National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit to Discharge to Waters of the State of Ohio
for Mahoning County Meander Water Pollution Control Facility (WPCF)

Public Notice No.: 20-03-069
Public Notice Date: March 20, 2020
Comment Period Ends: April 20, 2020

Ohio EPA Permit No.: 3PK00011*KD
Application No.: OH0045721

Name and Address of Applicant:
Mahoning County Board of Commissioners
Sanitary Engineering Department
761 Industrial Road
Youngstown, OH 44509

Name and Address of Facility Where Discharge Occurs:
Meander WPCF
3264 State Route 46
Mineral Ridge, OH 44440
Trumbull County

Receiving Water: Meander Creek

Subsequent Stream Network: Mahoning River to Beaver Creek 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 (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.

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

New effluent limits are proposed for bis (2-ethylhexyl) phthalate because there is reasonable potential for this pollutant to exceed water quality standards in the permittee's final effluent. A 36-month compliance schedule is proposed to meet final effluent concentration and loading limits. Additional details are in Part I.C of the permit.

Lower daily maximum effluent limits are proposed for copper because there is reasonable potential for this pollutant to exceed water quality standards in the permittee's final effluent. It is anticipated the permittee can achieve compliance with this limitation. Therefore, a compliance schedule is not proposed to meet effluent limits.

Final effluent limits are proposed to continue for free cyanide and *Escherichia coli*.

New monitoring is proposed for dissolved orthophosphate (as P), as required by ORC 6111.03.

The wasteload allocation calculations placed iron in group 5. However, this grouping was based on a small dataset, i.e. two data points. Based on the Director's discretion, only monitoring is proposed at this time.

Three new internal monitoring stations are proposed to monitor the bypass channel at the facility: monitoring stations 602, 603, and 604.

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 Ohio Administrative Code (OAC) 3754-33-07(B)(11) and will adequately characterize toxicity in the plant's effluent.

Monitoring frequencies at station 601 for cadmium, chromium, dissolved hexavalent chromium, lead, nickel, and zinc have been reduced.

Iron monitoring is proposed to be added to station 601.

Monitoring for total kjedahl nitrogen is proposed to be added to upstream monitoring station 801. All other parameters are proposed to remain the same at this monitoring station.

Downstream monitoring station 903 is proposed to be removed. All parameters that were previously monitored at downstream monitoring station 903 are proposed to be monitored at downstream monitoring station 901.

Monitoring for acute toxicity is proposed to be removed from downstream monitoring station 901.

The monitoring frequency for *E. coli* at upstream monitoring station 801 and downstream monitoring station 901 is proposed to be increased.

Bis (2-ethylhexyl) phthalate monitoring is proposed to be added to influent monitoring station 601.

A schedule of compliance for an ammonia and cyanide evaluation is included in Part I.C of the permit.

A schedule of compliance to restore the functionality of the dual media sand filtration is included in Part I.C of the permit.

A schedule of compliance to complete a hydraulic stress test and submit an associated report is included in Part I.C of the permit.

NPDES permits no longer authorize the use of method 4500 CN-I from Standard Methods for free cyanide testing. The permittee must use one of the approved methods for free cyanide listed in 40 CFR 136.

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; storm water compliance; tracking of parameters; pretreatment program requirements; and outfall signage.

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PROCEDURES FOR PARTICIPATION IN THE FORMULATION OF FINAL DETERMINATIONS

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

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

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

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

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

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits 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 Joe Trocchio by phone at 330-963-1193 or by email at joseph.trocchio@epa.ohio.gov, or contact Nick McGovern by phone at 614-644-2146 or by email at nicholas.mcgovern@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: http://epa.ohio.gov/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 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 Mahoning County Meander WPCF ("Meander WPCF") discharges to Meander Creek at River Mile (RM) 1.98 near the City of Niles, Trumbull County. Figure 1 and Figure 2 shows the approximate location of the facility.

This segment of the Meander Creek is described by Ohio EPA River Code: 18-015, Hydrologic Unit Code (HUC): 050301030703, County: Trumbull, Ecoregion: Erie/Ontario Lake Plain. Meander Creek is designated for the following uses under Ohio's WQS (OAC 3745-1-25): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Primary Contact Recreation (PCR).

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

Use designations for aquatic life protection include habitats for coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal 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

The Meander WPCF was constructed in 1977 and has not had a major upgrade. The average design flow for the advanced wastewater treatment system is 4.0 million gallons per day (MGD). The Meander WPCF serves the City of Canfield, as well as parts of Canfield Township, Austintown Township, Jackson Township, and Weathersfield Township (Trumbull County). The Meander WPCF serves a population of approximately 11, 570 people.

The Meander WPCF has the following treatment processes which are shown in Figure 4:

- Influent pumping
- Preliminary screening
- Grit removal
- Two-stage pure oxygen activated sludge process with biological nitrification
- Secondary clarification
- Tertiary clarification
- Sand filtration
- Ferric chloride addition for Phosphorus removal

- Ultraviolet disinfection

The Meander WPCF utilizes the following sewage sludge treatment processes:

- Gravity thickening
- Polymer addition
- Centrifuge

Treated sludge is disposed of in a municipal landfill. Table 1 shows the last five years of sludge removed from Meander WPCF.

The collection system for the Meander WPCF is comprised of 100% separate sanitary sewers and 0% combined sewers.

The Meander WPCF has not historically reported bypasses. However, Meander WPCF does have the capability to bypass at several points in the treatment process, as there is a bypass channel running the length of treatment with various points where flow can be diverted into this channel. This bypass channel gives Meander WPCF the ability to bypass individual processes, as well as the capability to bypass the entire treatment works. The path of the bypass channel, as well as locations of bypasses can be seen in Figure 4. This permit is proposed to include three new internal monitoring stations, which correspond to the three bypass locations. The bypasses include:

- Monitoring Station 602: bypass of both the 1st and 2nd step oxygenation and clarification
- Monitoring Station 603: bypass of the tertiary clarification
- Monitoring Station 604: bypass of the dual media filtration

When the Ohio EPA visited the Meander WPCF in September 2019, the dual media filtration system was being bypassed, and it appeared the bypass had been occurring for an extended period of time.

Mahoning County currently implements an Ohio EPA-approved pretreatment program. Based on the NPDES permit renewal application, the Meander WPCF has 4 categorical users that discharge approximately 0.098 MGD of flow to the collection system. The Meander WPCF has 1 significant non-categorical user that discharges approximately 0.081 MGD of flow.

The potable water for the populations serviced by the Meander WPCF comes from the Meander Reservoir. The primary provider of treated water is The Mahoning Valley Sanitary District (aka Meander Water).

DESCRIPTION OF EXISTING DISCHARGE

The Meander WPCF had several effluent violations which are shown in Table 2. Ammonia and cyanide violations are especially prevalent and have occurred largely over the last two years. The causes of these violations are not immediately known to the permittee, investigations to identify the cause(s), and a proposed compliance schedule is included in the draft permit.

The Meander WPCF estimates there is an infiltration/inflow (I/I) rate to the collection system of 0.5 MGD. The average annual effluent flow rate for the Meander WPCF for the previous five years is presented in Table 3. The Meander WPCF performs the following activities to minimize I/I: continual smoke testing and field investigations, with follow up on needed repairs that these investigations identify. An increase in annual effluent flow rate can be seen in Table 3, which corresponds to cyanide and ammonia violations. It is suspected these observations are related, and that a hydraulic stress test is warranted to identify to capability of the WPCF to treat wastewater during peak flows

The Meander WPCF reports SSOs at Station 300. No SSOs were reported over the past five years. SSOs are most likely mitigated by the deep underground storage in the collection system. A 72-inch interceptor enters the plant at a depth of approximately 80 feet below surface level. This interceptor extends to the City of Canfield, which is approximately 9 miles away from the Meander WPCF.

Table 5 presents chemical specific data compiled from Priority Pollutant Scan (PPS) data reported in annual pretreatment reports.

Table 6 presents chemical specific data compiled from data collected by Ohio EPA.

Table 7 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period August 2014 to July 2019. The current permit limits are provided for comparison.

Table 8 summarizes the chemical specific data for outfall 001 by presenting the average and maximum PEQ values (calculated from DMR data and select pretreatment PPS data).

Table 9 summarizes the results of acute and chronic WET tests of the final effluent utilizing *Ceriodaphnia Dubia* (water flea) and *Pimephales Promelas* (fathead minnow) as the test organisms.

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 Ohio EPA effluent testing conducted.

ASSESSMENT OF IMPACT ON RECEIVING WATERS

The Lower Meander Creek watershed assessment unit 050301030703, which includes the Meander Creek in the vicinity of Meander WPCF, is listed as impaired for aquatic life and recreation uses pursuant to Section 303(d) of the Clean Water Act.

