

National Pollutant Discharge Elimination System (NPDES) Permit Program

F A C T S H E E T

Regarding an NPDES Permit to Discharge to Waters of the State of Ohio  
for the **Rocky River Wastewater Treatment Plant**

Public Notice No.: 16-10-050  
Public Notice Date: October 31, 2016  
Comment Period Ends: November 30, 2016

OEPA Permit No.: **3PE00009\*MD**  
Application No.: **OH0030503**

Name and Address of Applicant:

**City of Rocky River\***  
**21012 Hilliard Blvd.**  
**Rocky River, Ohio 44116**

Name and Address of Facility Where  
Discharge Occurs:

**Rocky River Wastewater Treatment Plant (WWTP)**  
**22303 Lake Road**  
**Rocky River, Ohio 44116**  
**Cuyahoga County**

Receiving Water: **Lake Erie and Spencer Creek**    Subsequent Stream Network: *N/A*

(\* **Joint ownership of WWTP by Cities of Rocky River, Bay Village, Westlake, and Fairview Park**)

**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.

Adjustments to authorized effluent loading limitations, based on a corrected design capacity, were made to the permit. However, 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 monitoring requirements proposed for the following parameters are the same as in the current permit, although some monitoring frequencies may have changed: flow, temperature, 5-day carbonaceous biochemical oxygen demand (CBOD5), total suspended solids (TSS), ammonia, nitrite+nitrate, total Kjeldahl nitrogen (TKN), oil and grease, pH, free cyanide, cadmium, chromium, dissolved hexavalent chromium, copper, lead, nickel, zinc, dissolved oxygen (DO), phosphorus, *Escherichia coli*, chlorine and total dissolved solids (TDS).

Final effluent loading limitations are based on a corrected plant design flow rate of 22.5 MGD.

The average concentration and loading limits for mercury are proposed to be decreased in accordance with the data presented as part of the facility's mercury variance renewal request.

New monitoring for dissolved orthophosphate (as phosphorus) has been added to the effluent monitoring requirements. Dissolved orthophosphate is required by ORC 6111.03 and will occur on a monthly basis.

Silver and thallium monitoring have been removed from the permit.

In accordance with Ohio Administrative Code (OAC) 3745-33-07, it has been determined that the effluent from the Rocky River WWTP shows evidence of acute toxicity for *Ceriodaphnia dubia*. New chronic and acute toxicity limits are being proposed. A 54-month compliance schedule with semi-annual monitoring for chronic toxicity, with the determination of acute toxicity endpoints, is proposed in the interim. Annual chronic toxicity monitoring, with the determination of acute toxicity endpoints, for *Pimephales promelas* 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.

This permit no longer authorizes the use of method 4500 CN-I from Standard Methods for free cyanide testing. As soon as possible, the permittee must begin using either ASTM D7237-10 or OIA-1677-09, both of which are 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; mercury variance; pretreatment program requirements; phosphorus optimization; and outfall signage.

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

## Table of Contents

	Page
INTRODUCTION.....	1
SUMMARY OF PERMIT CONDITIONS.....	2
PROCEDURES FOR PARTICIPATION IN THE FORMULATION OF FINAL DETERMINATIONS.....	6
INFORMATION REGARDING CERTAIN WATER QUALITY BASED EFFLUENT LIMITS.....	6
LOCATION OF DISCHARGE/RECEIVING WATER USE CLASSIFICATION.....	8
FACILITY DESCRIPTION.....	8
DESCRIPTION OF EXISTING DISCHARGE.....	10
ASSESSMENT OF IMPACT ON RECEIVING WATERS.....	10
DEVELOPMENT OF WATER-QUALITY-BASED EFFLUENT LIMITS.....	11
REASONABLE POTENTIAL/EFFLUENT LIMITS/MANAGEMENT DECISIONS.....	12
OTHER REQUIREMENTS.....	16

### List of Figures

Figure 1. Location of Rocky River WWTP.....	18
Figure 2. Diagram of Wastewater Treatment System.....	19
Figure 3. Sewage Sludge Treatment Diagram.....	20

### List of Tables

Table 1. Sewage Sludge Removal.....	21
Table 2. Average Annual Effluent Flow Rates.....	21
Table 3. Bypass Discharges.....	21
Table 4. Effluent Characterization Using Pretreatment Data for Outfall 3PE00009001.....	22
Table 5. Effluent Characterization Using Self-Monitoring Data for Outfall 3PE00009001.....	23
Table 6. Projected Effluent Quality for Outfall 3PE00009001.....	25
Table 7. Summary of Acute and Chronic Toxicity Results for Outfall 3PE00009001.....	26
Table 8. Water Quality Criteria in the Study Area.....	26
Table 9. Instream Conditions and Discharger Flow.....	27

Table 10. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria .....	28
Table 11. Parameter Assessment.....	29
Table 12. Final Effluent Limits for Outfall 3PE00009001 .....	30

**List of Attachments**

Attachment 1. Supplemental Discharge Monitoring Report (DMR) Data .....	32
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**List of Addendums**

Addendum 1. Acronyms .....	34
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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 Brianne Ciccone ([Brianne.Ciccone@epa.ohio.gov](mailto:Brianne.Ciccone@epa.ohio.gov) or at (330) 963-1200)

## **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](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, written notification 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 3745-1-35. 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 Rocky River Wastewater Treatment Plant discharges to Lake Erie via Outfall 3PE00009001 at approximately Lake Mile 1197.1. Figure 1 shows the approximate location of the facility.

