122.41(m) through the LTCP and NFA analyses, which determined that it is infeasible to provide complete secondary treatment for additional wet weather flow and that the bypass will not cause exceedances of WQS. Based on the above, Ohio EPA has determined that Station 3PD00010602 will be designated as an approved CSO-related bypass in this permit, on the basis that the bypass will meet the requirements of the CSO Control Policy and 40 C.F.R. 122.41(m). The permit specifies the conditions under which discharge through Station 3PD00010602 is approved and that bypass flow will receive a minimum of solids and floatable removal, biologically-enhanced primary clarification, and seasonal disinfection (including dechlorination).

Girard WPCF has one combined sewer overflow (CSO). The collection system consists of combined and separate sanitary sewers. It is estimated that approximately 35.4 percent of the collection system is combined. The City has completed its 2002 Long Term Control Plan (LTCP), which proposed to eliminate all CSOs except CSO 3PD00010003, located near the WPCF and regulated by the allowable flow to the plant headworks. New Part II conditions are recommended to ensure that discharges from CSO 3PD00010003 will be maintained at or below the level of control of zero (0) events in a typical year.

The Girard WPCF has an approved pretreatment program. The Girard WPCF has one significant categorical industrial user that discharge 0.2 MGD of flow.

The municipal water supply source for the service area comes from Meander Reservoir.

Girard WPCF utilizes the following sewage sludge treatment processes Figure 3:

- Primary and Secondary Anaerobic Digestion
- Sludge Holding
- Belt Filter Press

Table 1 shows the last five years of sludge removed from Girard WPCF. Treated sludge is either hauled to a licensed solid waste landfill for disposal or transferred to another NPDES permit holder.

DESCRIPTION OF EXISTING DISCHARGE

Table 2 presents the effluent violations for Girard WPCF during the previous five years There were a number of effluent violations for *E.coli* in 2019 and 2020. These violations have been addressed by the UV disinfection and supplemental PAA upgrades.

Table 3 presents the average annual effluent flow rate for Girard WPCF for the previous five years. Girard WPCF has an estimated infiltration/inflow (I/I) rate of 0.100 MGD.

Table 4 presents the number of SSOs reported by Girard WPCF for the previous five years. SSOs are reported at station 3PD00010300.

Table 5 presents the bypasses reported at Girard WPCF for the previous five years. Bypasses are reported at station 3PD00010602.

Table 6 presents the number of CSOs reported by Girard WPCF during the previous five years.

Table 7 presents data characterizing the seasonal total phosphorus load from Girard WPCF during the previous five years.

Table 8 presents chemical specific data compiled from data reported in annual pretreatment reports. Because this data is substantially identical to the application requirements in CFR 122.21(j), the Director has waived the requirement for submittal of supplemental effluent testing data as part of the NPDES renewal application.

Table 9 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period January 2017 to September 2022. The current permit limits are provided for comparison.

Table 10 summarizes the chemical specific data for outfall 3PD00010001 by presenting the average and maximum PEQ values.

Table 11 summarizes the results of acute and chronic Whole Effluent Toxicity (WET) tests of the final effluent, using the water flea (*Ceriodaphnia dubia*) and fathead minnow (*Pimephales promelas*) as test organisms.

ASSESSMENT OF IMPACT ON RECEIVING WATERS

The lower Mahoning River watershed assessment unit, which includes the Little Girard Creek in the vicinity of Girard WPCF, is listed as impaired for recreation on Ohio's 303(d) list of the *2022 Ohio Integrated Water Quality Monitoring and Assessment Report* (Integrated Report). The Mahoning River Mainstem is listed as impaired for aquatic life, human health and recreation. The source of impairment near Girard WPCF is listed as dam/impoundment. The Integrated Report is available through the Ohio EPA, Division of Surface Water website at:

https://epa.ohio.gov/static/Portals/35/tmdl/2022intreport/Full-2022-IR.pdf

An assessment of the impact of a permitted point source on the immediate receiving waters includes an evaluation of the available chemical/physical, biological, and habitat data which have been collected by Ohio EPA pursuant to the Five-Year Basin Approach for Monitoring and NPDES Reissuance. Other data may be used provided it was collected in accordance with Ohio EPA methods and protocols as specified by the Ohio WQS and Ohio EPA guidance documents. Other information which may be evaluated includes but is not

limited to: NPDES permittee self-monitoring data; effluent and mixing zone bioassays conducted by Ohio EPA, the permittee, or U.S. EPA.

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

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

Three attainment status results are possible at each sampling location -full, partial, or non-attainment. Full attainment means that all of the applicable indices meet the biocriteria. Partial attainment means that one or more of the applicable indices fails meet the biocriteria. Nonattainment means that either none of the applicable indices meet the biocriteria or one of the organism groups indicates poor or very poor performance. An aquatic life use attainment table (see Table 12) is constructed based on the sampling results and is arranged from upstream to downstream and includes the sampling locations indicated by river mile, the applicable biological indices, the use attainment status (i.e., full, partial, or non), the Qualitative Habitat Evaluation Index, and comments and observations for each sampling location.

Biological and water quality surveys in Little Girard Creek during the 2013 field season found partial attainment of the WWH use designation above the Girard WPCF discharge, with the cause listed as “fish passage barrier” and the sources listed as “habitat alteration other than hydromodification” and “municipal point source”. No attainment status was determined in Little Girard Creek downstream of the WPCF discharge because the sampling location was considered to be in the mixing zone, where biological criteria do not apply. For much of the distance below the Girard WPCF outfall, until the confluence with the Mahoning River, Little Girard Creek is culverted under a highway, railroad tracks and an abandoned industrial area, so access is limited for sampling purposes. The report was finalized in 2018 and is available via the following link:

https://epa.ohio.gov/static/Portals/35/tmdl/TSD/Lower%20Mahoning%202013/2013-LMAHO-2_Mahoning%20TSD_FINAL.pdf

A summary of the results for the lower Mahoning River, which includes the study area near Little Girard Creek, can be found in Table 12.

The “*Mahoning River Total Maximum Daily Load (TMDL) for Fecal Coliform Bacteria*” report was developed by US EPA in September 2004. The report identified impairment at various locations along the Mahoning River, including the segment upstream and downstream of the Girard WWTP, with respect to the recreational use bacteria standards. The report identified the sources of the fecal coliform and *Escherichia (E.) coli* bacteria to include “unsewered areas, combined sewer overflows (CSOs), sanitary sewer overflows (SSOs), livestock, stormwater runoff, and permitted discharges.” With respect to the permitted dischargers, the TMDL noted that:

"No reductions to the permitted loads for the wastewater treatment plants and industrial facilities are being recommended as part of this TMDL, because within the NPDES program all permits are written to meet water quality standards set at the design flows for WWTPs or other facilities. Therefore, the WLA is the current loading."

The TMDL is available through the Ohio EPA, Division of Surface Water website at:

https://epa.ohio.gov/static/Portals/35/tmdl/Mahoning_tmdl_final.pdf

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 Girard WPCF 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 2017 through August 2022
Pretreatment program data	2017 through 2021

Statistical Outliers and Other Non-representative Data

The data were examined, and no values were removed from the evaluation.

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 (Table 10). See Modeling Guidance #1 for more information on PEQ calculations, available through the Ohio EPA, Division of Surface Water website at:
https://www.epa.ohio.gov/portals/35/guidance/model1.pdf

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 13).

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 break down in the receiving water. By rule, mixing zones are not authorized for pollutants, such as mercury, which have been designated as bioaccumulative chemicals of concern (BCCs). For BCCs, the WLA is set equal to the respective WQS value.

The methodology employed generally depends on whether the facility is considered a direct discharger to a (1) free-flowing receiving water/stream or (2) non-flowing receiving water/Lake.

For free-flowing streams, WLAs for both average and maximum criteria are performed 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.

WLAs for direct discharges to lakes are performed using the following equation for average criteria:

Discharger WLA = (11 x WQS) – (10 x Background Concentration).

As in past modeling studies, all facilities discharging to the Mahoning River mainstem between the Leavittsburg dam and the Ohio-Pennsylvania border are considered interactive and are included in the WLA. A river schematic (Figure 4) shows the interactive segment with locations of important dischargers, tributaries and other relevant features. The segment contains a total of 10 outfalls from 6 municipal WWTPs and 4 industrial facilities, as follows:

Municipal WWTPs	***Industrials***
Youngstown WWTP	Thomas Steel Strip
Warren WWTP	Cleveland Cliffs-Warren
Niles WWTP	RMI-Niles
Campbell WWTP	McDonald Steel
Struthers WWTP	
Lowellville WWTP	

Four dischargers located on tributaries are allocated separately from the mainstem discharges: Meander Creek WWTP (Meander Creek), Girard WWTP (Little Girard Creek), Mosquito Creek WWTP (Mosquito Creek), and Boardman WWTP (Mill Creek). Travel time to and distance from the Mahoning River are considered large enough that, for modeling purposes, the effluents from the respective treatment plants are considered non-interactive with the direct dischargers to the Mahoning. Effluents from these four treatment plants were allocated to meet water quality standards for the conditions, habitat, and use designation for their particular receiving waters. Monitoring was conducted downstream of these dischargers or at the mouths of these tributaries, however, for inputs into the Mahoning River mainstem model.