The attainment status of Lower Meander Creek is reported in the Final *Ohio 2018 Integrated Water Quality Monitoring and Assessment Report* ("Integrated Report'). 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 7-1). 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 10) 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.

The most recent data available for Lower Meander Creek is from 2011 and 2013. This data was published in 2018 in the *Biological and Water Quality Study of the Lower Mahoning River Watershed*. Lower Meander Creek is impaired for recreation and aquatic life largely due to impounded habitat. Lower Meander Creek is located immediately downstream of the Meander Creek Reservoir, which restricts flow to Meander Creek and results in limited to nonexistent flow. The Meander WCPF discharges to this stretch of the creek at RM 1.98, and it is suspected that the quality of the effluent has an adverse effect on aquatic life as well. The Biological and Water Quality report notes the Meander WPCF has been out of compliance for pH, ammonia, silver, phosphorus, copper, and fecal coliform. Meander WPCF has come into compliance with the majority of these parameters since the publication of the Biological and Water Quality report. No additional limits are recommended for the Meander WPCF as a result of the Integrated Report or the Biological and Water Quality report.

More information on the the full Integrated Report and the Biological and Water Quality report are available through the Ohio EPA Division of Surface Water website via the following links:

https://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport#1798510016-report

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

https://epa.ohio.gov/Portals/35/tmdl/TSD/Lower%20Mahoning%202013/2013-LMAHO-2_Appendices_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 Meander 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)	August 2014 through July 2019
Pretreatment data	2015 - 2019
Ohio EPA compliance sampling data	2014 and 2015

Statistical Outliers and Other Non-representative Data
The data were examined and the following values were removed from the evaluation as non-representative data:

- Cyanide - 0.53 ug/L; 8/3/2018; More than 10 times lower than the next closest value
- Nitrate + Nitrite - 0.055 mg/L; 9/13/2014; Sample collected by Ohio EPA; More than 10 times lower than the next closest value
- Nitrate + Nitrite - 0.577 mg/L; 8/19/2015; Sample collected by Ohio EPA; More than five times lower than the next closest value

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 (see Table 8).

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 11).

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. For free-flowing streams, WLAs using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations.

As in past modeling studies, all facilities discharging to the Mahoning River mainstem between the Leavittsburg dam and the Ohio-Pennsylvania boundary are considered interactive and are included in the WLA. The WLA contains a total of 23 outfalls from six municipal WWTPs and seven industrial facilities, as follows:

- Warren Steel Holdings
- Thomas Steel Strip
- ArcelorMittal-Warren
- Warren WWTP
- RMI-Niles
- BDM - Warren
- GenOn Niles Power
- Niles WWTP
- McDonald Steel
- Campbell WWTP
- Youngstown WWTP
- Lowellville WWTP
- Struthers WWTP

Four dischargers located on tributaries are allocated separately from the mainstem discharges: Meander WPCF (Meander Creek), Girard WWTP (Little Squaw 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 noninteractive with the direct dischargers to the Mahoning. Effluents from these four treatment plants were allocated to meet WQS for the conditions, habitat, and use designation for their particular receiving waters and

separate Permit Support Documents were prepared for each facility. The study area of the Mahoning River and its dischargers is presented in Figure 3.

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	Average	Summer 30Q10
		Winter 30Q10
Wildlife		Annual 90Q10
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 12, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

The data used in the WLA are listed in Table 11 and Table 12. The WLA results to maintain all applicable criteria are presented in Table 13.

Whole Effluent Toxicity Wasteload Allocation

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 Meander WPCF, the WLA values are 0.3 TU_a and 1.03 TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the estimate of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms (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/geometric mean of No Observed Effect Concentration and Lowest Observed Effect Concentration

The acute toxicity unit (TU_a) is defined as 100 divided by the concentration in water having 50% chance of causing death to aquatic life (LC_{50}) for the most sensitive test species:

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

This equation applies outside the mixing zone for all designated waters.

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

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

$$\text{Stream Dilution Ratio} = \frac{1Q10 + \text{Outfall 001 flow}}{\text{Outfall 001 flow}} = \frac{0.1 \text{ cfs} + 6.19 \text{ cfs}}{6.19 \text{ cfs}} = 1.02$$

The acute WLA for Meander WPCF is 30% percent mortality in 100 percent effluent based on the dilution ratio of 1.02 to 1.

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 13. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 8, 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 14.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 15 presents the final effluent limits and monitoring requirements proposed for Meander WPCF outfall 001 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

Ammonia, Phosphorus, Total Suspended Solids, and 5-Day Carbonaceous Biochemical Oxygen Demand
The limits proposed for ammonia, phosphorus, total suspended solids, and 5-day carbonaceous biochemical oxygen demand are all based on plant design criteria. These limits, including the ammonia limits which have been evaluated using the WLA procedures, are protective of WQS.

Dissolved Oxygen, Oil and Grease, pH, and *Escherichia coli*
Limits proposed for dissolved oxygen, oil and grease, pH, and *Escherichia coli* are based on WQS (OAC 3745-1-35 and 37). Primary contact recreation *E. coli* standards apply to Meander Creek.

Bis (2-ethylhexyl) Phthalate, Copper, and Cyanide
The Ohio EPA risk assessment (Table 14) places bis(2-ethylhexyl) phthalate, copper, and cyanide in group 5. This placement, as well as the data in Table 7 and Table 8, 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/or the PEQ is between 75 and 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 thirty-day average concentration and loading limits, as well as the daily maximum concentration and loading limits, for these parameters are presented in Table 15.

Although the current WLA would allow slightly higher daily maximum limits for cyanide, 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. The anti-backsliding provisions of OAC 3745-33-05(F) require that an anti-degradation review must be completed before an existing permit limit can be made less stringent. The rule requires other conditions to be satisfied as well. In the case of the Meander WPCF, none of those conditions have been satisfied. Therefore, the existing limits will be continued.

Iron
The Ohio EPA risk assessment (Table 14) places iron 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 this parameter. The PEQ values calculated for iron (Table 8) may not be representative of its actual levels in the plant effluent since they were based on two (2) data points. The purpose of the proposed monitoring is to collect additional data on the frequency of occurrence and variability of these pollutants in the plant's effluent.

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 Meander WPCF to notify Ohio EPA if a sample result exceeds the preliminary effluent limit (Table 13). If certain conditions are met, the facility is required to take steps to reduce the discharge level of this pollutant.

Lead, Mercury, Silver, and Total Filterable Residue
The Ohio EPA risk assessment (Table 14) places lead, mercury, silver, and total filterable residue in group 4. This placement, as well as the data in Table 7 and Table 8, 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). The monitoring frequencies are proposed to remain the same for these parameters.

Cadmium, Chromium, Dissolved Hexavalent Chromium, Nickel, Nitrite Plus Nitrate, and Zinc
The Ohio EPA risk assessment (Table 14) places cadmium, chromium, dissolved hexavalent chromium, nickel, nitrite plus nitrate, and zinc in groups 2 and 3. This placement, as well as the data in Table 7 and Table 8, 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 the same frequencies is proposed to document that these pollutants continue to remain at low levels.

Arsenic, Barium, Chloroform, Molybdenum, Selenium, and Strontium
The Ohio EPA risk assessment (Table 14) places these parameters in groups 2 and 3. This placement, as well as the data in Table 7 and Table 8, 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 new monitoring is proposed, with the exception of priority pollutant scans that should continue to occur annually.

Flow and Water Temperature
Monitoring for these parameters are proposed to continue in order to evaluate the performance of the treatment plant.

Total Kjeldahl Nitrogen
The Integrated Report lists Meander Creek watershed as impaired for aquatic life. Nutrients and organic enrichment/dissolved oxygen are listed as "high magnitude" causes, and major municipal point sources are listed among the "high magnitude" sources. Considering this information and the fact that municipal WWTPs discharge a nutrient load to the river, monthly monitoring for total Kjeldahl nitrogen is proposed based on best technical judgment. Monitoring for phosphorus and nitrate + nitrite at the upstream and downstream stations

also is proposed. The purpose of the monitoring is to maintain a nutrient data set for use in the future total maximum daily loads (TMDL) study.

Dissolved Orthophosphate
Monitoring for dissolved orthophosphate (as P) is required by Ohio Senate Bill 1 (ORC 6111.03), which was signed by the Governor on April 2, 2015. Monitoring for orthophosphate will further develop nutrient datasets for dissolved reactive phosphorus that are used in stream and watershed assessments and studies. Because Ohio EPA monitoring, as well as other in-stream monitoring, is taken by grab sample, grab samples are proposed for orthophosphate to maintain consistent data. The grab samples must be filtered within 15 minutes of collection using a 0.45-micron filter. The filtered sample must be analyzed within 48 hours.