Lake Erie is presently designated for the following uses under Ohio's water quality standards (OAC 3745-1-31): Exceptional Warmwater Habitat (EWH), Superior High Quality Water, Public Water Supply (PWS), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Bathing Waters (BW).

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 Rocky River WWTP was built in 1961, with the last major modification occurring in 2002. The Rocky River WWTP is jointly owned by the cities of Rocky River, Westlake, Bay Village, and Fairview Park in accordance with the authority granted by Ohio Revised Code Section 715.02. The population of the service area is approximately 85,419 people. The primary water supply source for the area is Lake Erie.

The original organizing agreement among the cities, as well as operating by-laws, were adopted in 1982. The Rocky River WWTP has a Management Committee consisting of the mayor of each city or his/her designee and a fifth member who is appointed by the four mayors. The Management Committee serves without compensation. The organizing agreement provides that the fifth member may be compensated. The WWTP is managed by the City of Rocky River with a report of operational activities made to the Management Committee annually. Personnel at the facility are employees of the City of Rocky River. Pursuant to the organizing agreement (and amendments), the plant is jointly owned by the cities with each member city's share being in proportion to its contribution to the total cost of constructing certain improvements. Also, each city owns the sanitary sewer lines located in its city and bills residents for wastewater collection services. The WWTP charges each member city for wastewater treatment services based upon the relative treatment plant usage as determined by a periodic flow quantity and strength study.

The secondary biological treatment plant is designed to treat an average daily flow rate of 22.5 MGD. The facility can provide complete primary and secondary treatment for flows up to 45 MGD, and primary treatment

only for flow rates up to 128 MGD. Rocky River WWTP utilizes the following wet-stream treatment processes which are shown in Figure 2:

- Mechanical Screening
- Grit Removal
- Scum Removal
- Primary Clarification
- Auxiliary Primary Clarification
- Excess Flow Primary Clarification
- Trickling Filters
- Intermediate and Secondary Clarification
- Phosphorus Removal (Ferric Chloride)
- Chlorination
- Dechlorination
- Influent and Effluent Flow Monitoring

Under normal operating conditions (<22.5 MGD), the treatment processes include mechanical screening, aerated grit removal, primary clarifiers (4), two-stage trickling filter biological treatment process (4), intermediate (2) and final clarifiers (2), and effluent disinfection (i.e. chlorination and dechlorination). Ferric chloride is fed ahead of the primary clarifiers for phosphorus removal. As plant flows increase during wet-weather periods (>22.5 MGD), the auxiliary primary clarifier is placed online and the trickling filters are switched to parallel mode (i.e. single-stage).

Flows exceeding the 45 MGD secondary treatment capacity are diverted to the excess flow primary (EFP) clarifiers for primary treatment (with ferric chloride addition for enhanced settling); the disinfected EFP effluent is monitored at Internal Station 3PE00009603 prior to commingling with the treated secondary effluent at Outfall 3PE00009001. The plant also includes an emergency headworks bypass (Outfall 3PE00009002) for flowrates exceeding 128 MGD and internal bypass (Station 3PE00009602) from the onsite Auxiliary Lake Road Pump Station.

The discharge pipe/outfall to Lake Erie is limited to a flowrate of approximately 68 MGD. Under extreme wet-weather condition, the excess effluent flows are directed to the culverted section of Spencer Creek (River Mile 0.2) from the Effluent Diversion Structure.

Waste primary and secondary sludges are processed sequentially through the following operations (See Figure 3):

- Sludge Thickening
- Primary and Secondary Anaerobic Digestion
- Chemical Conditioning (Polymer)
- Dewatering Via a Filter Press

The dewatered Class B sludge is generally land applied for agronomic beneficial use; landfill disposal is an alternative option. Table 1 lists the quantity of sewage sludge removed from the Rocky River WWTP for the past 5 years.

The collection system tributary to the Rocky River WWTP is comprised of separate sanitary sewers. The NPDES application identifies 10 lift stations in the collection system. The facility continues to identify rain-dependent inflow and infiltration (RDII) within the tributary collection systems as an ongoing operational issue. In response to separate USEPA Administrative Orders, the cities of Rocky River and Bay Village have initiated

various construction projects aimed at eliminating existing Sanitary Sewer Overflows (SSOs). Additionally, the cities are required to implement a Capacity, Management, Operation and Maintenance (CMOM) program for their respective collection systems.

Rocky River WWTP implements an Ohio EPA-approved industrial pretreatment program. Based on information in the NPDES renewal application, 5 significant industrial users currently discharge to the treatment plant, two (2) of which are categorical industries. The industrial users contribute approximately 0.25 MGD to the treatment plant flow.

## **DESCRIPTION OF EXISTING DISCHARGE**

The existing NPDES permit incorrectly references the average daily flow rate of the Rocky River WWTP as 22.0 MGD, as opposed to 22.5 MGD. Adjustments to authorized effluent loading limitations, based on the corrected design capacity, are proposed for this permit. While this revision will result in a *de facto* permit loading increase, it is not subject to review under the antidegradation rule (OAC 3745-1-05). Pursuant to OAC 3745-1-05 (B)(2)(b), “any existing source where the net increase is simply the result of allowing a previously authorized or documented production/treatment capacity to be achieved” are exempt from the provisions of the rule.

The average annual effluent flow rate for Rocky River WWTP for the most recent five-year period is presented in Table 2.