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

Aquatic life (Warmwater Habitat)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia-N	Average	Summer/winter 30Q10
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 14, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

The data used in the WLA are listed in Table 13 and Table 14. The WLA results to maintain all applicable criteria are presented in Table 15.

Whole Effluent Toxicity Wasteload Allocation

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 (i.e. TUa and TUc) by the associated WQS Implementation Rule (OAC 3745-2-09). The translation results in a numeric value of 0.3 TUa and 1.0 TUc. WLAs can then be calculated using these values as if they were water quality criteria.

There are two separate reasonable potential procedures in Ohio - one for the Lake Erie watershed and one for the Ohio River watershed. Dischargers in the Ohio River watershed are assessed using OAC 3745-33-07(B). Dischargers in the Lake Erie watershed are assessed in accordance with the "Great Lakes Water Quality Initiative Implementation Procedures" contained in 40 CFR Part 132, Appendix F, Procedure 6.

The WLA calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TUc) and 7Q10 flow for the average and the acute toxicity unit (TUa) and 1Q10 flow for the maximum. WET WLAs are based on meeting the values of 0.3 TUa and 1.0 TUc downstream of the discharge, and include any available dilution. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. WLAs for acute toxicity are capped at 1.0 TUa unless the discharger demonstrates that an Area-of-Initial-Mixing (AIM) exists under OAC 3745-1-06, or that one of the factors in OAC 3745-33-07(B)(5)-(9) allows a higher TUa limit to be granted. For the purposes of establishing WET limitations, the values of 1.0 TUa and 1.0 TUc are the most restrictive limitations that can be applied in NPDES permits [OAC 3745-33-07(B)(10)].

For Girard WPCF, the WLA values for outfall 001 are 0.3 TUa and 1.0 TUc.
The chronic toxicity unit (TUc) 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):

$$TUc = 100/IC25$$

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):

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

Where NOEC is the No Observed Effect Concentration and LOEC is the Lowest Observed Effect Concentration.

The acute toxicity unit (TUa) 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:

$$TUa = 100/LC50$$

This equation applies outside the mixing zone for all designated waters. Based on the above, a value of 1.0 TUa is the lowest value that can be calculated using the equation. TUa values between 0.2 and 1.0 are based on an interpolation of toxic effects where an LC50 cannot be identified.

When the acute WLA is less than 1.0 TUa, it may be defined as a ratio of the stream dilution to the effluent flow:

Acute Dilution Ratio (downstream flow to discharger flow)	Allowable Effluent Toxicity (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

$$\text{Acute Dilution Ratio} = \frac{1Q10 + [\text{WWTP flow rate}]}{[\text{WWTP flow rate}]} = \frac{0 \text{ cfs} + 7.74 \text{ cfs}}{7.74 \text{ cfs}} = 1$$

The acute WLA for Girard WPCP can be expressed as 30 percent mortality in 100 percent effluent based on the dilution ratio of 1 to 1. If the acute dilution ratio is less than 3.3 to 1.0, and there is evidence that effluent values between 0.3 TUa and 1.0 TUa cause or contribute to violations of WQS, the permittee may be required to investigate and remediate toxicity in this range.

REASONABLE POTENTIAL/EFFLUENT LIMITS/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 WLAs are selected from Table 15. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 10, 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 16.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 17 presents the final effluent limits and monitoring requirements proposed for Girard WPCP outfall 3PD00010001 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit. Additional information on permit guidance is available at the following webpage:

https://epa.ohio.gov/static/Portals/35/guidance/npdes_permit_guidance%201.pdf

Total Suspended Solids and 5-day Carbonaceous Biochemical Oxygen Demand

The limitations proposed for total suspended solids (TSS) and 5-day carbonaceous biochemical oxygen demand ($CBOD_5$) are a continuation of existing permit limitations. These limits are based on plant design criteria and are equivalent to the Secondary Treatment Standards in 40 CFR Part 133.

Ammonia (as Nitrogen)

The existing permit for Girard WPCF does not contain effluent limits for ammonia-N. At the time of the original trickling filter plant construction and subsequent improvements, the Girard WPCF was considered a “de

facto" direct discharger to the Mahoning River and modelled as such. This was due to the fact that just downstream of the Girard discharge, at RM 0.35, Little Girard Creek flows into an 1800-foot culvert, which ends at the confluence with the Mahoning River. Based on its inherent design, and significant dilution provided by the Mahoning River mainstem, it was determined that ammonia-N limits were not necessary for the Girard WPCF.

Since 2007, Ohio EPA has revised the modeling approach for the Girard WPCF. The critical flows and background water quality of Little Girard Creek, rather than the Mahoning River, are now utilized in the wasteload allocation. The current WLA resulted in preliminary monthly average effluent limits for ammonia-N of 1.0 mg/L (summer) and 1.9 mg/L (winter). Based on the data in Table 8, the Girard WPCF currently exceeds these values more than fifty percent of the time, meaning that the City would need to undertake major capital improvements to upgrade the WPCF to consistently meet these limits.

As previously noted, plant improvements were recently completed for the Girard WPCF. At this time, Ohio EPA does not believe it is reasonable to issue a permit that would require the City to undertake additional major plant upgrades to meet ammonia-N limits calculated to protect a culverted stream. However, Ohio EPA believes that it is important to issue a permit that protects fish passage through the culvert into Little Girard Creek. This can best be accomplished by ensuring that the discharge from the Girard WPCF does not exhibit any evidence of acute toxicity to aquatic organisms in Little Girard Creek.

Based on best technical judgment, Ohio EPA is recommending that the existing monitoring requirement for ammonia nitrogen be continued instead of imposing the water quality based effluent limits from Table 14. To address concerns with potential ammonia toxicity, and to assist in the evaluation of instream impacts, acute toxicity monitoring in Little Girard Creek is recommended to continue.

Dissolved Oxygen, Oil and Grease, pH, and *Escherichia (E.) coli*

Limits proposed for dissolved oxygen (DO), oil and grease, pH, and *Escherichia coli* are based on WQS (OAC 3745-1-35 and -37). Primary contact recreation contact recreation *E. coli* standards apply to Little Girard Creek and the downstream segment of the Mahoning River.

Peracetic Acid (PAA)

The existing daily effluent limit for PAA is proposed to continue and is necessary to protect the inside mixing zone maximum (IMZM) WQS. The IMZM is the WQS value calculated to avoid lethal conditions at the point of discharge and is to be met anytime PAA is being utilized for effluent disinfection.

At the current time, it is understood by Ohio EPA that an analytical method is not approved under 40 CFR 136 to comply with NPDES permit limits for PAA. As an oxidizing agent, PAA behaves similarly to chlorine and, thus, can be analyzed using similar total residual chlorine (TRC)/total residual oxidants (TRO) analytical methods. Until such time that a PAA analytical method is promulgated, PAA analyses shall be performed using one of the following approved TRC methods contained in *Standard Methods for the Examination of Water and Wastewater* (SM): SM 4500-CL D - Amperometric direct; SM 4500-CL E- Amperometric direct (low level); SM 4500-CL F - DPD FAS; and SM 4500-CL G - DPD Spectrophotometric. Test methods used shall be sufficiently sensitive to quantify peracetic acid concentrations at the effluent limit.

Bis (2-ethylhexyl) phthalate, Free Cyanide, Mercury, and Selenium

The Ohio EPA risk assessment (Table 16) places bis (2-ethylhexyl) phthalate, free cyanide, mercury, and selenium in group 5. This placement, as well as the data in Table 9 and Table 10, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For these parameters, the PEQ

is greater than 100 percent of the WLA and certain conditions exist that increase the risk to the environment. Pollutants that meet this requirement must have permit limits under OAC 3745-33-07(A)(1). The recommended limits for bis (2-ethylhexyl) phthalate, and mercury are a continuation of existing limits. Although the current WLA would allow slightly higher daily maximum limits for mercury, anti-backsliding provisions in the OAC prevent the imposition of less stringent limits than those in the existing permit unless specific conditions have been satisfied.

A 36-month compliance schedule is recommended for the permittee to meet the new final effluent limits for free cyanide and selenium. Provisions are also provided that would allow the permittee to request a modification to remove the limits after the collection of data for a 24-month period. Details are in Part I, C of the permit.

Silver

The Ohio EPA risk assessment (Table 16) places silver in group 5, which recommends limits to protect water quality. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), monitoring rather than limits is proposed for silver. The PEQ values calculated for silver (Table 10) may not be representative of its actual levels in the plant effluent since they were based on 2 data points. Additionally, the method detection level (MDL) of 2.0 ug/L is above the WQBEL 30-day average of 1.3 ug/L. Considering the magnitude of the reported values compared to the WLA, a tracking provision is proposed in Part II of the permit that requires the Girard WPCF to notify Ohio EPA if a sample result exceeds the preliminary effluent limit (Table 15). If certain conditions are met, the City is required to take steps to reduce the discharge level of this pollutant. A permit condition is proposed to require an appropriate MDL for silver.

Copper

The Ohio EPA risk assessment (Table 16) places copper in group 4. This placement, as well as the data in Table 9 and Table 10, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2). Limits for copper are proposed to be removed but monitoring will continue.

Cadmium, Chromium (Total), Dissolved Hexavalent Chromium Lead, Nickel, Total Filterable Residue and Zinc

The Ohio EPA risk assessment (Table 16) places these parameters in groups 2 and 3. This placement, as well as the data in Table 9 and Table 10, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring at a low frequency is proposed to document that these pollutants continue to remain at low levels.