Whole Effluent Toxicity Reasonable Potential
Based on evaluating the WET data presented in Table 9 and other pertinent data under the provisions of OAC 3745-33-07(B), the Meander WPCF is placed in Category 4 with respect to WET. 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). Annual chronic toxicity monitoring with the determination of acute endpoints is proposed for the life of the permit. The proposed monitoring will adequately characterize toxicity in the plant's effluent.

Additional Monitoring Requirements
Three new internal monitoring stations are proposed to monitor the three bypass locations at the facility. Station 602 is proposed to monitor the bypass of both the 1st and 2nd step oxygenation and clarification. Station 603 is proposed to monitor the tertiary clarification bypass. Station 604 is proposed to monitor the dual media filtration bypass.

Monitoring frequencies are proposed to be reduced at station 601 for cadmium, chromium, dissolved hexavalent chromium, lead, nickel, and zinc to match the monitoring frequencies for these parameters at station 001.

Iron monitoring is proposed to be added to station 601 at the same monitoring frequency as monitoring iron at station 001 to ensure treatment plant efficacy for this parameter.

Per Ohio EPA Permit Guidance 1, monitoring for total kjedahl nitrogen is proposed to be added to upstream monitoring station 801.

It has been determined that it is no longer necessary to monitor for WET at downstream stations. As such, downstream far-field monitoring at station 903 is proposed to be removed. All parameters which were previously monitored at station 903, except acute toxicity, are proposed to be monitored at station 901.

Per Ohio EPA Permit Guidance 1, the monitoring frequency of *E. coli* at upstream monitoring station 801 and downstream monitoring station 901 is proposed to be increased.

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.

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

A reporting table for monitoring station 588 is proposed to be added to the permit. This monitoring station was included in Part II of the previous permit for monitoring sludge transferred to another NPDES facility, but did not have an associated reporting table in Part I.B.

OTHER REQUIREMENTS

Compliance Schedule

Pretreatment Local Limits Review - A 6-month compliance schedule is proposed for the permittee 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 permittee must also submit a pretreatment program modification request. Details are in Part I.C of the permit.

Bis (2-ethylhexyl) phthalate New Limit(s) - A 36-month compliance schedule is proposed for the Meander WPCF to meet the new daily maximum and monthly concentration and loading limits for bis (2-ethylhexyl) phthalate. The compliance schedule stipulates that the permittee must demonstrate compliance with final effluent limits as soon as possible, but no later than 24-months after the effective date of the permit if the facility does not need to be upgraded. Details are in Part I.C of the permit.

Ammonia and Cyanide Evaluation – An 18-month compliance schedule is proposed for the Meander WPCF to submit a report to the Ohio EPA Northeast District office and implement the recommendations identified in the report to maintain compliance with final effluent limits of ammonia and cyanide. The report should evaluate potential sources and causes of the elevated ammonia and free cyanide levels identified in the plant effluent. The report should outline the facility's findings, evaluate operational and/or necessary treatment plant improvements to achieve consistent performance, and present the facility's plan to bring the final effluent discharge at Outfall 001 into compliance with its permit. Details are in Part I.C of the permit.

Dual Media Sand Filtration Functionality – A 2-month compliance schedule is proposed to submit a report to the Ohio EPA Northeast District Office describing the actions to be taken to rehabilitate and/or replace the tertiary filtration system. Details are in Part I.C of the permit.

Hydraulic Stress Test – A 24-month compliance schedule is proposed to test the hydraulic capacity of the Meander WPCF, and to submit a report detailing the findings of the test and need and feasibility of expanding the treatment plant. Details are in Part I.C of the permit.

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 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 Meander WPCF to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001. 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.

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.

New NPDES permits no longer authorize the use of method 4500 CN-I from Standard Methods for free cyanide testing. The new permits require permittees to begin using one of these approved methods as soon as possible. If a permittee must use method 4500 CN-I during the transition to an approved method, they are instructed to report the results on their DMR and enter "Method 4500 CN-I" in the remarks section.

Outfall Signage
Part II of the permit includes requirements for the permittee to place and maintain a sign at each outfall to Meander 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.

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, the Meander WPCF may seek permit coverage under the general permit for industrial storm water (permit # OHR000006) or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if: 1) the Meander WPCF 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.