The Rocky River WWTP monitors and reports headworks bypasses at Station 3PE00009002 and internal plant bypasses at Stations 3PE00009602 and 3PE00009603. The number of bypasses and dates reported is presented in Table 3.

Table 4 presents chemical specific data compiled from information contained in Rocky River WWTP’s annual pretreatment reports.

Table 5 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfall 3PE00009001. Data are presented for the period, April 2011 through March 2016. The existing NPDES permit limitations are provided for comparison. Supplemental DMR data for influent and sludge stations are listed in Attachment 1.

Table 6 summarizes the chemical specific data for outfall 3PE00009001 by presenting the average and maximum PEQ values.

Table 7 summarizes the results of acute whole effluent toxicity (WET) tests of the final effluent using the water flea (*Ceriodaphnia dubia*) and fathead minnow (*Pimephales promelas*) 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 effluent testing conducted by the Agency.

## **ASSESSMENT OF IMPACT ON RECEIVING WATERS**

The *Ohio 2014 Integrated Water Quality Monitoring and Assessment Report* lists the Lake Erie Central Basin Shoreline as impaired for the aquatic life, recreation and fish consumption uses. Monitoring to develop a comprehensive Lake Erie nearshore monitoring program was funded by a Great Lakes Restoration Initiative grant conducted from 2011-2013. Fish community sampling results were used to update assessment unit status for the 2014 *Integrated Report*. Because data assessment and analyses were still underway for this project,

causes and sources were retained from the previous report and include: siltation, nutrients, exotic species and direct habitat alterations (causes) and municipal point sources, urban runoff/storm sewers, habitat modifications other than hydromodification, combined sewer overflows, streambank modification/destabilization and non-irrigated crop production (sources).

The 2014 report is available at this Ohio EPA web site:

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

## **DEVELOPMENT OF WATER-QUALITY-BASED EFFLUENT LIMITS**

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

### **Parameter Selection**

Effluent data for the Rocky River WWTP were used to determine what parameters should undergo WLA. The parameters discharged are identified by the data available to Ohio EPA, e.g. 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)	April 2011 through March 2016
Pretreatment data	2011 - 2015

The data were examined for potential statistical outliers and other non-representative values. No values were removed from the evaluation.

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ<sub>avg</sub>) values represent the 95<sup>th</sup> percentile of monthly average data, and maximum PEQ (PEQ<sub>max</sub>) values represent the 95<sup>th</sup> percentile of all data points (see Table 6).

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<sub>avg</sub> or PEQ<sub>max</sub> 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.

Generally speaking, mixing zones are not authorized for pollutants, such as mercury, that have been designated as bioaccumulative chemicals of concern (BCCs). For BCCs, the WLA is set equal to the respective WQS value.

WLAs for direct discharges to lakes, e.g. Lake Erie, are done using the following equation for average criteria:  $WLA = (11 \times \text{Water Quality Criteria}) - (10 \times \text{Background Concentration})$ . Allocations for maximum criteria are set equal to the Inside Mixing Zone Maximum (IMZM) values. The values for the OMZM are left blank in Table 10 to indicate that any limits based upon a maximum WLA are actually represented by the Inside Mixing Zone Maximum criteria. The wasteload allocation values in Table 10 would allow the Rocky River WWTP to maintain all applicable water quality criteria. Allocations cannot exceed the Inside Mixing Zone Maximum criteria.

The data used in the WLA are listed in Table 8 and Table 9. The WLA results to maintain all applicable criteria are presented in Table 10.

### **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 Rocky River WWTP the WLA values are 1.0  $TU_a$  and 11.0  $TU_c$ .

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):

$$TU_c = 100/\text{geometric mean of No Observed Effect Concentration (NOEC) and Lowest Observed Effect Concentration (LOEC)}$$

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

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

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

### **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 10. The average PEL (PEL<sub>avg</sub>) is compared to the average PEQ (PEQ<sub>avg</sub>) from Table 6 and the PEL<sub>max</sub> is compared to the PEQ<sub>max</sub>. Based on the calculated percentage of the allocated value  $[(PEQ_{avg} \div PEL_{avg}) \times 100]$ , or  $[(PEQ_{max} \div PEL_{max}) \times 100]$ , the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 11.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 12 presents the final effluent limits and monitoring requirements proposed for Rocky River WWTP outfall 3PE00009001 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

#### ***Water Temperature, Dissolved Oxygen, Ammonia, and Flow Rate***

Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

#### ***Total Suspended Solids, Carbonaceous Biochemical Oxygen Demand (5 day), and Oil & Grease***

The limits proposed for total suspended solids, 5-day carbonaceous biochemical oxygen demand, and oil & grease are all based on plant design criteria and are all a continuation of existing permit limits. These limits are protective of WQS. The monitoring frequency for CBOD<sub>5</sub> will be decreased to 3/week in accordance with new monitoring guidelines.

#### ***Total Residual Chlorine***

The limit for total residual chlorine is proposed to continue from the existing permit as a plant design value and is necessary to protect the inside mixing zone maximum (IMZM) standard. The IMZM is the WQS value calculated to avoid rapidly lethal conditions in the effluent mixing zone. The effluent limit for chlorine at outfall 001 is less than the quantification level of 0.050 mg/L. However, a pollutant minimization program is not required because the dosing rate of dechlorination chemicals ensures that the water quality based effluent limit is being met. Monitoring is only required during periods of chlorine usage.