Iron, Chloroform, Molybdenum, and Toluene

The Ohio EPA risk assessment (Table 16) places these parameters in groups 2 and 3. This placement, as well as the data in Table 9 and Table 10, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. No additional monitoring requirements beyond the PPS scans are recommended for iron, chloroform, molybdenum, and toluene.

Total Kjeldahl Nitrogen (TKN) and Nitrate+nitrite (as Nitrogen)

Monitoring requirements for nitrate+nitrite and TKN are proposed in accordance with Ohio EPA guidance. The purpose of the monitoring is to provide data on nutrient loads discharged to the Mahoning River as part of the

Ohio River system. Additionally, monitoring will ensure that a nutrient data set is maintained for use in future stream studies and/or development of a TMDL.

Total Phosphorus and Dissolved Orthophosphate (as Phosphorus)

Monitoring for total phosphorus and dissolved orthophosphate (aka dissolved reactive phosphorus) is required by ORC 6111.03. Monitoring is proposed to further develop nutrient datasets and to assist in stream and watershed assessments and studies.

Ohio EPA monitoring, as well as other in-stream monitoring, are generally performed via the collection of grab samples. Thus, orthophosphate is proposed to be collected by grab sample to maintain consistent data to support watershed and stream surveys. The grab sample must be filtered within 15 minutes of collection using a 0.45-micron filter. The filtered sample must be analyzed within 48 hours of sample collection.

Temperature and Flow Rate

Monitoring for temperature and flow rate is proposed to continue to evaluate performance of the treatment plant.

Whole Effluent Toxicity Reasonable Potential

Based on evaluating the WET data presented in Table 11 and Attachment 1, and other pertinent data under the provisions of OAC 3745-33-07(B), the Girard WPCF is placed in Category 3 with respect to WET for *Pimephales promelas*, and Category 4 for *Ceriodaphnia dubia*. While test results indicate possible toxicity of the plant's effluent to *Pimephales promelas*, the reported effluent data for ammonia indicate that acute toxicity is possible under certain conditions. In order to ensure continued fish passage through the downstream section of Little Girard Creek, the existing quarterly acute toxicity monitoring, along with limits are to be retained. In addition, annual chronic toxicity testing is proposed consistent with the minimum monitoring requirements contained in OAC 3754-33-07(B)(11). Furthermore, semi-annual acute toxicity monitoring at the downstream monitoring location in Little Girard Creek is recommended to assist in the evaluation of instream impacts.

Additional Monitoring Requirements

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.

New monthly monitoring for silver is being proposed at the influent station 3PD00010601. Continued monitoring in the receiving stream are recommended for the following parameters: DO, pH, temperature, ammonia-N, nitrate+nitrite, phosphorus, *E. coli*, acute toxicity and hardness (downstream only).

Based on revisions to Ohio EPA monitoring guidance, the monitoring frequencies for *E. coli* have been changed from 1/month (Summer) to 1/ 2 weeks (June - August) at the upstream and downstream monitoring stations. Additionally, new monitoring requirements for TKN have been added.

Sludge

Limits and monitoring requirements proposed for the disposal of sewage sludge by the following management practices are based on OAC 3745-40: disposal at an authorized solid waste landfill (Station 3PD00010586) and hauling to another NPDES permit holder (Station 3PD00010588).

OTHER REQUIREMENTS

Compliance Schedule

Pretreatment Local Limits Review - A compliance schedule is proposed for the City 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, the City must also submit a pretreatment program modification request. Details are in Part I.C of the permit.

New Limit(s) - A 36-month compliance schedule is proposed for the Girard WPCF to meet the new limits for free cyanide and selenium. Details are in Part I.C of the permit.

Mercury Pollutant Minimization Program

Mercury is categorized as a bioaccumulative chemical of concern (BCC). BCCs include any chemical that has the potential to cause adverse effects due to bioaccumulation in aquatic organisms. Part II of the permit includes requirements for the permittee to continue implementing a Pollutant Minimization Program for mercury. The goal of the PMP is to maintain effluent concentrations of mercury at or below the effluent limits.

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 discharge monitoring reports (DMRs); 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 and Operator of Record

Operator certification requirements have been included in Part II of the permit in accordance with rules effective on August 15, 2018 (OAC 3745-7). These rules require the Girard WPCF to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 3PD00010001. These rules also require the permittee to designate one or more operator of record to oversee the technical operation of the treatment works and sewerage system.

On December 21, 2018, the permittee was granted a reduction to the minimum staffing requirements from 40 to 20 hours. Any change in the criteria under which the reduced staffing plan was approved (such as enforcement status, history of compliance, or provisions included in the plan) will require that the treatment works immediately return to the minimum staffing requirements included in OAC 3745-7-04(C)(1). The permittee is also required to designate one or more operator of record to oversee the technical operation of the treatment works and sewerage system.

Low-Level Free Cyanide Testing

Currently there are three approved methods for free cyanide listed in 40 CFR 136 that have a quantification level lower than water quality-based effluent limits:

- ASTM D7237-10, OIA-1677-09, and ASTM D4282-02. (Note: The use of ASTM D4282-02 requires supporting documentation that it meets the requirement of a "sufficiently sensitive" test procedure as defined in 40 CFR 122.44(i)(1)(iv)).

These methods will allow Ohio EPA to make more reliable water quality-related decisions regarding free cyanide. Because the quantification levels are lower than any water quality-based effluent limits, it will also be possible to directly evaluate compliance with free cyanide limits.

Method Detection Limit Reporting

The Method Detection Limit (MDL) represents the minimum concentration at which we can be confident that a pollutant is present, i.e. above zero, in a discharge. The Quantification Level (QL) is the minimum concentration at which we can be confident that the numerical result is accurate. Minimum Level (ML) and Practical Quantification Level (PQL) are specific ways to measure the QL. In general, Ohio law requires that Ohio EPA use PQL as the quantification level in NPDES permits, and sets PQL at 5 times the MDL for the most sensitive test method (ORC 6111.13). This statute also allows the director to set other PQLs and MDLs based on a national consensus standard or other generally accepted standard.

When submitting Discharge Monitoring Reports (DMRs), NPDES permit holders must report all detected concentration values above the MDL, even if that value is below the QL. A detection above the MDL indicates the presence of a pollutant, with strong confidence, which must be considered when performing a reasonable potential analysis.
For more information on MDLs, see Modeling Guidance #9 at the following webpage:
https://epa.ohio.gov/static/Portals/35/guidance/permit_9.pdf

Sufficiently Sensitive Method

Part II of the permit includes a condition requiring the permittee to use laboratory analytical methods with a sufficiently sensitive MDL. All detected concentration values above the MDL must be reported.

Outfall Signage

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

Part III

Part III of the permit details standard conditions that include monitoring, reporting requirements, compliance responsibilities, and general requirements.

Stormwater Compliance

The Girard WPCF has identified three (3) stormwater outfalls (101, 102 and 103) that discharge to Little Girard Creek and are subject to the industrial stormwater regulations. Parts IV, V, and VI have been included in the permit to ensure that stormwater flows from the facility site are properly regulated and managed. As an alternative to complying with Parts IV, V, and VI, Girard WPCF may seek permit coverage under the general permit for industrial stormwater (permit # OHR000007). or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if: 1) Girard WPCF 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.