Figure 1. Location of the Meander WPCF

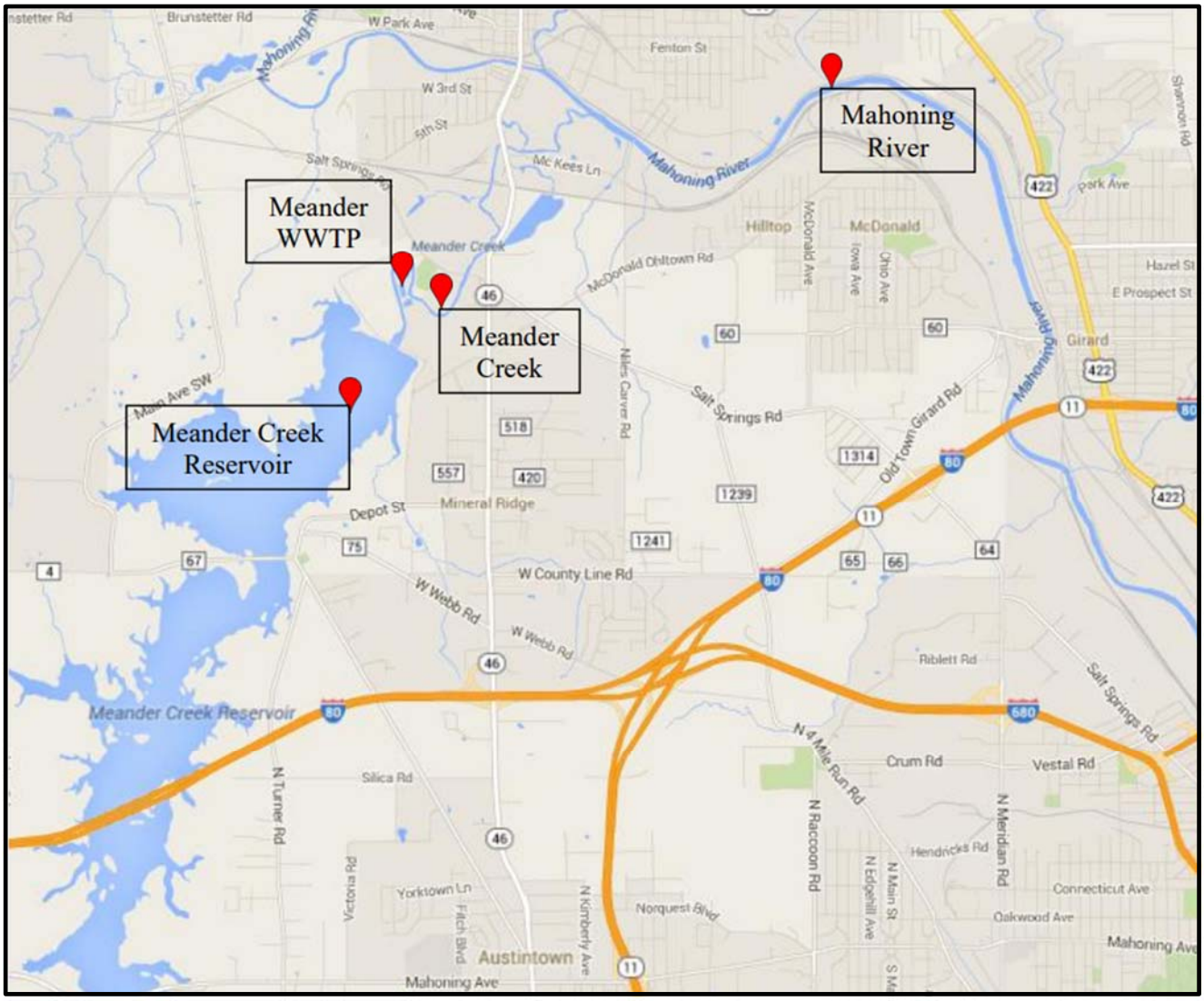

Figure 2. Meander Creek Study Area

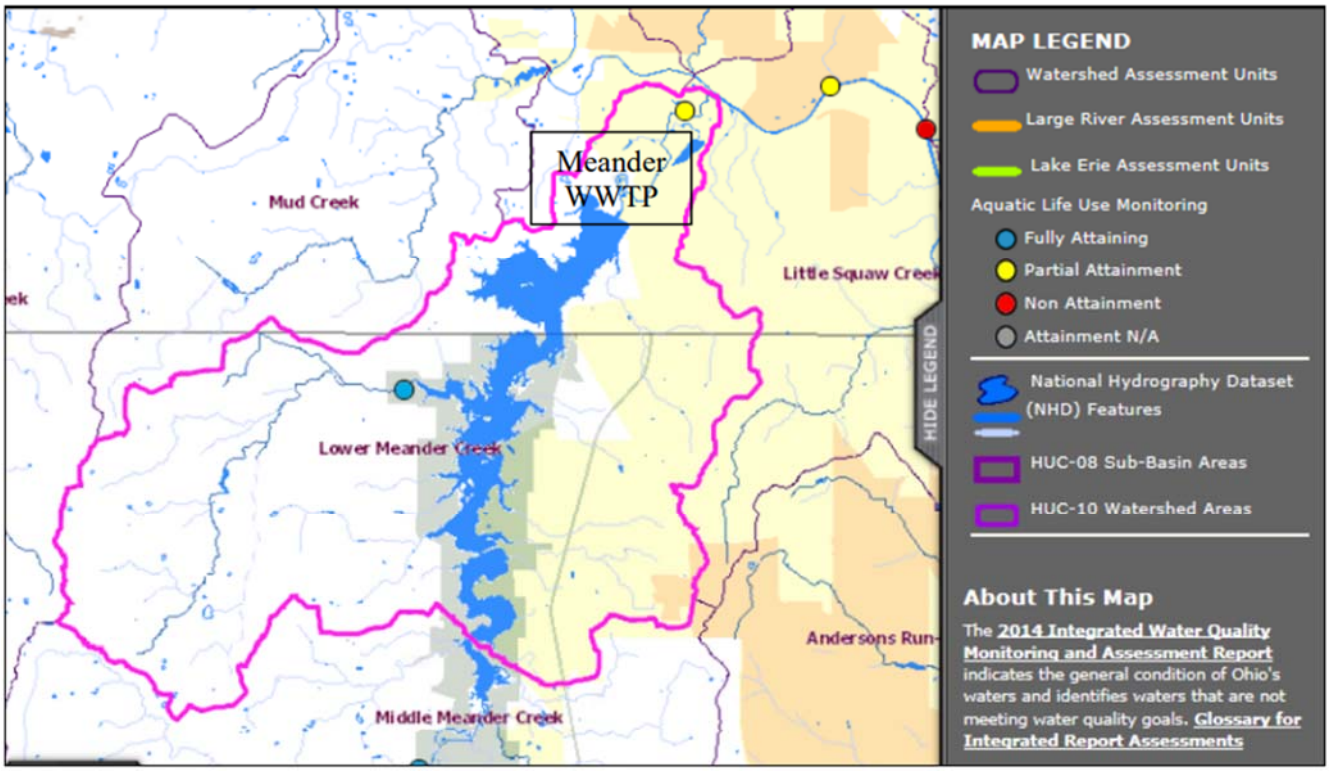

Figure 3. Mahoning River Study Area

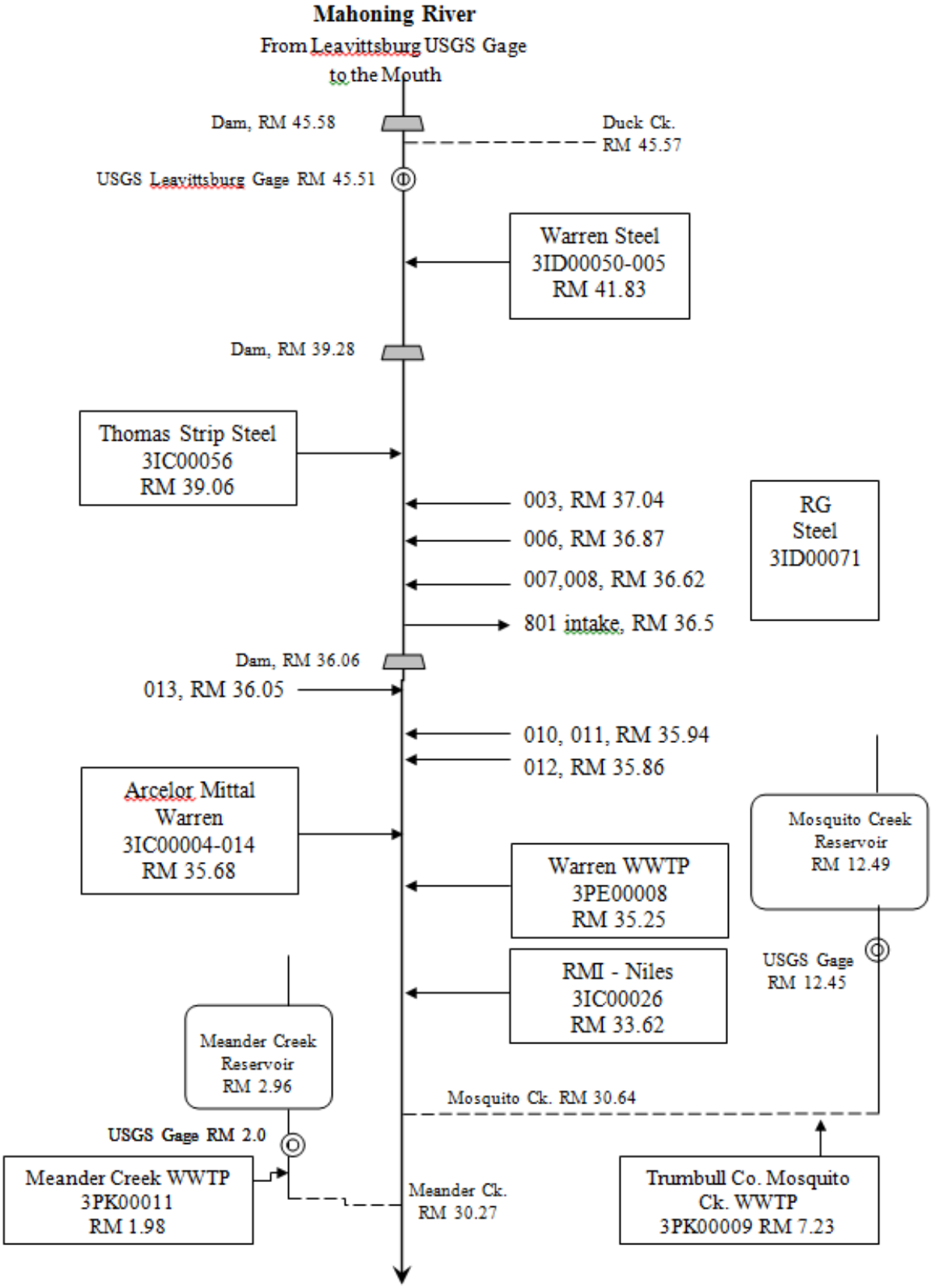

Figure 3. Mahoning River Study Area (continued)