#### ***Phosphorus, pH, and Escherichia coli (E. coli)***

Limits proposed for pH and *Escherichia coli* are based on WQS (OAC 3745-1-07). Bathing Water *E. coli* standards apply to the Lake Erie. Phosphorus limitations are based on the provisions of OAC 3745-33-06(C).

#### ***Dissolved Orthophosphate (aka Dissolved Reactive Phosphorus)***

New monthly monitoring is proposed for dissolved orthophosphate (as P). This monitoring is required by Ohio Senate Bill 1, which was signed by the Governor on April 2, 2015 and incorporated into ORC 6111.03. Monitoring for orthophosphate is proposed to further develop nutrient datasets for dissolved reactive phosphorus 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.

## ***Mercury***

The Ohio EPA risk assessment (Table 11) places mercury in group 5. This placement, as well as the data in Table 4 and Table 5, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For this parameter, the PEQ is greater than 100 percent of the WLA. Pollutants that meet this requirement must have permit limits under OAC 3745-33-07(A)(1).

The current NPDES permit includes a variance-based limit of 10.0 ng/L for mercury. Based on available monitoring data and new application information, the Rocky River WWTP has determined that the facility will not meet the 30-day average permit limit of 1.3 ng/L. However, the effluent data shows that the permittee can meet the mercury annual average value of 12 ng/L. The permittee's application has also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based upon these demonstrations, the Rocky River WWTP is eligible for renewal of the mercury variance under OAC 3745-33-07(D)(8).

Rocky River WWTP submitted information supporting the renewal of the variance. The Pollutant Minimization Program (PMP) schedule developed from the original variance continues to be implemented, and further reductions in mercury may be possible.

Ohio EPA has reviewed the mercury variance application and has determined that it meets the requirements of the OAC. A condition in Part II of the NPDES permit lists the provisions of the mercury variance renewal, and includes the following requirements:

- A lower variance-based monthly average effluent limit of 4.3 ng/L, based on a review of the facility's self-monitoring discharge data;
- A requirement that the permittee make reasonable progress to meet the WQBEL for mercury by implementing the plan of study, which has been developed as part of the PMP;
- Low-level mercury monitoring of the plant's influent and effluent;
- A requirement that the annual average mercury effluent concentration is less than or equal to 12 ng/l as specified in the plan of study;
- A requirement to submit an annual report on implementation of the PMP; and
- A requirement for submittal of a certification stating that all permit conditions related to implementing the plan of study and the PMP have been satisfied, but that compliance with the monthly average WQBEL for mercury has not been achieved.

## ***Copper***

The Ohio EPA risk assessment (Table 11) places copper in group 4. This placement, as well as the data in Table 4, Table 5, and Table 6, support that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2).

## ***Total Filterable Residue (Total Dissolved Solids) and Free Cyanide***

The Ohio EPA risk assessment (Table 11) places these parameters in group 3. This placement, as well as the data in in Table 5 and Table 6, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Continued monthly monitoring is proposed for free cyanide in order to document that this pollutant continues to remain at low levels.

***Chromium, Lead, Hexavalent Chromium (Dissolved), Cadmium, Nickel, Zinc, Arsenic, Molybdenum, Silver, Selenium, and Thallium***

The Ohio EPA risk assessment (Table 11) places these parameters in group 2. This placement, as well as the data in in Table 4, Table 5, and Table 6, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. A reduced monitoring frequency, i.e. 1/month, is recommended for chromium, lead, hexavalent chromium (dissolved), cadmium, nickel, and zinc. Monitoring for silver and thallium are proposed to be removed; all of the reported results for these parameters were below the detection limits. No new monitoring requirements are proposed for arsenic, molybdenum, and selenium.

***Nitrate+Nitrite and TKN***

Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

**Whole Effluent Toxicity Reasonable Potential**

Evaluating the acute toxicity results in Table 7 under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, gives an acute PEQ value of 9.0 TU<sub>a</sub> and chronic PEQ of 15.7 TU<sub>c</sub> for *Ceriodaphnia dubia*. Reasonable potential for toxicity is demonstrated with respect to *C. dubia*, since these values exceed the WLA values of 1.0 TU<sub>a</sub> and 11.0 TU<sub>c</sub>. Consistent with Procedure 6 and OAC 3745-33-07(B), a monthly average limitation of 11.0 TU<sub>c</sub> and a daily maximum limitation of 1.0 TU<sub>a</sub> are proposed. A 54-month compliance schedule with semi-annual monitoring for chronic toxicity, with the determination of acute toxicity endpoints, is proposed in the permit. An evaluation regarding the need for a Toxicity Reduction Evaluation (TRE) will be conducted as part of the next permit renewal. If the toxicity results within the first 36 months consistently show that toxicity is not present at the plant, the Rocky River WWTP may request a permit modification that would allow for removal of the final effluent limitation and/or a reduction in toxicity testing.

Reasonable potential for toxicity was not demonstrated with respect to *Pimephales promelas*. Annual chronic toxicity monitoring with the determination of acute endpoints is proposed for the life of the permit. This satisfies the minimum testing requirement of Ohio Administrative Code (OAC) 3754-33-07(B)(11) and will adequately characterize toxicity in the plant's effluent.

**Additional Monitoring Requirements**

Additional monitoring requirements proposed at the final effluent, influent and upstream/downstream stations (where applicable) 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 reuse and/or disposal of sewage sludge by the following management practices are based on OAC 3745-40: land application/beneficial use of biosolids (Station 3PE0009581), disposal at an authorized solid waste landfill (Station 3PE0009586), and disposal at another NPDES facility (Station 3PE0009588).