Figure 1. Location of Girard WPCF

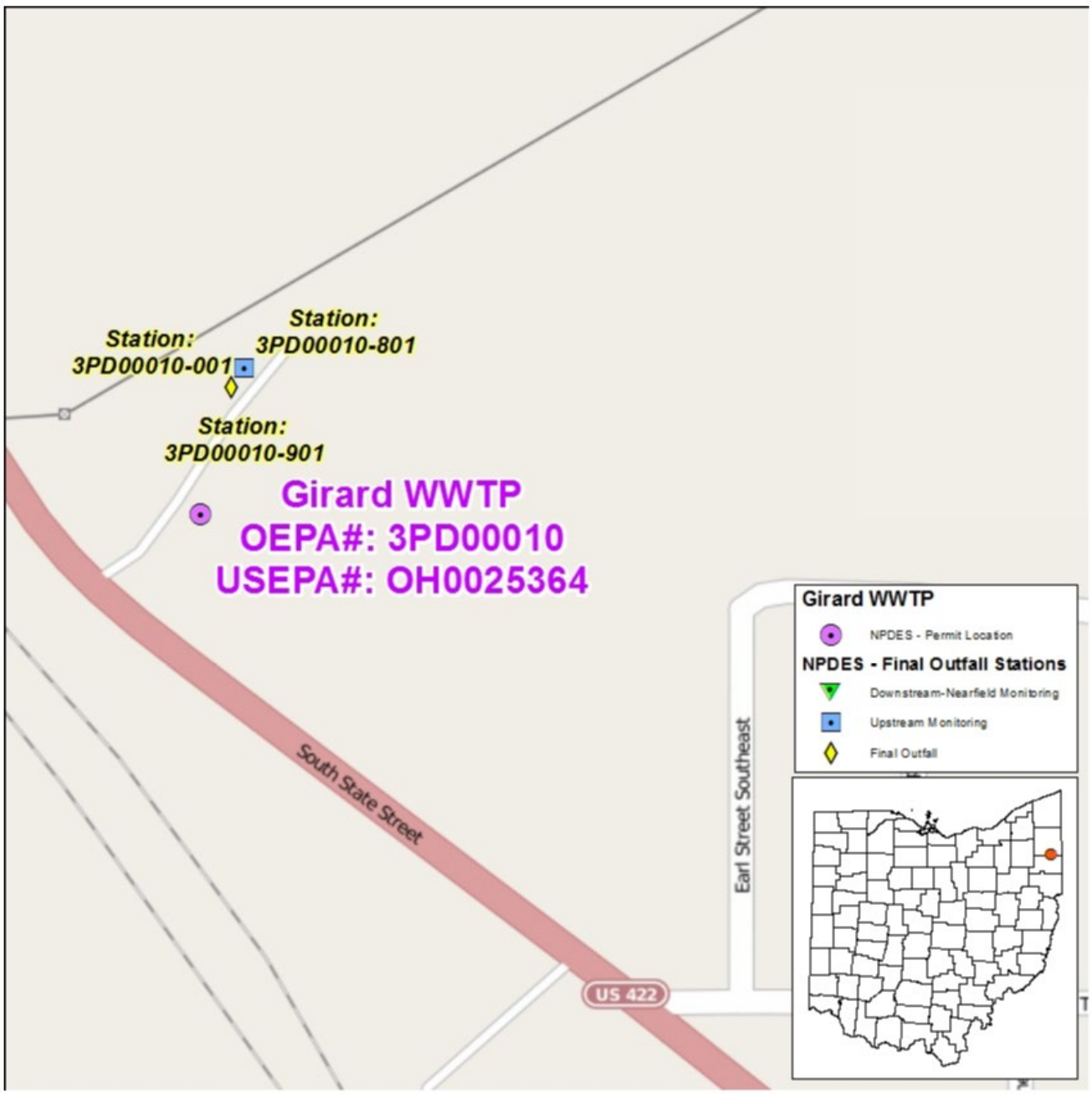

Figure 2. Diagram of Wastewater Treatment System

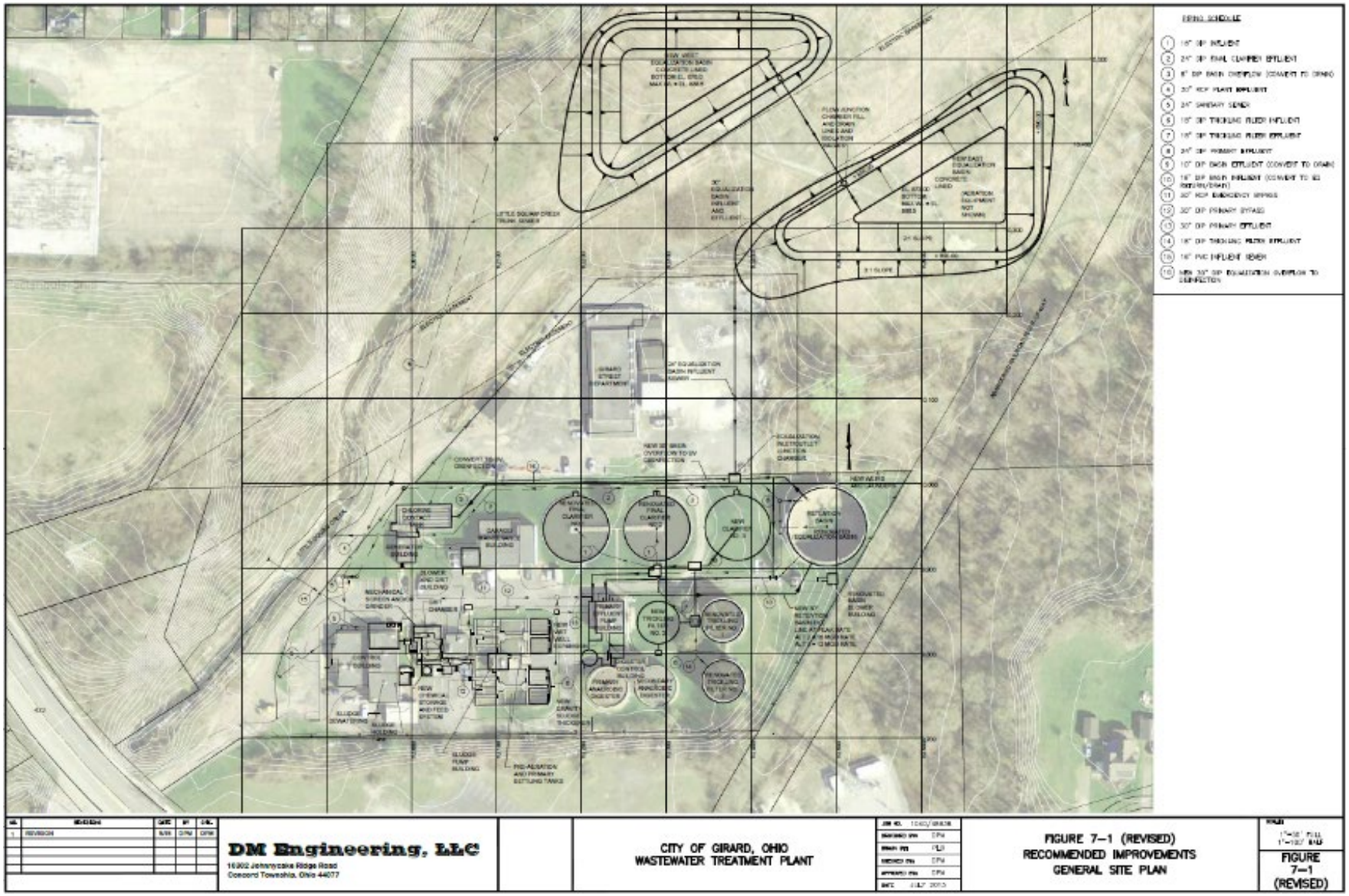

Figure 3. Diagram of Sludge Treatment System

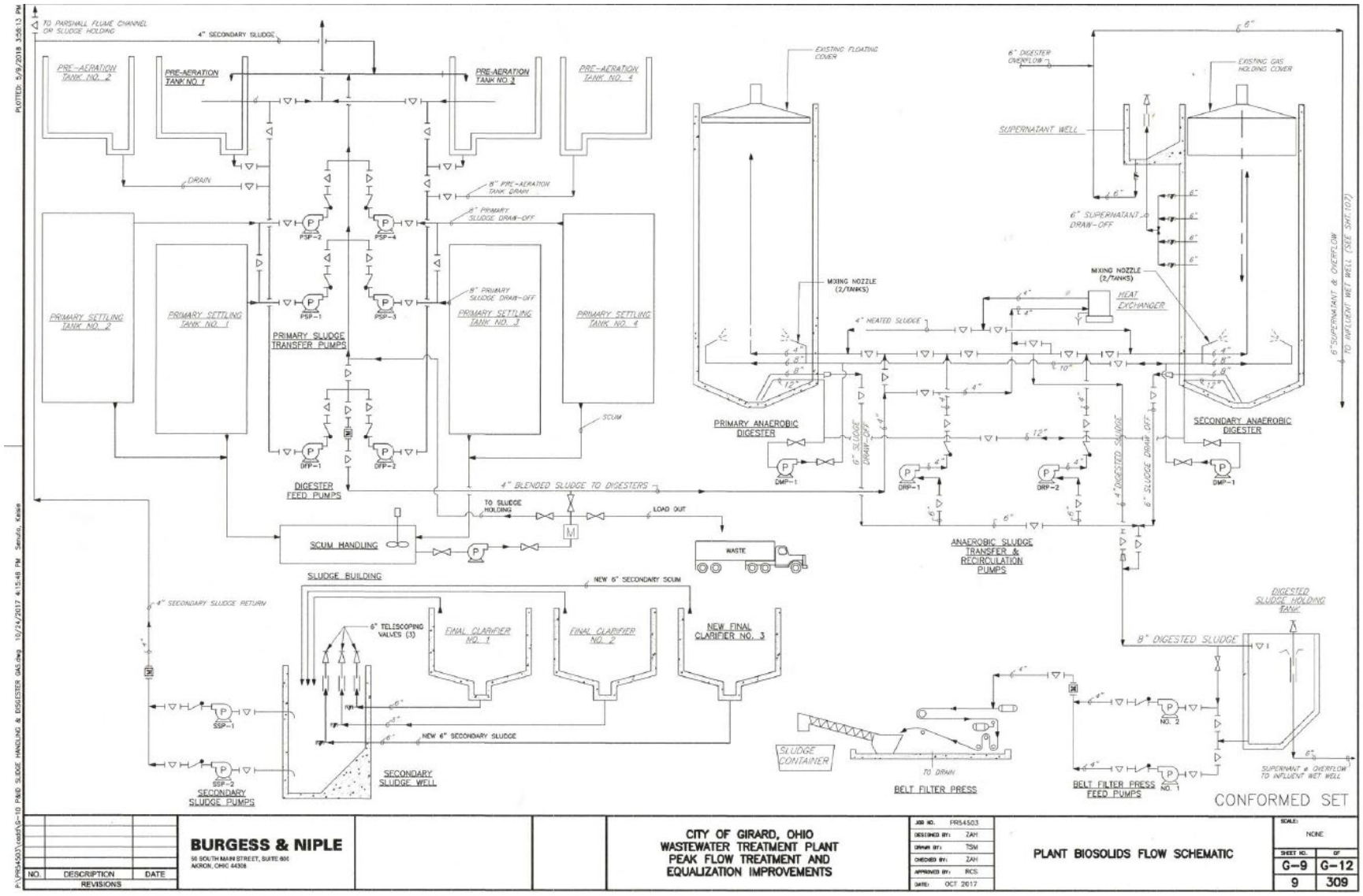

Figure 4. Mahoning River Study Area

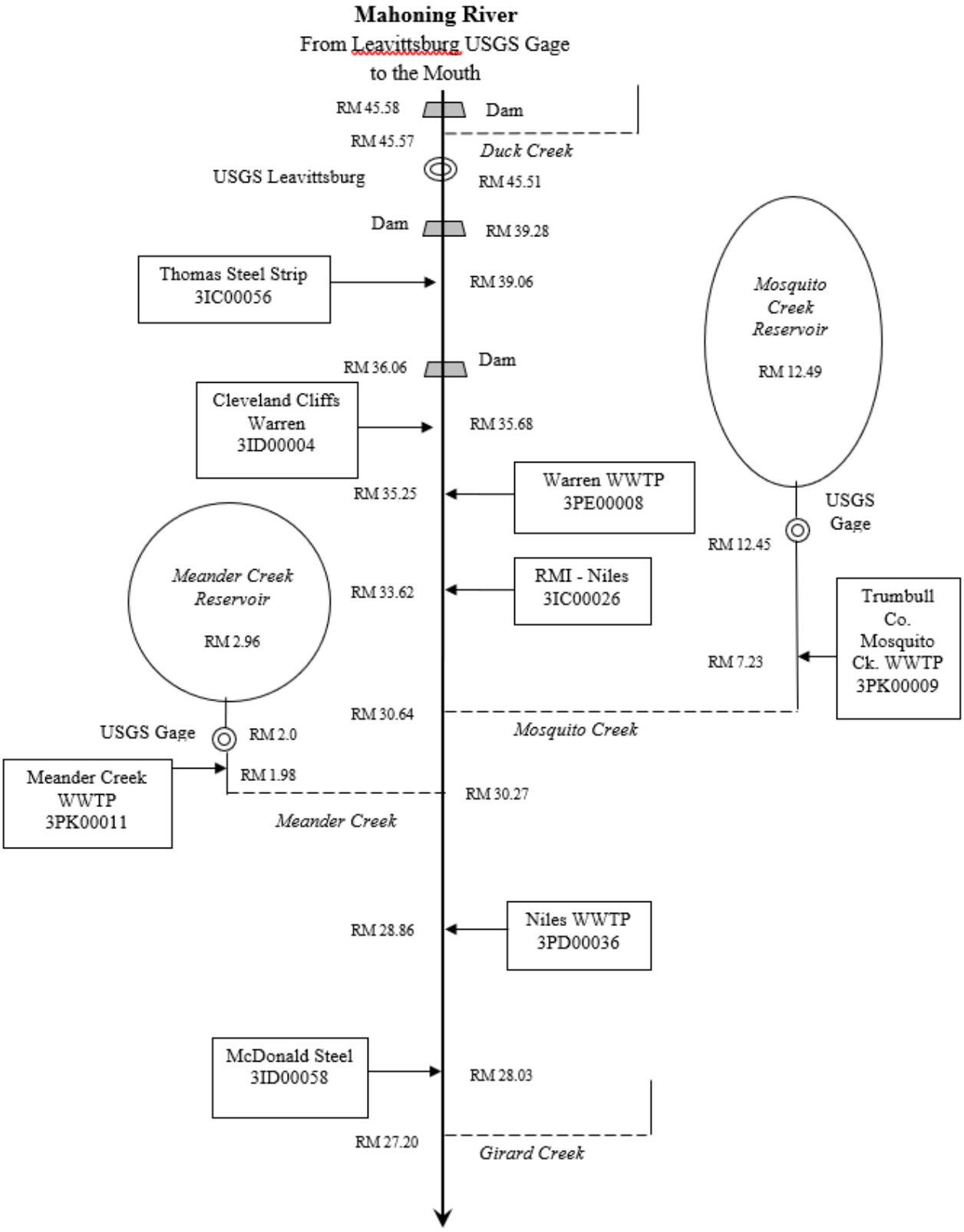

Figure 4. Mahoning River Study Area (continued)

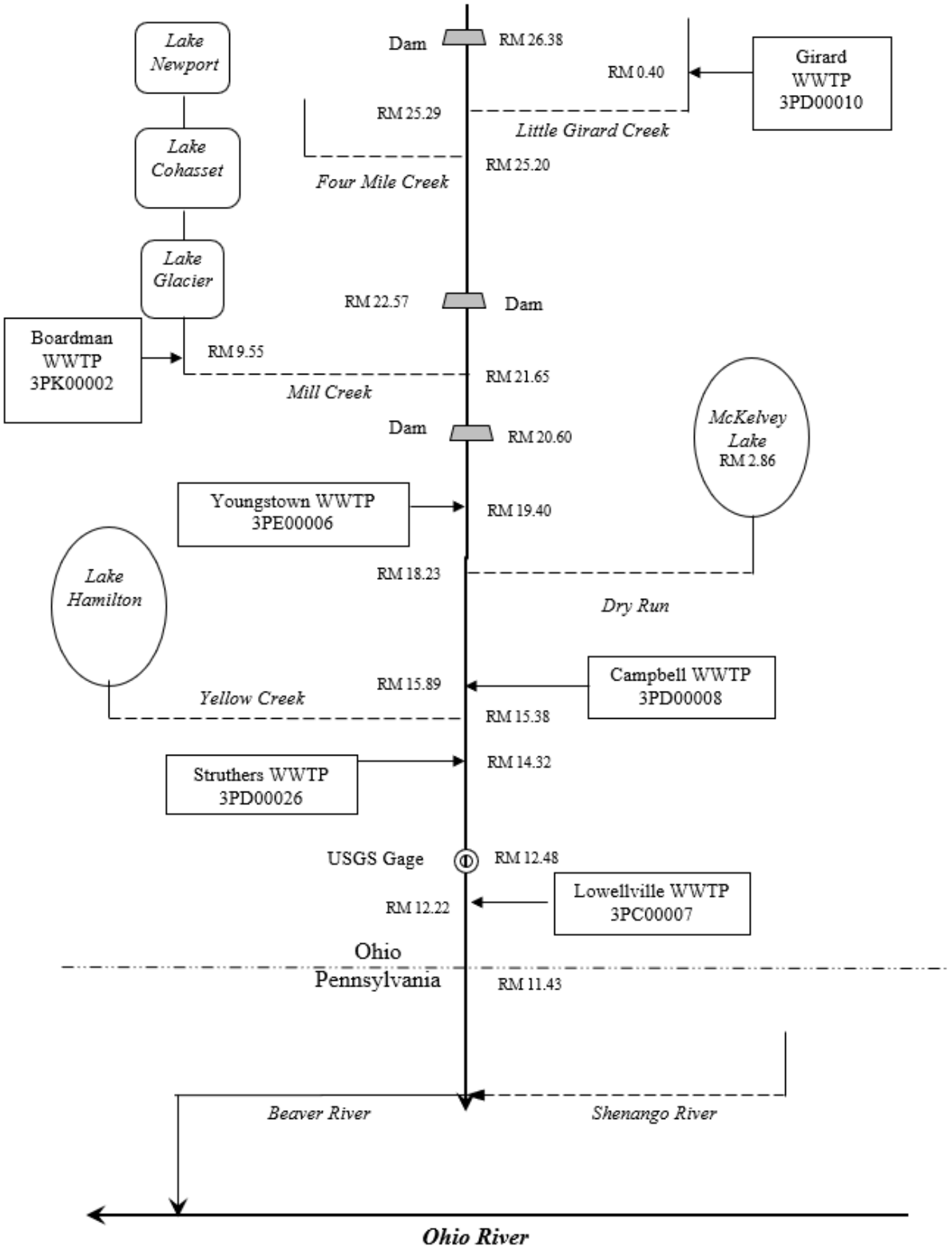

Table 1. Sewage Sludge Removal

Year	Dry Tons Removed
	Station 3ID00010586
2017	88.3
2018	38.4
2019	165
2020	587
2021	167
2022	100.6

Table 2. Effluent Violations for Outfall 3PD00010001

Parameter	2017	2018	2019	2020	2021	2022[a]
Bis(2-ethylhexyl) Phthalate	0	0	1	0	0	0
Chlorine, Total Residual	1	0	0	0	0	0
Copper, Total Recoverable	0	0	1	0	0	0
Dissolved Oxygen	0	0	0	1	0	0
E. coli	0	0	20	15	0	0
Mercury, Total	1	1	0	0	0	0
Oil and Grease, Hexane	0	2	0	0	0	0
Total Suspended Solids	0	0	3	0	0	0
pH, Maximum	0	1	0	0	0	1
Total	**2**	**4**	**25**	**16**	**0**	**1**

[a] = data set end 9/1/22

Table 3. Annual Effluent Flow Rates for Outfall 3PD00010001

Year	Annual Flow (MGD)		
	50th Percentile	95th Percentile	Maximum
2017	2.46	5.07	10.71
2018	3.18	7.01	13.33
2019	2.18	4.69	16.09
2020	2.24	5.03	13.35
2021	2.28	4.89	7.76
2022[a]	3.03	6.81	10.02