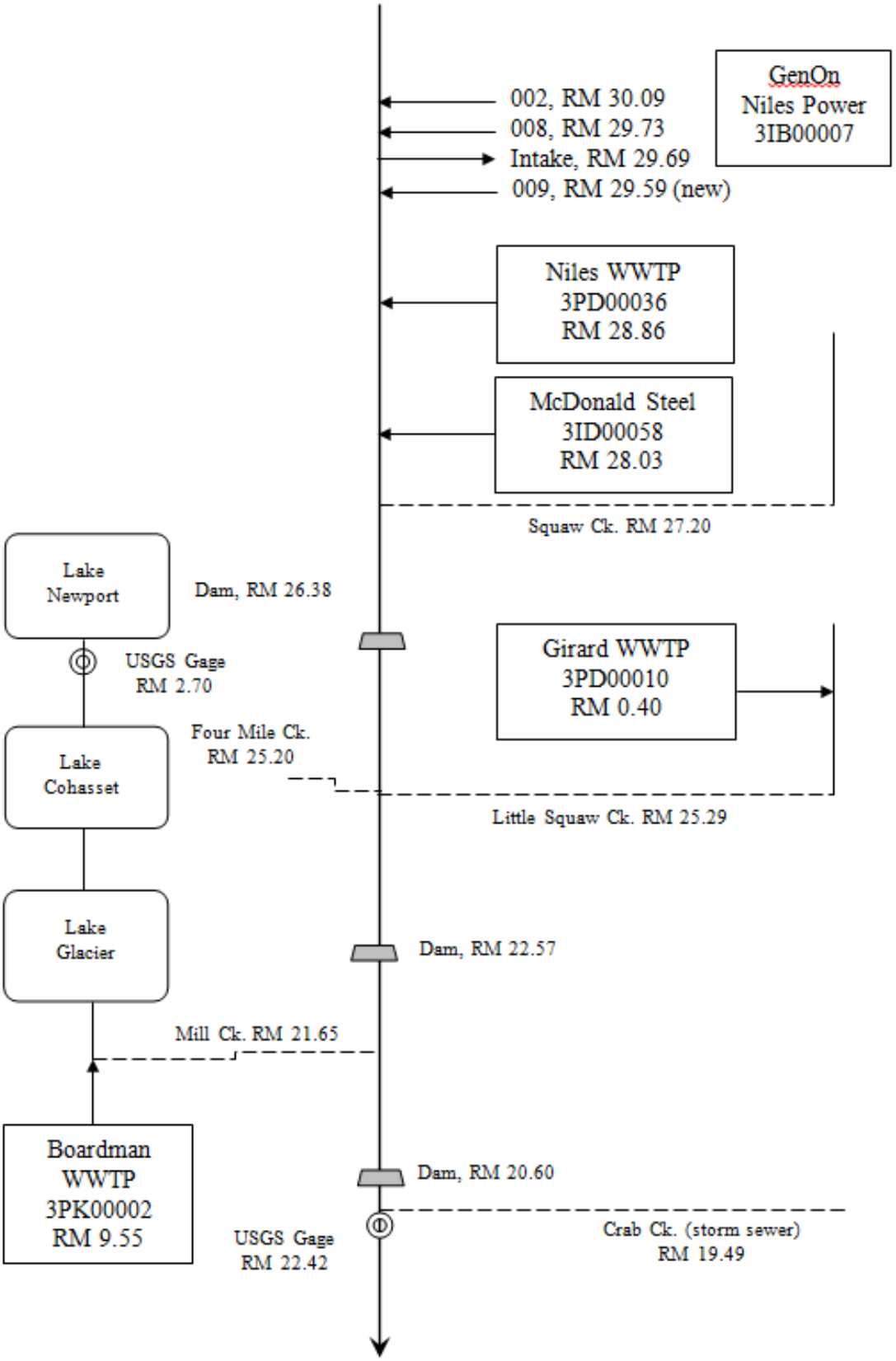

Figure 4. Diagram of Wastewater Treatment System

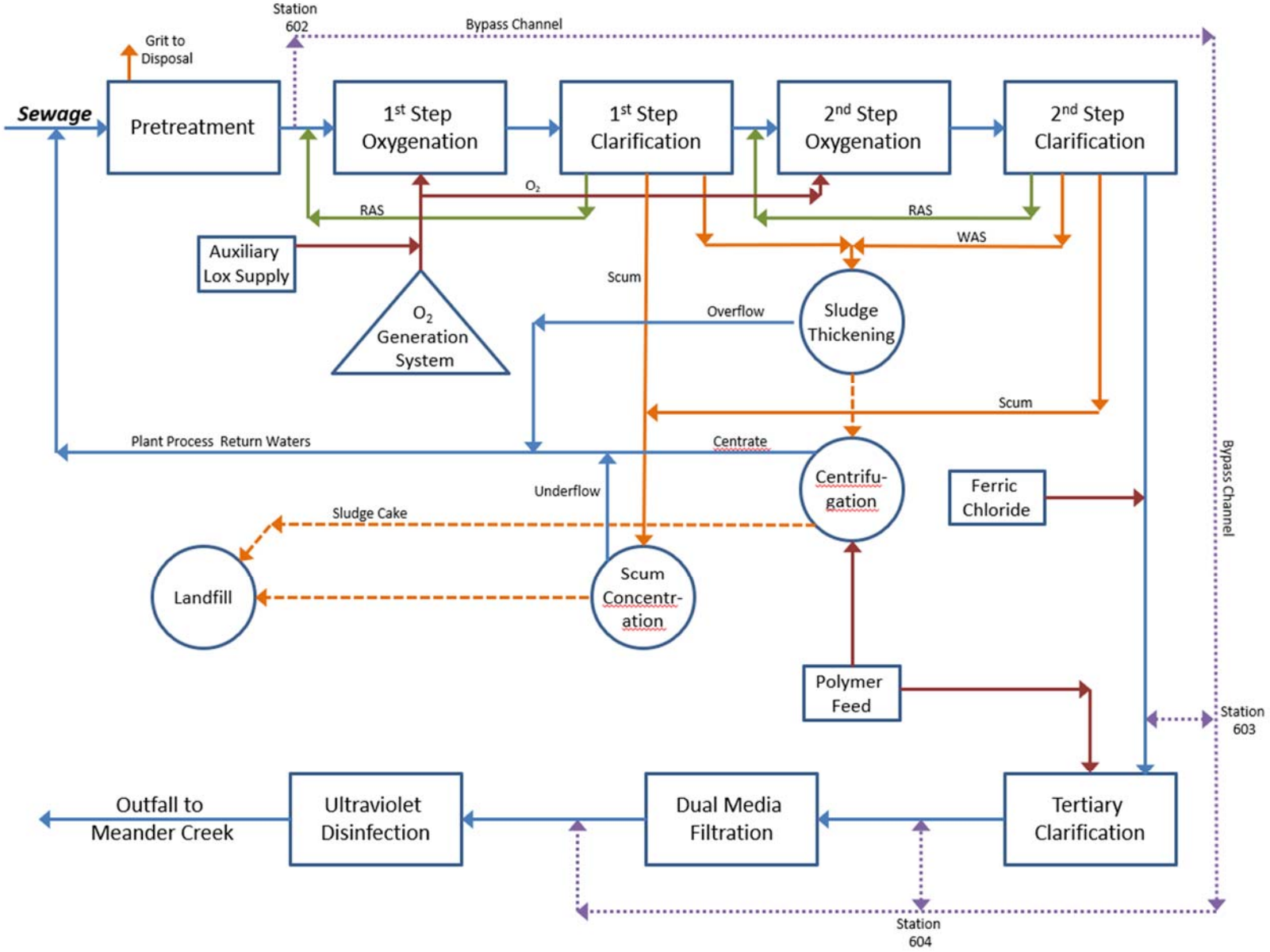

Table 1. Sewage Sludge Removal for Station 586

Year	Dry Tons Removed
2014	570
2015	523
2016	600
2017	645
2018	632

Table 2. Effluent Violations for Outfall 001

Parameter	2014	2015	2016	2017	2018	2019
CBOD, 5-Day	0	4	0	0	0	0
Copper, Total Recoverable	0	2	0	2	0	0
Cyanide, Free	0	0	0	1	15	21
E. coli	0	2	0	0	0	1
Nitrogen, Ammonia (NH_3)	0	12	0	0	45	60
Phosphorous, Total (P)	0	1	0	0	4	2
Total Suspended Solids	0	3	0	0	3	1
Total	0	24	0	3	67	85

Table 3. Average Annual Effluent Flow Rates

Year	# Observations	Annual Flow in MGD			
		Average	50th Percentile	95th Percentile	Maximum
2014	153	3.74	3.53	5.74	6.95
2015	365	3.89	3.55	6.33	7.57
2016	366	3.53	3.31	6.23	7.54
2017	365	3.69	3.44	6.50	7.33
2018	365	4.07	3.61	7.14	8.19
2019	212	4.66	4.17	7.39	7.94

MGD = million gallons per day.

Table 4. Calculated Phosphorus Loadings from 2014 - 2019

Months May through October				
Year	# Observations	Median Daily P Concentration (mg/L)	Median Flow (MGD)	Calculated Loading (kg/day)
2014	13	0.33	3.68	6.21
2015	30	0.41	3.62	4.9
2016	24	0.45	2.81	5.08
2017	24	0.40	3.17	5.34
2018	24	0.56	3.27	7.35
2019	12	0.48	4.45	8.11

MGD = million gallons per day

Table 5. Effluent Characterization Using Pretreatment Data

Parameter (µg/l)	4/6/2015	4/8/2016	4/7/2017	4/6/2018	4/26/2019
Arsenic	AA (25)	AA (15.0)	AA (15.0)	AA (15.0)	AA (15.0)
Bis (2-ethylhexyl) phthalate	12.7	AA (10.0)	18.9	AA (10.0)	AA (10.0)
Cadmium	AA (5.0)	AA (1.0)	AA (1.0)	AA (1.0)	AA (1.0)
Chloroform	AA (2.0)	AA (2.0)	2.46	AA (2.0)	AA (2.0)
Chromium	AA (5.0)	AA (2.0)	AA (2.0)	4.2	AA (2.0)
Copper	12	9.86	5.32	15.3	AA (5.0)
Lead	AA (15.0)	AA (7.0)	AA (7.0)	AA (7.0)	AA (7.0)
Molybdenum	NA	AA (3.0)	AA (3.0)	AA (0.05)	5.31
Nickel	AA (10.0)	5.01	AA (5.0)	AA (5.0)	6.43
Selenium	AA (25.0)	AA (7.0)	AA (7.0)	AA (7.0)	AA (7.0)
Zinc	46.1	34.2	35.2	46.5	27.5