## OTHER REQUIREMENTS

### Compliance Schedule(s)

***Pretreatment Local Limits Review*** - A 6-month compliance schedule is proposed for the Rocky River WWTP to submit a technical justification for either revising its local industrial user limits or retaining its existing local limits. If revisions to local limits are required, the Rocky River WWTP must also submit a pretreatment program modification request. Details are in Part I.C of the permit.

***Phosphorus Optimization*** - The permittee shall prepare and submit a Phosphorus Discharge Optimization Evaluation plan to Ohio EPA Northeast District Office. The plan shall be completed and submitted to Ohio EPA no later than 12 months from the effective date of this permit. Details are in Part I.C of the permit.

***Bypassing: No Feasible Alternatives Analysis and Schedule*** - A continuation of the “Schedule of Compliance” from the previous permit is included in this permit for implementation of the required improvements to address wet weather bypasses. 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 OAC 3745-7-02. These rules require the Rocky River WWTP to have a Class IV wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 3PD00003001. These rules also require the permittee to designate one or more operator of record to oversee the technical operation of the “treatment works” and/or “sewerage system”.

### Low-Level Free Cyanide Testing

Currently there are two approved methods for free cyanide listed in 40 CFR 136.3 that have quantification levels lower than any water quality-based effluent limits:

- ASTM D7237-10 and OIA-1677-09 - Flow injection followed by gas diffusion amperometry

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 Lake Erie 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 facility may seek permit coverage under the general permit for industrial storm water (Permit # OHR000005 or subsequent renewal) or submit a “No Exposure Certification.” Parts IV, V, and VI will be removed from the final permit if: 1) the facility 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 Rocky River WWTP