MGD = million gallons per day.
[a] = data set end 9/1/22

Table 4. Sanitary Sewer Overflows Discharges

Year	Occurrences
2017	1
2018	--
2019	1
2020	--
2021	--
2022[a]	--

[a] = data set end 9/1/22

Table 5. Bypass Discharges (Station 3PD00010602)

Year	No. of Events	Bypass Flow (MGD)			
		Average	Median	95th Percentile	Maximum
2017	13	1.03	0.91	2.72	3.03

Table 6. Combined Sewer Overflow Discharges (Station 3PD00010003)

Year	Occurrences	Volume	TSS*	CBOD5*
		Million Gallons	mg/L	mg/L
2017	3	1.70	128	43.3
2018	5	5.35	28	13.2
2019	2	1.85	69	52.95
2020	1	1.50	32	14.7
2021	4	1.87	134	35.65
2022[a]	2	5.01	163	30.7

* Values are annual medians
[a] = data set end 9/1/22

Table 7. Seasonal Effluent Phosphorus for Months May – October

Year	n	Median Phosphorus (mg/L)	Median Flow (MGD)	Median Loading (kg/day)
2017	24	2.67	2.456	24.19
2018	26	2.64	3.184	33.63
2019	24	2.56	2.176	20.44
2020	24	2.735	2.24	24.57
2021	25	3.3	2.276	30.29
2022[a]	16	2.785	2.841	29.59

[a] = data set end 9/1/22
MGD = million gallons per day
n = number of samples

Table 8. Effluent Characterization Using Pretreatment Data

PARAMETER (µg/L)	2017	9/6/2018 & 9/7/2018	9/4/19 & 9/5/19	9/14/20 & 9/15/20	9/23/2021 & 9/24/2021
Antimony	AA (15)	AA (15)	AA (15)	AA (15)	AA (15)
Arsenic	AA (15)	AA (15)	AA (15)	AA (15)	AA (15)
Beryllium	AA (1.5)	AA (1.5)	AA (1.5)	AA (1.5)	AA (1.5)
Bis(2-ethylhexyl)phthalate	34.2	AA (10.0)	AA (10.0)	AA (10.0)	AA (10.0)
Cadmium	AA (1.0)	AA (1.0)	AA (1.0)	AA (1.0)	AA (1.0)
Chloroform	4.24	AA (2.0)	AA (2.0)	AA (2.0)	AA (2.0)
Chromium	AA (2.0)	AA (2.0)	AA (2.0)	AA (2.0)	AA (2.0)
Copper	18.6	7.17	9.99	5.36	6.78
Lead	AA (7.0)	AA (7.0)	AA (7.0)	AA (7.0)	AA (7.0)
Mercury	AA (0.05)	AA (0.05)	AA (0.05)	AA (0.05)	AA (0.05)
Molybdenum	AA (3.0)	14.3	36.4	10.7	47.5
Nickel	AA (5.0)	AA (5.0)	AA (5.0)	AA (5.0)	AA (5.0)
Selenium	AA (7.0)	AA (7.0)	AA (7.0)	8.85	AA (7.0)
Silver	AA (2.0)	AA (2.0)	AA (2.0)	AA (2.0)	AA (2.0)
Thallium	AA (5.0)	AA (5.0)	AA (5.0)	AA (5.0)	AA (5.0)
Toluene	AA (2.0)	AA (2.0)	2.64	AA (2.0)	AA (2.0)
Zinc	47.2	41.3	39.9	21.6	25.1

AA = not-detected (analytical method detection limit)

Table 9. Effluent Characterization Using Self-Monitoring Data for Outfall 3PD00010001

Parameter	Unit	Current Limits		# Obs	Percentiles		Data Range
		30 Day	Daily		50th	95th	
Water Temperature	°C	Monitor		1486	14.2	21.2	0 - 96
Dissolved Oxygen	mg/L	--	5.0[m]	1476	8.19	6.3*	4 - 10.8
Total Suspended Solids	kg/day	568	852[w]	811	134	461	0 - 1130
Total Suspended Solids	mg/L	30	45[w]	811	14	34	0 - 128
Oil and Grease	mg/L	--	10	137	2.58	5.98	0 - 16.4
Nitrogen, Ammonia	mg/L	Monitor		811	3.68	11.8	.023 - 32.8
Nitrogen Kjeldahl, Total	mg/L	Monitor		69	4.82	13	1.34 - 22.2
Nitrite Plus Nitrate, Total	mg/L	Monitor		69	8.3	13.3	1.58 - 20.4
Phosphorus, Total	mg/L	Monitor		275	2.8	4.77	.718 - 7.61
Orthophosphate, Dissolved	mg/L	Monitor		73	1.81	3.53	.583 - 4.2
Cyanide, Free	kg/day	0.23	0.87	10	--	--	< .111
Cyanide, Free	mg/L	0.012	0.046	10	--	--	< .02
Iron, TR	µg/L	Monitor		3	521	642	519 - 655
Selenium, TR	µg/L	Monitor		28	< 2	5.15	0 - 8.08
Nickel, TR	µg/L	Monitor		31	< 5	7.3	0 - 11.6
Silver, TR	µg/L	Monitor		10	< 2	2.4	0 - 2.67
Zinc, TR	µg/L	Monitor		77	45.6	68	13 - 136
Cadmium, TR	µg/L	Monitor		31	--	--	< 1
Lead, TR	kg/day	0.398	7.76	10	--	--	< .0374
Lead, TR - 2017-2017	µg/L	21	410	10	--	--	< 7
Lead, TR - 2017-2020	µg/L	Monitor		34	< 7	< 7	0 - 10.3
Chromium, TR	µg/L	Monitor		31	< 2	2.12	0 - 2.45
Copper, TR - 2020-2022	kg/day	0.36	0.59	33	.0789	.164	.0344 - .222
Copper, TR - 2017-2020	kg/day	0.38	0.63	44	.0854	.269	0 - .326
Copper, TR - 2020-2022	µg/L	19	31	33	8.8	13.1	5.03 - 16
Copper, TR - 2017-2020	µg/L	20	33	44	8.42	19.2	0 - 28.6
Chromium, Dissolved Hexavalent	µg/L	Monitor		30	--	--	< 5
E. coli	#/100 mL	126	284[w]	439	65	3790	0 - 18900
Bis(2-ethylhexyl) Phthalate - Quarterly	kg/day	0.034	20.8	3	.0337	.0353	0 - .0355
Bis(2-ethylhexyl) Phthalate - Quarterly	µg/L	1.8	1100	3	4.5	5.1	0 - 5.17
Bis(2-ethylhexyl) Phthalate - Quarterly - Alt.	kg/day	0.16	20.8	20	.0291	.118	0 - .141
Bis(2-ethylhexyl) Phthalate - Quarterly - Alt.	µg/L	8.4	1100	20	2.57	7.64	0 - 19.4
Flow Rate	MGD	Monitor		2069	2.52	5.57	.016 - 16.1
Chlorine, Total Residual - All	mg/L	--	0.019	143	.0175	.0189	.0024 - .019
Chlorine, Total Residual - Summer	mg/L	--	0.019	278	.017	.0189	.0003 - .061
Chlorine, Total Residual - Winter	mg/L	--	0.019	4	.0177	.0187	.013 - .0188

Parameter	Unit	Current Limits		# Obs	Percentiles		Data Range
		30 Day	Daily		50th	95th	
Mercury, Total	kg/day	0.00023	0.021	83	.000062	.000234	.00000157 - .000465
Mercury, Total	ng/L	12	1100	83	5.83	14.2	1.02 - 30.1
Cyanide, Free (Low-Level)	µg/L	Monitor		20	9.23	24	0 - 30.6
Peracetic Acid	µg/L	--	330	37	.23	.314	.08 - .38
Acute Toxicity, Ceriodaphnia dubia - Quarterly	TUa	--	1.0	3	--	--	< .2
Acute Toxicity, Ceriodaphnia dubia - Quarterly - Alt.	TUa	--	1.0	19	< .2	.33	0 - .6
Chronic Toxicity, Ceriodaphnia dubia	TUc	Monitor		6	--	--	< 1
Acute Toxicity, Pimephales promelas - Quarterly	TUa	--	1.0	3	--	--	< .2
Acute Toxicity, Pimephales promelas - Quarterly - Alt.	TUa	--	1.0	19	< .2	.64	0 - 1
Chronic Toxicity, Pimephales promelas	TUc	Monitor		6	< 1	1.49	0 - 1.98
pH, Maximum	S.U.	--	9.0	1480	7.86	8.22	7.04 - 12.2
pH, Minimum	S.U.	--	6.5[m]	1480	7.73	7.2*	6.6 - 12.2
Residue, Total Filterable	mg/L	Monitor		136	614	715	310 - 858
CBOD 5 day	kg/day	474	757[w]	810	109	282	.757 - 694
CBOD 5 day	mg/L	25	40[w]	810	11.6	20.9	1.3 - 38.5

* = For pH minimum and dissolved oxygen, 5th percentile shown in place of 95th percentile.
[w] = weekly average.
[m] = minimum limit.