AA = not-detected (analytical method detection limit)
NA = Not analyzed

Table 6. Effluent Characterization Using Ohio EPA data

Parameter	Units	9/3/2014	8/19/2015
Ammonia	mg/L	0.098	0.784
Arsenic	µg/L	AA (0.67)	1.4
Barium	µg/L	AA (5.0)	9
Cadmium	µg/L	AA (0.07)	0.02
Chloride	mg/L	146	158
Chromium	µg/L	AA (0.67)	0.7
Copper	µg/L	5.6	4.9
Iron	µg/L	924	1730
Lead	µg/L	AA (0.67)	0.5
Magnesium	mg/L	14.6	16.4
Manganese	µg/L	211	268
Nickel	µg/L	9.5	6.1
Nitrate + Nitrite	mg/L	9.17	12.1
Nitrite (NO2)	mg/L	0.055	0.577
Selenium	µg/L	AA (0.67)	0.6
Strontium	mg/L	221	198
Sulfur, Sulfate (SO4)	mg/L	86.2	90.2
Total Dissolved Solids	mg/L	676	694

AA = not detected (analytical method detection limit)

Table 7. Effluent Characterization Using Self-Monitoring Data

Outfall	Parameter	Unit	Current Limits		# Obs	Percentiles		Data Range
			30 Day	Daily		50th	95th	
	Water Temperature	°C	Monitoring Only		1244	17	21.2	8.3 - 23
	Dissolved Oxygen	mg/L	--	5.0[m]	1247	10	8*	6.8 - 19.3
	Total Suspended Solids	kg/day	303	454[w]	720	81.5	319	0 - 1660
	Total Suspended Solids	mg/L	20.0	30.0[w]	720	5.9	15.6	0 - 62
	Oil and Grease	mg/L	--	10.0	120	< 2.98	7.45	0 - 9.78
	Nitrogen, Ammonia - Summer	kg/day	28.8	43.1[w]	378	3.8	183	0 - 466
	Nitrogen, Ammonia - Summer	mg/L	1.9	2.85[w]	378	.29	10.8	0 - 36.3
	Nitrogen, Ammonia - Winter	kg/day	75.7	113.6[w]	378	22.7	235	0 - 368
	Nitrogen, Ammonia - Winter	mg/L	5.0	7.5[w]	378	1.42	15.1	0 - 24.9
	Nitrogen Kjeldahl, Total	mg/L	Monitoring Only		64	2.44	19	.25 - 30.5
	Nitrite Plus Nitrate, Total	mg/L	Monitoring Only		65	10.7	19.8	2.58 - 20.6
	Phosphorus, Total	kg/day	15.2	22.9[w]	266	6.72	19	0 - 34.2
	Phosphorus, Total	mg/L	1.0	1.5[w]	266	.48	1.18	0 - 1.48
001	Orthophosphate, Dissolved	mg/L	Monitoring Only		32	.385	.737	.02 - 1.1
	Cyanide, Free	mg/L	Monitoring Only		4	--	--	< .007
	Nickel, TR	µg/L	Monitoring Only		20	7.27	28.4	0 - 57.3
	Silver, TR	kg/day	0.02	0.074	4	--	--	< .00478
	Silver, TR - 2014-2014	µg/L	1.3	4.9	4	--	--	< .41
	Silver, TR - 2014-2019	µg/L	Monitoring Only		56	< .1	< .1	0 - 1.02
	Zinc, TR	µg/L	Monitoring Only		20	37.4	76.8	8.86 - 77.4
	Cadmium, TR	µg/L	Monitoring Only		20	--	--	< .12
	Lead, TR	µg/L	Monitoring Only		20	< 3.71	6.35	0 - 7.87
	Chromium, TR	µg/L	Monitoring Only		20	< 1.13	2.57	0 - 9.57
	Copper, TR	kg/day	0.24	0.39	62	.105	.265	0 - .309
	Copper, TR	µg/L	16.0	26.0	62	7.64	13.9	0 - 20.8
	Chromium, Dissolved Hexavalent	µg/L	Monitoring Only		23	--	--	< 7.07
	Fecal Coliform	#/100 mL	1000	2000[w]	36	80	1230	10 - 2600
	E. coli	#/100 mL	126	284[w]	327	10	542	0 - 6750

Outfall	Parameter	Unit	Current Limits		# Obs	Percentiles		Data Range
			30 Day	Daily		50th	95th	
001 Cont'd	Flow Rate	MGD	Monitoring Only		1826	3.57	6.72	2.09 - 8.19
	Mercury, Total	kg/day	0.0002	0.017	4	.0000682	.0000716	.0000475 - .0000718
	Mercury, Total - 2014-2014	ng/L	12	1100	4	4.74	4.94	3.24 - 4.96
	Mercury, Total - 2014-2019	ng/L	Monitoring Only		56	2.44	6.94	0 - 11.1
	Cyanide, Free (Low-Level)	kg/day	0.182	0.699	58	< .0000248	1.02	0 - 1.35
	Cyanide, Free (Low-Level)	µg/L	12.0	46.0	58	< 3	56.2	0 - 71.8
	Acute Toxicity, *Ceriodaphnia dubia*	TUa	Monitoring Only		5	--	--	< 100
	Chronic Toxicity, *Ceriodaphnia dubia*	TUc	Monitoring Only		5	--	--	< 100
	Acute Toxicity, *Pimephales promelas*	TUa	Monitoring Only		5	--	--	< .2
	Chronic Toxicity, *Pimephales promelas*	TUc	Monitoring Only		5	--	--	< 100
	pH, Maximum	S.U.	--	9.0	1245	7	7.4	6.5 - 8
	pH, Minimum	S.U.	--	6.5[m]	1245	6.9	6.6*	6.5 - 7.8
	Residue, Total Filterable	mg/L	Monitoring Only		57	640	886	211 - 1320
	CBOD 5 day	kg/day	181.7	272.7[w]	721	39.3	142	0 - 1720
	CBOD 5 day	mg/L	12.0	18.0[w]	721	2.9	8.3	0 - 146
586	Sludge Fee Weight	dry tons	Monitoring Only		5	600	643	523 - 645
588	Sludge Weight	Dry Tons	Monitoring Only		5	600	643	523 - 645
601	Total Suspended Solids	mg/L	Monitoring Only		720	99	301	7.4 - 1690
	Phosphorus, Total	mg/L	Monitoring Only		140	3.74	5.48	1.41 - 7.68
	Cyanide, Total	mg/L	Monitoring Only		4	--	--	< .009
	Nickel, TR	µg/L	Monitoring Only		20	9.39	38.4	0 - 41.2
	Silver, TR	µg/L	Monitoring Only		62	< .1	2.93	0 - 6.74
	Zinc, TR	µg/L	Monitoring Only		20	106	628	8.12 - 738
	Cadmium, TR	µg/L	Monitoring Only		20	< .38	4.38	0 - 6.45
	Lead, TR	µg/L	Monitoring Only		20	9.44	62.8	0 - 447
	Chromium, TR	µg/L	Monitoring Only		20	5.21	29.3	0 - 32.8
	Copper, TR	µg/L	Monitoring Only		63	36.9	170	6.49 - 341

Outfall	Parameter	Unit	Current Limits 30 Day	Current Limits Daily	# Obs	Percentiles 50th	Percentiles 95th	Data Range
601 Cont'd	Chromium, Dissolved Hexavalent	µg/L	Monitoring Only		23	--	--	< 1.13
	Mercury, Total	ng/L	Monitoring Only		59	30.9	88	1.93 - 473
	Cyanide, Free (Low-Level)	µg/L	Monitoring Only		60	< 3	100	0 - 306
	pH, Maximum	S.U.	Monitoring Only		1244	9.8	11.4	6.6 - 12.1
	pH, Minimum	S.U.	Monitoring Only		1244	9.2	7.4*	6.6 - 11.9
	CBOD 5 day	mg/L	Monitoring Only		720	83.5	152	0 - 230
801	Water Temperature	°C	Monitoring Only		57	16.1	22.7	3.5 - 23
	Dissolved Oxygen	mg/L	Monitoring Only		57	9.3	4.7*	3.2 - 18.2
	pH	S.U.	Monitoring Only		57	7.1	8.2	6 - 8.3
	Nitrogen, Ammonia	mg/L	Monitoring Only		57	.08	1.01	0 - 4
	Nitrite Plus Nitrate, Total	mg/L	Monitoring Only		57	1.44	4.77	0 - 6.25
	Phosphorus, Total	mg/L	Monitoring Only		57	.15	.324	0 - .95
	Fecal Coliform	#/100 mL	Monitoring Only		3	190	195	40 - 195
	E. coli	#/100 mL	Monitoring Only		27	55	187	0 - 500
	48-Hr. Acute Toxicity *Ceriodaphnia dubia*	% Affected	Monitoring Only		5	--	--	0 - 0
	96-Hr. Acute Toxicity *Pimephales promela*	% Affected	Monitoring Only		5	2	11.2	0 - 12
	7-Day Chronic Toxicity *Ceriodaphnia dubia*	% Affected	Monitoring Only		5	0	10	0 - 10
	7-Day Chronic Toxicity *Pimephales promelas*	% Affected	Monitoring Only		5	12	30	2 - 30
901	Nitrogen, Ammonia	mg/L	Monitoring Only		1	.22	.22	.22 - .22
	48-Hr. Acute Toxicity *Ceriodaphnia dubia*	% Affected	Monitoring Only		5	--	--	0 - 0
	96-Hr. Acute Toxicity *Pimephales promela*	% Affected	Monitoring Only		5	0	7.4	0 - 8
903	Water Temperature	°C	Monitoring Only		60	15.9	21.5	3.8 - 23
	Dissolved Oxygen	mg/L	Monitoring Only		60	8.92	5.31*	4.18 - 17.6
	pH	S.U.	Monitoring Only		60	7.29	7.6	6.31 - 8.1
	Nitrogen, Ammonia	mg/L	Monitoring Only		60	.145	7.46	0 - 14.3
	Nitrogen Kjeldahl, Total	mg/L	Monitoring Only		56	1.83	12.5	.2 - 209
	Nitrite Plus Nitrate, Total	mg/L	Monitoring Only		56	7.18	19	0 - 27.6