Figure 2. Diagram of Wastewater Treatment System

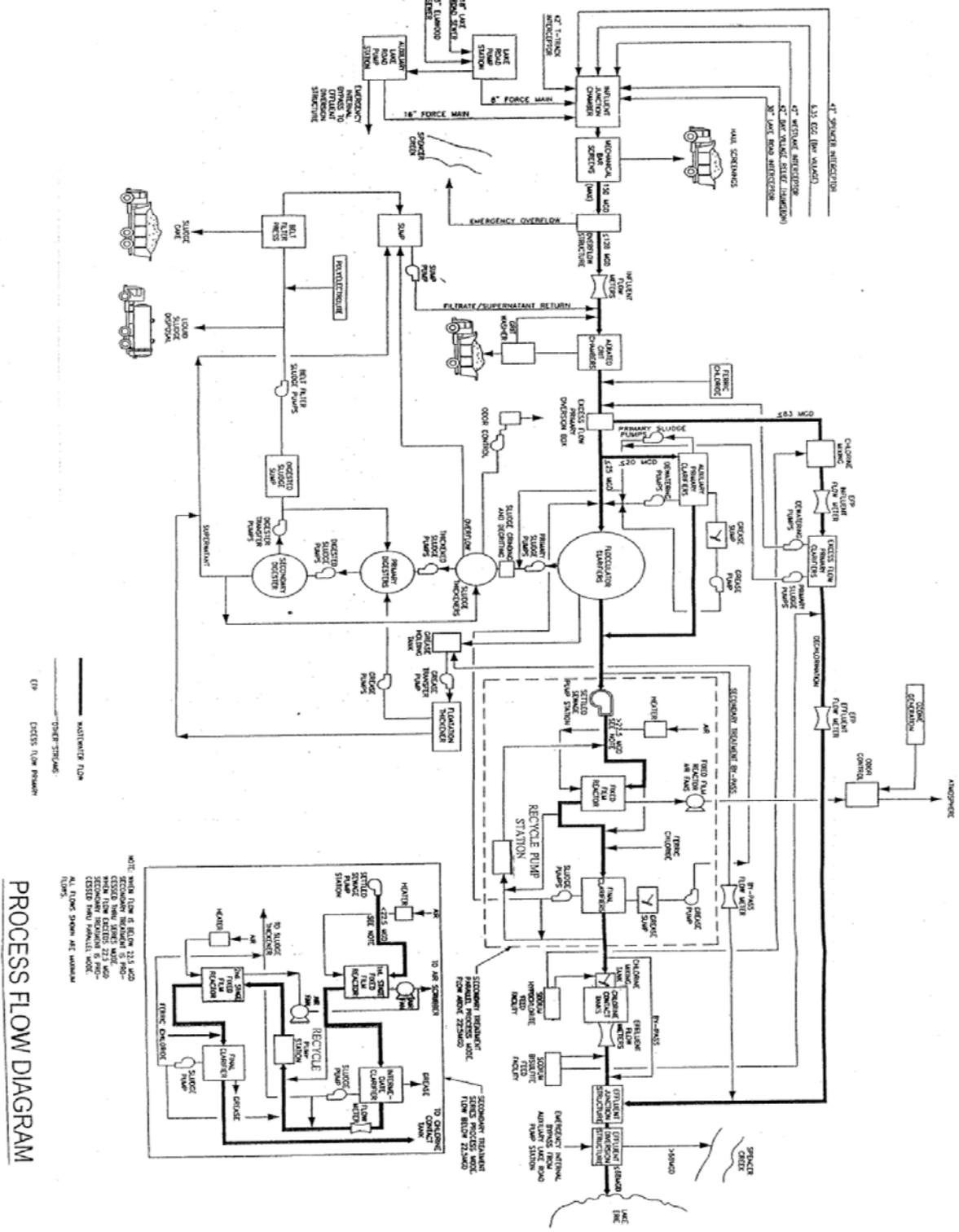
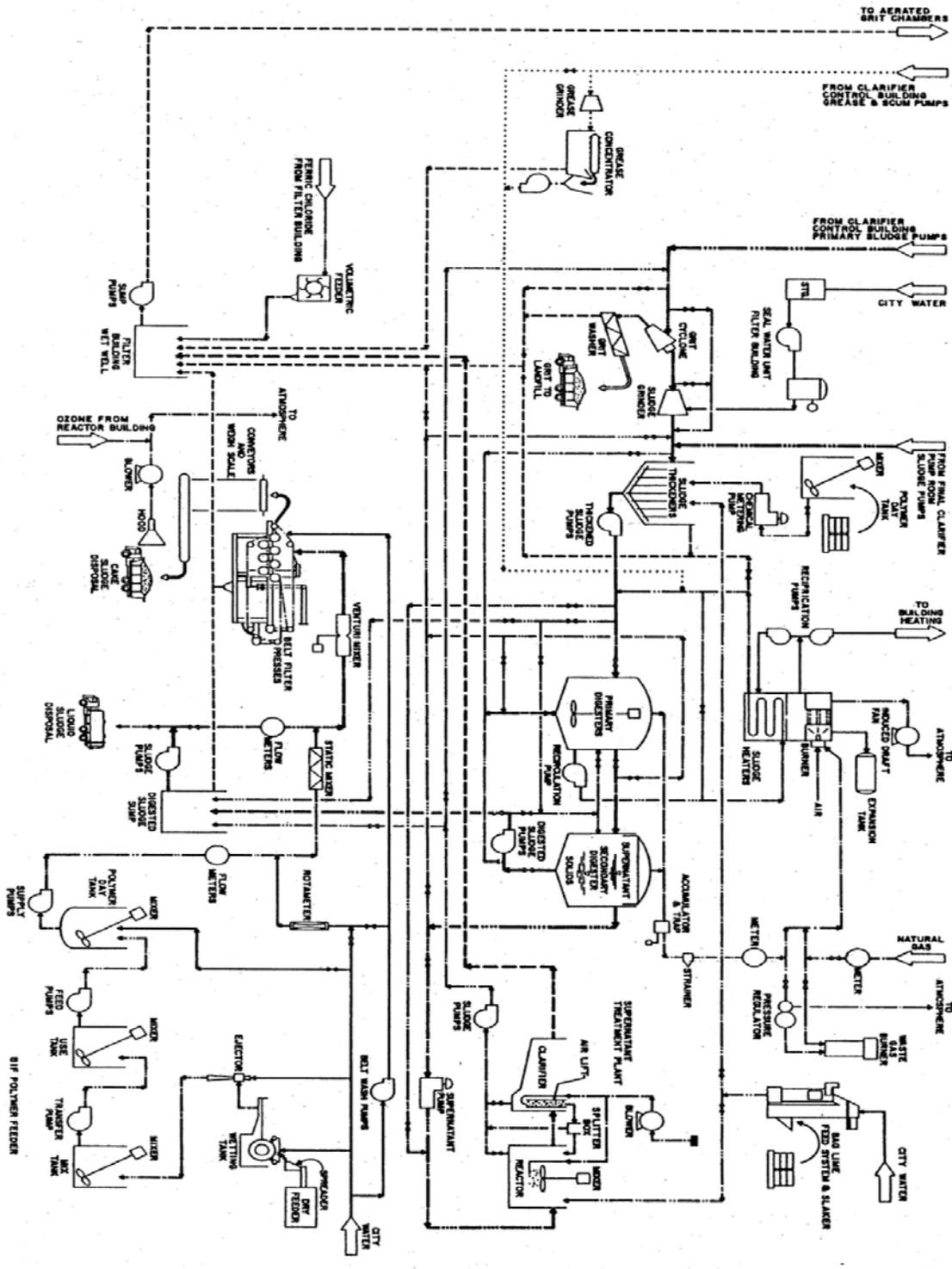


Figure 3. Sewage Sludge Treatment Diagram



**PROCESS FLOW DIAGRAM**  
**SOLIDS TREATMENT**

**Table 1. Sewage Sludge Removal**

Year	Land Applied - Dry Tons (Station 3PE00009581)	Landfilled - Dry Tons (Station 3PE00009586)
2011	1759.8	133.279
2012	1120.715	538.4
2013	1175.789	510.961
2014	1158.98	886.6
2015	1048.4	490

\* - Excludes lime and other admixtures

**Table 2. Average Annual Effluent Flow Rates**

Year	Annual Flow in MGD			
	50th Percentile	95th Percentile	Maximum	Average
2011	15.286	36.572	64.08	18.046
2012	11.552	25.251	92.238	13.927
2013	12.501	24.421	74.692	13.979
2014	12.943	27.501	70.518	15.115
2015	11.797	26.199	80.25	14.225

MGD = million gallons per day.