Table 10. Projected Effluent Quality for Outfall 3PD00010001

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Self-Monitoring (DMR) Data					
Ammonia (Summer) *	mg/L	274	274	8.51	16.85
Ammonia (Winter) *	mg/L	201	201	7.883	16.88
Bis(2-ethylhexyl) phthalate [A]	µg/L	28	17	15.11	25
Cadmium - TR [A]	µg/L	36	0	--	--
Chlorine – Total Residual	mg/L	282	282	0.031	0.043
Chromium - TR [A]	µg/L	36	3	1.967	2.695
Chromium VI - Dissolved	µg/L	30	0	--	--
Copper - TR [A]	µg/L	82	77	14.17	19.57
Cyanide - free	µg/L	20	19	24.25	40.87
Iron - TR	µg/L	3	3	1435	1965
Lead - TR [A]	µg/L	80	1	6.767	9.27
Mercury – TR [B]	ng/L	88	83	12.78	19.37
Nickel - TR [A]	µg/L	36	7	6.644	10.94
Nitrite-N + Nitrate-N	mg/L	69	69	12.76	17.86
Nitrogen Kjeldahl, Total	mg/L	69	69	9.51	13.91
Peracetic Acid	µg/L	37	37	0.29	0.435
Phosphorus	mg/L	275	275	4.087	5.401
Selenium - TR [A]	µg/L	33	6	8.003	11.31
Silver	µg/L	15	2	2.924	4.005
Total Filterable Residue	mg/L	136	136	686	772
Zinc - TR [A]	µg/L	82	82	61.95	82.11
Pretreatment data					
Chloroform	µg/L	5	1	7.119	9.752
Molybdenum	µg/L	5	4	79.75	109.3
Toluene	µg/L	5	1	4.433	6.072

[A] = DMR data combined with Pretreatment Program data
[B] = Bioaccumulative Chemical of Concern (BCC)
DMR = Discharge Monitoring Report
MDL = analytical laboratory method detection limit
PEQ = projected effluent quality
TR = total recoverable
* Per OAC 3745-2-04(E)(3), ammonia PEQ is based on data collected during the following months:
Summer – June through September
Winter – December through February

Table 11. Summary of Acute and Chronic Toxicity Results

Date	*Ceriodaphnia Dubia*		*Pimephales promelas*	
	TU_a	TU_c	TU_a	TU_c
3/7/2017	AA (0.2)		AA (0.2)	
6/11/2017	AA (0.2)		AA (1.0)	
6/13/2017		AA (0.2)		AA (1.0)
8/9/2017	AA (0.2)		AA (0.2)	
12/4/2017	AA (0.2)		AA (0.2)	
3/12/2018	AA (0.2)		AA (0.2)	
6/3/2018	AA (0.2)	AA (100)	1	1.98
9/19/2018	AA (0.2)		AA (0.2)	
12/10/2018	AA (0.2)		AA (0.2)	
3/25/2019	AA (0.2)		.2	
6/10/2019	AA (0.2)	AA (1)	AA (0.2)	AA (1)
9/11/2019	AA (0.2)		AA (0.2)	
12/3/2019	AA (0.2)		.6	
3/9/2020	AA (0.2)		.4	
6/14/2020	AA (0.2)	AA (1.0)	AA (0.2)	AA (1.0)
9/14/2020	AA (0.2)		AA (0.2)	
12/2/2020	AA (0.2)		AA (0.2)	
3/2/2021	AA (0.2)		AA (0.2)	
6/13/2021	AA (0.2)	AA (1.0)	AA (0.2)	AA (1.0)
9/7/2021	AA (0.2)		AA (0.2)	
12/2/2021	.3		AA (10)	
3/1/2022	.6		AA (10)	
6/12/2022	AA (0.2)	AA (1.0)	.4	AA (1.0)

AA = non-detection; analytical method detection limit of 0.2 TU_a, 1.0 TU_c
TU_a = acute toxicity unit
TU_c = chronic toxicity unit

Table 12. Aquatic Life Use Attainment Table

Location	Year	River Mile	Use	Status	Cause	Source
Mahoning R dst Warren WWTP	2013	35.03	WWH	PARTIAL	Direct habitat alterations, Other flow regime alterations, Sedimentation/ siltation	Dam or Impoundment
Mahoning R. at Niles @ Belmont Avenue	2013	29.98	WWH	PARTIAL	Direct habitat alterations, Other flow regime alterations, Sedimentation/ siltation	Dam or Impoundment
Mahoning R. dst Niles WWTP, upst McDonald Steel	2013	28.63	WWH	NON	Direct habitat alterations, Other flow regime alterations, Sedimentation/ siltation	Dam or Impoundment
Mahoning R. at Girard, dst Liberty St. Dam	2013	26.36	WWH	FULL		
Mahoning R. at Youngstown @ Division St.	2013	23.43	WWH	PARTIAL	Direct habitat alterations, Other flow regime alterations, Sedimentation/ siltation	Dam or Impoundment
Mahoning R. at Youngstown, upst Mill Creek	2013	21.73	WWH	FULL		
Mahoning R. at Youngstown @ West Avenue	2013	21.14	WWH	PARTIAL	Organic Enrichment, biological indicators	Combined sewer overflows
Mahoning R. at Youngstown @ Marshall St.	2013	20.45	WWH	(FULL)		
Mahoning R dst Youngstown WWTP	2013	19.20	WWH	PARTIAL	Organic Enrichment, biological indicators	Combined sewer overflows, Municipal point source dischargers
Little Girard Creek upstream Girard WPCF	2013	0.41	WWH	Partial	Fish passage barrier; Habitat alteration other than hydromodification; Municipal point source discharge	Fish passage barrier; Habitat alteration other than hydromodification; Municipal point source discharge
Little Girard Creek downstream Girard WPCF	2013	0.37	WWH	N/A	Mixing zone; biological criteria do not apply	

WWH = Warmwater Habitat
Upst.= Upstream
Dst = Downstream
WWTP = Wastewater Treatment Plant

Table 13. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum Aquatic Life	
		Human Health	Agri-culture	Aquatic Life		
Ammonia (Summer)	mg/L	--	--	1	--	--
Ammonia (Winter)	mg/L	--	--	1.9	--	--
Bis(2-ethylhexyl) phthalate	µg/L	3.7 [C]	--	8.4	1100	2100
Cadmium - TR	µg/L	--	50	4.7	12	23
Chlorine – Total Residual	mg/L	--	--	0.011	0.019	0.038
Chloroform	µg/L	20000 [C]	--	140	1300	2600
Chromium - TR	µg/L	--	100	170	3600	7100
Chromium VI - Dissolved	µg/L	--	--	11	16	31
Copper - TR	µg/L	--	500	19	31	61
Cyanide - free	µg/L	400	--	12	46	92
Iron - TR	µg/L	--	5000	--	--	--
Lead - TR	µg/L	--	100	18	350	700
Mercury – TR [A]	ng/L	12	10000	910	1700	3400
Molybdenum	µg/L	--	--	20000	190000	370000
Nickel - TR	µg/L	4600	200	110	950	1900
Nitrite-N + Nitrate-N	mg/L	--	100	--	--	--
Nitrogen Kjeldahl, Total	mg/L	--	--	--	--	--
Peracetic Acid	µg/L	--	--	25	160	330
Phosphorus	mg/L	--	--	--	--	--
Selenium - TR	µg/L	4200	50	5	62	120
Silver	µg/L	--	--	1.3	6.6	13
Toluene	µg/L	520	--	62	560	1100
Total Filterable Residue	mg/L	--	--	1500	--	--
Zinc - TR	µg/L	26000	25000	240	240	480

[A] = Bioaccumulative Chemical of Concern (BCC)
[C] = This criterion is based on a carcinogenic endpoint.
TR = total recoverable

Table 14. Instream Conditions and Discharger Flow

Parameter	Units		Value	Basis
Upstream Flows				
Little Girard Creek upstream of Girard WPCF				
7Q10	cfs	annual	0	USGS gage #03097500,1929-51 data
1Q10	cfs	annual	0	USGS gage #03097500,1929-51 data
30Q10	cfs	summer	0	USGS gage #03097500,1929-51 data
30Q10	cfs	winter	0	USGS gage #03097500,1929-51 data
Harmonic Mean Flow	cfs	annual	0	USGS gage #03097500,1929-51 data
Mixing Assumption	%	average	100	Stream-to-discharge ratio
	%	max	100	Stream-to-discharge ratio
Instream Temperature	^{o}C	summer	20.75	Girard 901; 23 values, 2017-22
	^{o}C	winter	11.3	Girard 901; 17 values, 2017-22
Instream pH	S.U.	summer	8.10	Girard 901; 23 values, 2017-22
	S.U.	winter	8.23	Girard 901; 17 values, 2017-22
Instream Hardness	mg/l	annual	229	Girard 901; 69 values, 2017-22
Girard WPCF Flow	cfs (MGD)	design	7.74 (5.0)	NPDES permit application

USGS = United States Geological Survey
S.U. = Standard Units
cfs = cubic feet per second
MGD = Million Gallons per Day
WPCF = Water Pollution Control Facility