Outfall	Parameter	Unit	Current Limits 30 Day	Current Limits Daily	# Obs	Percentiles 50th	Percentiles 95th	Data Range
	Phosphorus, Total	mg/L	Monitoring Only		56	.325	1.23	.033 - 2.51
	Cyanide, Total	mg/L	Monitoring Only		4	--	--	< .009
	Hardness, Total (CaCO3)	mg/L	Monitoring Only		60	188	242	3.06 - 322
	Nickel, TR	µg/L	Monitoring Only		1	--	--	< 3.85
	Silver, TR	µg/L	Monitoring Only		4	--	--	< .41
	Zinc, TR	µg/L	Monitoring Only		1	33.5	33.5	33.5 - 33.5
	Cadmium, TR	µg/L	Monitoring Only		1	--	--	< .33
	Lead, TR	µg/L	Monitoring Only		1	--	--	< 3.71
	Chromium, TR	µg/L	Monitoring Only		1	--	--	< 1.13
	Copper, TR	µg/L	Monitoring Only		4	3.67	5.92	0 - 6.04
903 Cont'd	Chromium, Dissolved Hexavalent	µg/L	Monitoring Only		4	--	--	< 1.13
	Fecal Coliform	#/100 mL	Monitoring Only		3	787	862	390 - 870
	E. coli	#/100 mL	Monitoring Only		27	110	392	0 - 700
	48-Hr. Acute Toxicity *Ceriodaphnia dubia*	% Affected	Monitoring Only		4	0	8.5	0 - 10
	96-Hr. Acute Toxicity *Pimephales promela*	% Affected	Monitoring Only		4	2.5	11	0 - 12
	7-Day Chronic Toxicity *Ceriodaphnia dubia*	% Affected	Monitoring Only		1	--	--	0 - 0
	7-Day Chronic Toxicity *Pimephales promelas*	% Affected	Monitoring Only		1	2	2	2 - 2
	Residue, Total Filterable	mg/L	Monitoring Only		55	544	716	21 - 755

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

Table 8. Projected Effluent Quality for Outfall 001

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia (Summer)	mg/L	247	228	2.35	4.51
Ammonia (Winter)	mg/L	182	177	11.74	16.08
Arsenic - TR	µg/L	2	1	3.88	5.32
Barium	µg/L	2	1	24.97	34.2
Bis(2-ethylhexyl)phthalate	µg/L	5	2	31.73	43.47
Cadmium - TR	µg/L	1	1	0.09	0.12
Chlorides	mg/L	2	2	438.29	600.4
Chloroform (Trichloromethane)	µg/L	5	1	4.13	5.66
Chromium - TR	µg/L	26	8	5.63	7.57
Hexavalent Chromium (Dissolved)	µg/L	23	0	--	--
Copper - TR	µg/L	69	66	14.89	22.64
Cyanide, Free	µg/L	61	23	70	90
Dissolved Solids	mg/L	59	59	862.6	1138.4
Iron - TR	µg/L	2	2	4799.02	6574
Lead - TR	µg/L	26	6	7.47	10.23
Manganese - TR	µg/L	2	2	743.43	1018.4
Mercury	ng/L	60	59	6.17	9.47
Molybdenum	µg/L	4	1	10.08	13.8
Nickel - TR	µg/L	27	18	34.99	57.7
Nitrate-N + Nitrite-N	mg/L	65	65	17.82	25.9
Selenium - TR	µg/L	2	1	1.86	2.54
Silver	µg/L	60	1	0.74	1.02
Strontium	µg/L	2	2	613.05	839.8
Sulfates	mg/L	2	2	250.21	342.76
Zinc - TR	µg/L	27	27	66.4	99.59

MDL = analytical method detection limit
PEQ = projected effluent quality

Table 9. Summary of Acute and Chronic Toxicity Results

	Ceriodaphnia Dubia		*Pimephales promelas*	
Date	TU_a	TU_c	TU_a	TU_c
9/30/2014	AA (0.2)	AA (1.0)	AA (0.2)	AA (1.0)
9/22/2015	AA (0.2)	AA (0.2)	AA (1.0)	AA (1.0)
9/30/2016	AA (1.0)	AA (1.0)	AA (0.2)	AA (0.2)
9/30/2017	AA (1.0)	AA (1.0)	AA (1.0)	AA (1.0)
9/30/2018	AA (1.0)	AA (1.0)	AA (0.2)	AA (0.2)

AA = non-detection (method detection limit)
TU_a = acute toxicity unit
TU_c = chronic toxicity unit

Table 10. Use Attainment Table

Location	River Mile	Use	Attainment	ICI*	Sources of Impairment
Meander Creek Upstream Meander Creek WPCF	2.0	WWH	Partial	20	Impounded habitat
Meander Creek Downstream Meander Creek WPCF	1.8	WWH	Partial	8	Meander WPCF final effluent quality and low flow
Meander Creek Near Niles @ Main St	0.76	WWH	Partial	18	Meander WPCF final effluent quality and low flow

WWH = warmwater habitat
ICI = Invertebrate community index
* WWH biocriterion for ICI in the Erie/Ontario lake plains ecoregion is a score of 34.
*** Meander WPCF discharges at river mile 1.98

Table 11. Water Quality Criteria in the Study Area

		Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
Parameter	Units	Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia (Summer)	mg/L	--	--	2	--	--
Ammonia (Winter)	mg/L	--	--	7.2	--	--
Arsenic - TR	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 - TR	µg/L	--	50	4	9.2	18
Chlorides	mg/L	--	--	--	--	--
Chloroform (Trichloromethane)	µg/L	4700[c]	--	140	1300	2600
Chromium - TR	µg/L	--	100	140	3000	6000
Hexavalent Chromium (Dissolved)	µg/L	--	--	11	16	31
Copper - TR	µg/L	1300	500	16	25	51
Cyanide, Free	µg/L	220000	--	12	46	92
Dissolved Solids	mg/L	--	--	1500	--	--
Iron - TR	µg/L	--	5000	--	--	--
Lead - TR	µg/L	--	100	14	270	550
Manganese - TR	µg/L	--	--	--	--	--
Mercury	ng/L	12	10000	910	1700	3400
Molybdenum	µg/L	--	--	20000	190000	370000
Nickel - TR	µg/L	4600	200	89	800	1600
Nitrate-N + Nitrite-N	mg/L	--	100	--	--	--
Selenium - TR	µg/L	11000	50	5	--	--
Silver	µg/L	--	--	1.3	4.7	9.5
Strontium	µg/L	--	--	21000	40000	81000
Sulfates	mg/L	--	--	--	--	--
Zinc - TR	µg/L	69000	25000	200	200	410