**Table 3. Bypass Discharges**

Station	Year	No. of Events	Reported Value (MGD)		
			Minimum	Maximum	Median
002	2012	1	0.369	0.369	0.369
002	2013	3	0.22	0.636	0.38533
002	2014	4	0.001	1.218	0.526
002	2015	3	0.806	3.781	1.9013
602	2011	1	0.219	0.219	0.219
602	2015	1	0.18	0.18	0.18
603	2012	20	0.163	46.218	4.211
603	2013	16	0.128	29.349	1.3195
603	2014	19	0.376	24.8	3.41
603	2015	15	0.025	37.504	2.23

**Table 4. Effluent Characterization Using Pretreatment Data for Outfall 3PE00009001**

Parameter (µg/l)	5/26/2011	5/23/2012	5/13/2013	7/3/2014	3/24/2015
Antimony	AA (5)	AA (5)	AA (5)	AA (5)	AA (5)
Arsenic	AA (5)	AA (5)	AA (5)	AA (5)	AA (5)
Beryllium	AA (3)	AA (3)	AA (3)	AA (3)	AA (3)
Cadmium	AA (0.5)	AA (3)	AA (3)	AA (3)	AA (3)
Chromium	AA (2)	AA (7)	AA (7)	AA (7)	AA (7)
Copper	18	10	9	8	9
Lead	AA (2)	AA (10)	AA (10)	AA (10)	AA (10)
Nickel	1.1	11	11	8	8
Selenium	AA (4)	AA (4)	AA (4)	AA (4)	AA (4)
Silver	AA (0.2)	AA (5)	AA (5)	AA (5)	AA (5)
Thallium	AA (2)	AA (5)	AA (5)	AA (5)	AA (5)
Zinc	46	24	18	23	19

AA = not-detected (below analytical method detection limit)

**Table 5. Effluent Characterization Using Self-Monitoring Data for Outfall 3PE00009001**

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 <sup>th</sup>	95 <sup>th</sup>	
Water Temperature	Annual	C	--	--	1827	16	22.2	8.4-24
Dissolved Oxygen	Summer	mg/L	--	--	920	7.8	9.8	4.8-10.3
Dissolved Oxygen	Winter	mg/L	--	--	907	9.8	11.7	4.17-7320
Total Suspended Solids	Annual	mg/L	20	30 <sup>a</sup>	1266	6	17	1-36
Oil and Grease, Hexane Method	Annual	mg/L	--	--	210	2.73	6.62	0-11.5
Oil and Grease, Freon Method	Annual	mg/L	--	10	38	2.75	4.41	1.37-5.49
Nitrogen, Ammonia (NH3)	Summer	mg/L	--	--	651	10.9	16.1	1.83-21.5
Nitrogen, Ammonia (NH3)	Winter	mg/L	--	--	619	9.19	15.1	2.32-19.4
Nitrogen Kjeldahl, Total	Annual	mg/L	--	--	60	10.6	17.7	4.71-20.1
Nitrite Plus Nitrate, Total	Annual	mg/L	--	--	138	7.26	11.3	1.72-13.8
Phosphorus, Total (P)	Annual	mg/L	1.0	1.5 <sup>a</sup>	1268	0.33	0.77	0.05-5.1
Cyanide, Free	Annual	mg/L	--	--	89	0	0	0-0.007
Thallium, Total Recoverable	Annual	µg/L	--	--	213	0	0	0-0
Nickel, Total Recoverable	Annual	µg/L	--	--	252	6.8	13	0-42
Silver, Total Recoverable	Annual	µg/L	--	--	213	0	0	0-0
Zinc, Total Recoverable	Annual	µg/L	--	--	251	15	28	0-84
Cadmium, Total Recoverable	Annual	µg/L	--	--	252	0	0	0-0.32
Lead, Total Recoverable	Annual	µg/L	--	--	252	0	0	0-2.4
Chromium, Total Recoverable	Annual	µg/L	--	--	252	0	0	0-8.6
Copper, Total Recoverable	Annual	µg/L	--	--	252	8.9	17	0-47
Chromium, Dissolved Hexavalent	Annual	µg/L	--	--	87	0	0	0-0
E. coli	Annual	#/100 ml	--	--	633	3	40.4	1-2550
Flow Rate	Summer	MGD	--	--	920	11.4	26.9	8.23-92.2
Flow Rate	Winter	MGD	--	--	907	13.8	29	8.7-70.5
Flow Rate	Annual	MGD	--	--	1827	12.7	28.2	8.23-92.2
Chlorine, Total Residual	Annual	mg/L	--	0.038	920	0.009	0.018	0-0.033
Mercury, Total (Low Level)	Annual	ng/L	10	3400	51	2.3	4.36	1.25-5.08
Mercury, Total (Low Level, PQL=1000)	Annual	ng/L	--	--	9	4.37	8.84	1.47-9.6
Acute Toxicity, Ceriodaphnia dubia	Annual	TUa	--	--	8	0	4.3	0-6.5

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 <sup>th</sup>	95 <sup>th</sup>	
Chronic Toxicity, Ceriodaphnia dubia	Annual	TUc	--	--	8	0	7.93	0-11.3
Acute Toxicity, Pimephales promelas	Annual	TUa	--	--	8	0	0.265	0-0.3
Chronic Toxicity, Pimephales promelas	Annual	TUc	--	--	8	0	0	0-0
pH, Maximum	Annual	S.U.	--	9.0	1827	7.3	7.53	6.8-8.4
pH, Minimum	Annual	S.U.	--	6.5	1827	7.1	7.4	6.5-8.7
Residue, Total Filterable	Annual	mg/L	--	--	51	635	841	368-860
CBOD 5 day	Summer	mg/L	15	23 <sup>a</sup>	637	10	15	5-26
CBOD 5 day	Winter	mg/L	15	23 <sup>a</sup>	609	8	13	3-25

\* = For minimum pH, 5th percentile shown in place of 50th percentile.