Table 15. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum Aquatic Life	
		Human Health	Agri Supply	Aquatic Life		
Ammonia (Summer)	mg/L	--	--	1	--	--
Ammonia (Winter)	mg/L	--	--	1.9	--	--
Bis(2-ethylhexyl) phthalate	µg/L	59 [C]	--	8.4	1100	2100
Cadmium - TR [B]	µg/L	--	50 [A]	4.7	12	23
Chlorine - Total Residual	mg/L	--	--	0.011	0.019	0.038
Chromium - TR [B]	µg/L	--	100	170	3600	7100
Chromium VI – Dissolved [B]	µg/L	--	--	11	16	31
Copper - TR	µg/L	1300 [A]	500 [A]	19	31	61
Cyanide - free	µg/L	22000 [A]	--	12	46	92
Iron - TR	µg/L	--	4945	--	--	--
Lead - TR	µg/L	--	100	18	350	700
Mercury - TR [C]	ng/L	12	10000 [A]	910	1700	3400
Nickel - TR [B]	µg/L	4600 [A]	200	110	950	1900
Peracetic Acid [B]	µg/L	--	--	25	160	330
Selenium - TR	µg/L	11000 [A]	50	5	62	120
Silver	µg/L	--	--	1.3	6.7	13
Total Filterable Residue	mg/L	--	--	1500	--	--
Zinc - TR	µg/L	69000 [A]	25000 [A]	240	240	480

[A] Allocation must not exceed the Inside Mixing Zone Maximum
[B] Parameter would not require a WLA based on reasonable potential procedures, but allocation requested by Permits Group.
[C] Bioaccumulative Chemical of Concern (BCC), WQS must be met at end-of-pipe, unless the requirements for an exclusion are met as listed in 3745-2-08 (L).
TR = total recoverable

Table 16. Parameter Assessment

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

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

Cadmium	Chloroform	Chromium
Chromium VI - Dissolved	Molybdenum	Nickel
Nitrate+Nitrite (N)	Toluene	Peracetic Acid

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

Iron - TR	Lead	Total Filterable Residue
Zinc		

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

Copper - TR

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

Limits to Protect Numeric Water Quality Criteria

			Recommended Effluent Limits	
Parameter	**Units**	**Period**	**Average**	**Maximum**
Ammonia-N *	mg/l	Summer	1.0	--
Ammonia-N *	mg/l	Winter	1.9	--
Bis(2-ethyhexyl) phthalate	µg/l	Annual	8.4	1100
Chlorine, Total Residual *	mg/l	Summer Only	0.011	0.019
Cyanide, free	µg/l	Annual	12	46
Mercury *	ng/l	Annual	12	1700
Selenium	µg/l	Annual	5.0	62
Silver *	µg/l	Annual	1.3	6.7

* = See reasonable potential discussion regarding parameter assessment
PEL = preliminary effluent limit; PEQ = projected effluent quality; TR = total recoverable
WLA = wasteload allocation; WQS = water quality standard

Table 17. Final Effluent Limits for Outfall 3PD00010001

Parameter	Units	Frequency	Concentration		Loading (kg/day)[a]		Basis[b]
			30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Water Temperature	°C	1/day	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Dissolved Oxygen	mg/L	1/day	--	5.0 (Min.)	--	--	WQS
Total Suspended Solids	mg/L	3/week	30	45[d]	568	852 [d]	PD
Oil & Grease	mg/L	1/ 2 weeks	--	10	--	--	WQS
Ammonia (as Nitrogen)	mg/L	3/week	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Total Kjeldahl Nitrogen	mg/L	1/month	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Nitrate+Nitrite (as Nitrogen)	mg/L	1/month	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Phosphorus, Total	mg/L	1/week	- - - - - - - - - - - Monitor - - - - - - - - - - - -				PMR
Orthophosphate, Dissolved (as P)	mg/L	1/month	- - - - - - - - - - - Monitor - - - - - - - - - - - -				PMR
Selenium	µg/L	1/month	5.0	62	0.095	1.2	WLA
Silver	µg/L	1/month	- - - - - - - - - - - Monitor - - - - - - - - - - - -				RP
Nickel	µg/L	1/quarter	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M
Zinc	µg/L	1/month	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M
Cadmium	µg/L	1/quarter	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M
Lead	µg/L	1/month	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M
Chromium, Total	µg/L	1/quarter	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M
Copper	µg/L	1/month	- - - - - - - - - - - Monitor - - - - - - - - - - - -				RP
Hexavalent Chromium (Dissolved)	µg/L	1/quarter	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M
E. coli	#/100 ml	3/week	126	284[d]	--	--	WQS
Bis(2-ethylhexyl) Phthalate	µg/L	1/quarter	8.4	1100	0.16	20.8	WLA
Flow Rate	MGD	1/day	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Mercury	ng/L	1/month	12	1100	0.00023	0.032	WLA
Cyanide, Free	µg/L	1/month	12	46	0.23	0.87	WLA
Peracetic Acid	µg/L	When Disc.	--	330	--	--	WQS
Acute Toxicity, *Ceriodaphnia dubia*	TUa	1/quarter	--	1.0	--	--	WET
Chronic Toxicity, *Ceriodaphnia dubia*	TUc	1/year	- - - - - - - - - - - Monitor - - - - - - - - - - - -				WET
Acute Toxicity, *Pimephales promelas*	TUa	1/quarter	--	1.0	--	--	WET
Chronic Toxicity, *Pimephales promelas*	TUc	1/year	- - - - - - - - - - - Monitor - - - - - - - - - - - -				WET
pH (Minimum/Maximum)	S.U.	1/day	6.5 - 9.0		--	--	WQS
Total Filterable Residue	mg/L	1/ 2 weeks	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M
cBOD5	mg/L	3/week	25	40[d]	474	757[d]	PD

[a] Effluent loadings based on average design discharge flow of 5.0 MGD.

[b] Definitions:

M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
PD = Plant Design (OAC 3745-33-05(E))
PMR = Phosphorus monitoring requirements (ORC 6111.03)
RP = Reasonable Potential for requiring monitoring in permits (OAC 3745-33-07(A))
WET = Reasonable potential for requiring water quality-based effluent limits and monitoring requirements for whole effluent toxicity in NPDES permits [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.
[m] minimum limit

Attachment 1. Whole Effluent Toxicity Reasonable Potential Analysis

Whole effluent toxicity testing produced only non-detection results for chronic toxicity in *Ceriodaphnia dubia*, and therefore fall under Hazard Category 4. The reasonable potential analyses in Table A were only performed for *Ceriodaphnia dubia* acute toxicity (TUa Cd), and for *Pimephales promelas* acute and chronic toxicity(TUa/TUc Pp).

Hazard Category Summary

	Ceriodaphnia dubia		***Pimephales promelas***	
	Acute	**Chronic**	**Acute**	**Chronic**
Effluent Toxicity (Table A)	4	4	3	3
	4		3	

Hazard Categories: 1: Toxicity adequately documented 3: Toxicity possible
2: Toxicity strongly suspected 4: No toxicity

Table A. Effluent Toxicity

	Ceriodaphnia dubia		***Pimephales promelas***	
	Acute	**Chronic**	**Acute**	**Chronic**
WLA	0.3	1.0	0.3	1.0
# of tests	22	6	22	6
Maximum value	0.6	AA	1	1.98
Percent of tests >WLA	9.1	--	23	16.7
Geometric mean	0.21	--	0.24	1.12
Average Exceedance (Geomean * Percent of tests >WLA)	0.019	--	0.055	0.19
Average Exceedance / WLA	0.065	--	0.18	0.19

Attribute Evaluated	**Hazard Category 1**	**Hazard Category 2**	**Hazard Category 3**	**Hazard Category 4**
Degree of Toxicity	Adequately Documented	Strongly Suspected	Possible	None
(1) Minimum number of tests	3 TUa Cd TUa Pp TUc Pp	1	0 or 1	
(2) Percent of tests >WLA	>30	20 to 30 TUa Pp	10 to 20 TUc Pp	10 TUa Cd
(3) Average Exceedance/WLA[1] (Tables B and C data not available)				
(a) & (b) Acute[2] & Chronic	> 0.3	≥ 0.3	≥ 0.2	< 0.2 TUa Cd TUa Pp TUc Pp
(4) Maximum TU value (Tables 3B and 3C data not available)	≥(3xWLA) TUa Pp	≥WLA	≥WLA TUa Cd TUc Pp	<WLA

[1] Compare (per cent exceedances x geometric mean TU) to table factor.
[2] Use 0.3 x WLA for situations where AIM exists.

Addendum 1. Acronyms

ABS	Anti-backsliding
BPJ	Best professional judgment
CFR	Code of Federal Regulations
CMOM	Capacity Management, Operation, and Maintenance
CONSWLA	Conservative substance wasteload allocation
CSO	Combined sewer overflow
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DMT	Dissolved metal translator
IMZM	Inside mixing zone maximum
LTCP	Long-term Control Plan
MDL	Analytical method detection limit
MGD	Million gallons per day
NPDES	National Pollutant Discharge Elimination System
OAC	Ohio Administrative Code
Ohio EPA	Ohio Environmental Protection Agency
ORC	Ohio Revised Code
ORSANCO	Ohio River Valley Water Sanitation Commission
PEL	Preliminary effluent limit
PEQ	Projected effluent quality
PMP	Pollution Minimization Program
PPE	Plant performance evaluation
SSO	Sanitary sewer overflow
TMDL	Total Daily Maximum Load
TRE	Toxicity reduction evaluation
TU	Toxicity unit
U.S. EPA	United States Environmental Protection Agency
WET	Whole effluent toxicity
WLA	Wasteload allocation
WPCF	Water Pollution Control Facility
WQBEL	Water-quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater Treatment Plant