[c] = carcinogen

Table 12. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	0.1	USGS Station # 03097500
7Q10	cfs	annual	0.2	USGS Station # 03097500
		summer	0	
		winter	0	
30Q10	cfs	summer	0.4	USGS Station # 03097500
		winter	0.4	USGS Station # 03097500
90Q10	cfs	annual	0.5	USGS Station # 03097500
Harmonic Mean	cfs	annual	1.4	USGS Station # 03097500
Mixing Assumption	%	average	100	
		maximum	100	
Hardness, OMZ	mg/L	annual	188	eDMR data; station 903; 2014-2019; median
Hardness, IMZ	mg/L	annual	188	eDMR data; station 903; 2014-2019; median
pH	S.U.	summer	7.4	eDMR data; station 903; 2014-2019; 75th perc.
		winter	7.48	eDMR data; station 903; 2014-2019; 75th perc.
Temperature	ºC	summer	21.425	eDMR data; station 903; 2014-2019; 75th perc.
		winter	11	eDMR data; station 903; 2014-2019; 75th perc.
Meander Creek WPCF flow	cfs	annual	6.1889	NPDES Application
Background Water Quality				
Ammonia (Summer)	mg/L		0.025	OEPA; 2011-2012; n=11; 7<MDL; Median
Ammonia (Winter)	mg/L		0.025	OEPA; 2011-2012; n=11; 7<MDL; Median
Arsenic - TR	µg/L		2.6	OEPA; 2011-2012; n=10; 3<MDL; Median
Barium	µg/L		17	OEPA; 2011-2012; n=10; 1<MDL; Median
Bis(2-ethylhexyl)phthalate	µg/L		3.404	OEPA; 2011-2012; n=5; 3<MDL; Average
Cadmium - TR	µg/L		0	OEPA; 2011-2012; n=10; 10<MDL;
Chlorides	mg/L		59.05	OEPA; 2011-2012; n=6; 0<MDL; Average
Chloroform (Trichloromethane)	µg/L			No representative data available.
Chromium - TR	µg/L		0	OEPA; 2011-2012; n=10; 10<MDL;
Hexavalent Chromium (Dissolved)	µg/L			No representative data available.
Copper - TR	µg/L		2.9	OEPA; 2011-2012; n=10; 2<MDL; Median
Cyanide, Free	mg/L			No representative data available.
Dissolved Solids	mg/L		236	OEPA; 2011-2012; n=11; 0<MDL; Median
Iron - TR	µg/L		158.5	OEPA; 2011-2012; n=10; 0<MDL; Median
Lead - TR	µg/L		0	OEPA; 2011-2012; n=10; 10<MDL;
Manganese - TR	µg/L		71.5	OEPA; 2011-2012; n=10; 0<MDL; Median
Mercury	ng/L			No representative data available.
Molybdenum	µg/L			No representative data available.
Nickel - TR	µg/L		1	OEPA; 2011-2012; n=10; 7<MDL; Median
Nitrate-N + Nitrite-N	mg/L		0.71	OEPA; 2011-2012; n=11; 0<MDL; Median
Selenium - TR	µg/L		0	OEPA; 2011-2012; n=10; 10<MDL;

Parameter	Units	Season	Value	Basis
Silver	µg/L			No representative data available.
Strontium	µg/L		115	OEPA; 2011-2012; n=10; 0<MDL; Median
Sulfates	mg/L		40.8	OEPA; 2011-2012; n=11; 1<MDL; Median
Zinc - TR	µg/L		0	OEPA; 2011-2012; n=10; 10<MDL; Average

MDL = analytical method detection limit
n = number of samples
NPDES = National Pollutant Discharge Elimination System
OEPA = Ohio Environmental Protection Agency monitoring station 204761, Meander Creek Reservoir, L-1
WWTP = Water Pollution Control Facility

Table 13. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

		Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
Parameter	Units	Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia (Summer)	mg/L	--	--	2.13	--	--
Ammonia (Winter)	mg/L	--	--	7.66	--	--
Arsenic - TR	µg/L	--	122	155	345	680
Barium	µg/L	--	--	227	2032	4000
Bis(2-ethylhexyl)phthalate	µg/L	72	--	8.6	1118	2100
Cadmium - TR	µg/L	--	61	4.1	9.3	18
Chlorides	mg/L	--	--	--	--	--
Chloroform (Trichloromethane)	µg/L	5763	--	145	1321	2600
Chromium - TR	µg/L	--	123	145	3048	6000
Hexavalent Chromium (Dissolved)	µg/L	--	--	11	16	31
Copper - TR	µg/L	1593	612	16	25	51
Cyanide, Free	µg/L	270000	--	12	47	92
Dissolved Solids	mg/L	--	--	1541	--	--
Iron - TR	µg/L	--	6095	--	--	--
Lead - TR	µg/L	--	123	14	274	550
Manganese - TR	µg/L	--	--	--	--	--
Mercury	ng/L	12	10000	910	1700	3400
Molybdenum	µg/L	--	--	20646	193070	370000
Nickel - TR	µg/L	5640	245	92	813	1600
Nitrate-N + Nitrite-N	mg/L	--	122	--	--	--
Selenium - TR	µg/L	13488	61	5.2	--	--
Silver	µg/L	--	--	1.3	4.8	9.5
Strontium	µg/L	--	--	21675	40644	81000
Sulfates	mg/L	--	--	--	--	--
Zinc - TR	µg/L	84609	30655	206	203	410

Table 14. Parameter Assessment

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

Chlorides	Manganese - TR	Sulfates

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

Arsenic - TR	Barium	Cadmium - TR
Chloroform (Trichloromethane)	Chromium - TR	Hexavalent Chromium (Dissolved)
Molybdenum	Nitrate-N + Nitrite-N	Strontium

Group 3: PEQmax < 50 percent of maximum PEL and PEQavg < 50 percent of average PEL.
No limit recommended; monitoring optional.

Nickel - TR	Selenium - TR	Zinc - TR

Group 4: PEQmax >= 50 percent, but < 100 percent of the maximum PEL or
PEQavg >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

Dissolved Solids	Lead - TR	Mercury
Silver		

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*	*Average*	*Maximum*
Bis(2-ethylhexyl)phthalate	µg/L	8.6	1118
Copper - TR	µg/L	16	25
Cyanide, Free	µg/L	12	47
Iron - TR [a]	µg/L	6095	--

Copper - TR becomes a Group 5 parameter based upon the loading test [OAC 3745-2-06(B)].
Iron - TR becomes a Group 5 parameter based upon the loading test [OAC 3745-2-06(B)].
[a] = See reasonable potential discussion, pg. 14
PEL = preliminary effluent limit
PEQ = projected effluent quality
WLA = wasteload allocation
WQS = water quality standard

Table 15. Final Effluent Limits for Outfall 001

Parameter	Units	Concentration 30 Day Average	Concentration Daily Maximum	Loading (kg/day)[a] 30 Day Average	Loading (kg/day)[a] Daily Maximum	Basis[b]
Water Temperature	°C	- - - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
Dissolved Oxygen	mg/L	--	5.0[m]	--	--	WQS
Total Suspended Solids	mg/L	20.0	30.0[w]	303	454[w]	PD
Oil and Grease	mg/L	--	10.0	--	--	WQS
Nitrogen, Ammonia (NH3)						
Summer	mg/L	1.9	2.85[w]	28.8	43.1[w]	PD
Winter	mg/L	5.0	7.5[w]	75.7	113.6[w]	PD
Total Kjeldahl Nitrogen	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Nitrate + Nitrite	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Phosphorus	mg/L	1.0	1.5[w]	15.2	22.9[w]	PD
Orthophosphate, Dissolved (as P)	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				SB1
Iron	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				RP
Nickel, TR	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Silver, TR	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Zinc, TR	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Cadmium, TR	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Lead, TR	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Chromium, TR	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Copper, TR	µg/L	16.0	25.0	0.24	0.38	WLA
Chromium, Dissolved Hexavalent	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
E. coli	#/100 mL	126	284[w]	--	--	WQS
Bis(2-ethylhexyl)phthalate	µg/L	8.6	1118.0	0.13	17.0	WLA
Flow Rate	MGD	- - - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
Mercury, Total (Low Level)	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Cyanide, Free (Low Level)	µg/L	12.0	46.0	0.182	0.699	WLA, ABS
Acute Toxicity, *Ceriodaphnia dubia*	TUa	- - - - - - - - - - - Monitor - - - - - - - - - - -				WET
Chronic Toxicity, *Ceriodaphnia dubia*	TUc	- - - - - - - - - - - Monitor - - - - - - - - - - -				WET
Acute Toxicity, *Pimephales promelas*	TUa	- - - - - - - - - - - Monitor - - - - - - - - - - -				WET
Chronic Toxicity, *Pimephales promelas*	TUc	- - - - - - - - - - - Monitor - - - - - - - - - - -				WET
pH, Maximum	S.U.	--	9.0	--	--	WQS
pH, Minimum	S.U.	--	6.5[m]	--	--	WQS
Total Filterable Residue	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
CBOD 5 day	mg/L	12.0	18.0[w]	181.7	272.7[w]	PD

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

[b] Definitions:
ABS = Antibacksliding Rule (OAC 3745-33-05(F) and 40 CFR Part 122.44(l))
M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
PD = Plant Design (OAC 3745-33-05(E))
RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in permits (OAC 3745-33-07(A))
SB1 = Implementation of Senate Bill 1 (ORC 6111.03)
TR = Total Recoverable
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)

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

[w] Weekly average limit.

[m] Minimum limit.

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