\*\* = For dissolved oxygen, 5th percentile shown in place of 95th percentile.

<sup>a</sup> = weekly average.

**Table 6. Projected Effluent Quality for Outfall 3PE00009001**

<b>Parameter</b>	<b>Units</b>	<b>Number of Samples (*)</b>	<b>Number &gt; MDL</b>	<b>PEQ Average</b>	<b>PEQ Maximum</b>
Arsenic	µg/L	5	0	--	--
Cadmium	µg/L	175	1	0.18688	0.256
Chlorine, Total Residual	mg/L	920	919	0.011184	0.020499
Chromium	µg/L	183	4	5.0224	6.88
Hexavalent Chromium (Dissolved)	µg/L	87	0	--	--
Copper	µg/L	257	193	13.869	18.957
Cyanide - free	mg/L	63	1	0.00511	0.007
Dissolved Solids	mg/L	51	51	768.82	900.64
Lead	µg/L	257	8	0.54611	0.67212
Mercury	ng/L	60	60	4.2814	5.9981
Molybdenum	µg/L	5	0	--	--
Nickel	µg/L	257	177	11.304	15.861
Nitrate-N + Nitrite-N	mg/L	138	138	10.481	14.103
Silver	µg/L	218	0	--	--
Zinc	µg/L	256	244	22.804	29.305
Selenium	µg/L	5	0	--	--
Thallium	µg/L	218	0	--	--

(\*) – Includes pretreatment Data

MDL = analytical method detection limit

PEQ = projected effluent quality

**Table 7. Summary of Acute and Chronic Toxicity Results for Outfall 3PE00009001**

Date	<i>Ceriodaphnia Dubia</i>		<i>Pimephales promelas</i>	
	TU <sub>a</sub>	TU <sub>c</sub>	TU <sub>a</sub>	TU <sub>c</sub>
6/12/2012	AA	AA	AA	AA
10/1/2012	AA	1.41	AA	AA
6/9/2013	AA	AA	AA	AA
10/7/2013	6.5	11.31	AA	AA
6/20/2014	AA	AA	AA	AA
10/14/2014	AA	AA	0.2	AA
6/19/2015	AA	AA	AA	AA
10/4/2015	0.2	1.65	0.3	AA

AA = non-detection; analytical method detection limit of 0.2 TU<sub>a</sub>, 1.0 TU<sub>c</sub>

TU<sub>a</sub> = acute toxicity unit

TU<sub>c</sub> = chronic toxicity unit

N/A = Not Applicable/Not Required

**Table 8. Water Quality Criteria in the Study Area**

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Average				Maximum Aquatic Life	
		Wildlife	Human Health	Agri-culture	Aquatic Life		
Arsenic	µg/L	--	580	100	150	340	680
Cadmium	µg/L	--	730	50	2.8	5.5	11
Chlorine, Total Residual	mg/L	--	--	--	0.011	0.019	0.038
Chromium	µg/L	--	14000	100	99	2100	4200
Hexavalent Chromium (Dissolved)	µg/L	--	14000	--	11	16	31
Copper	µg/L	--	64000	500	11	16	33
Cyanide - free	mg/L	--	48	--	0.0052	0.022	0.044
Total Dissolved Solids	mg/L	--	--	--	1500	--	--
Lead	µg/L	--	--	100	8	150	310
Mercury	ng/L	1.3	3.1	10000	910	1700	3400
Molybdenum	µg/L	--	10000	--	20000	190000	370000
Nickel	µg/L	--	43000	200	60	540	1100
Nitrate-N + Nitrite-N	mg/L	--	--	100	--	--	--
Silver	µg/L	--	11000	--	1.3	2.2	4.3
Zinc	µg/L	--	35000	25000	140	140	280
Selenium	µg/L	--	3100	50	5	--	--
Thallium	µg/L	--	--	--	17	79	160

**Table 9. Instream Conditions and Discharger Flow**

Parameter	Units	Season	Value	Basis
<i>Hardness, OMZ</i>	mg/L	annual	119	n = 31 (Lake Erie STORET Station 300895 and 301256): 2010-2015
<i>Hardness, IMZ</i>	mg/L	annual	119	n = 31 (Lake Erie STORET Station 300895 and 301256): 2010-2015
<i>Rocky River WWTP flow</i>	cfs	annual	34.8	Plant Design
<i>Background Water Quality</i>				
Arsenic	µg/L		0	Ohio EPA; 2010-2015; n=18; 18<MDL; Lake Erie STORET Station 300895; Median value
Cadmium	µg/L		0	Ohio EPA; 2010-2015; n=18; 18<MDL; Lake Erie STORET Station 300895; Median value
Chlorine, Total Residual	mg/L		0	No representative data available.
Chromium	µg/L		0	Ohio EPA; 2010-2015; n=18; 18<MDL; Lake Erie STORET Station 300895; Median value
Hexavalent Chromium (Dissolved)	µg/L		0	No representative data available.
Copper	µg/L		1	Ohio EPA; 2010-2015; n=18; 14<MDL; Lake Erie STORET Station 300895; Median value
Cyanide - free	mg/L		0	No representative data available.
Dissolved Solids	mg/L		170	Ohio EPA; 2010-2015; n=35; 0<MDL; Lake Erie STORET Station 300895; Median value
Lead	µg/L		0	Ohio EPA; 2010-2015; n=18; 18<MDL; Lake Erie STORET Station 300895; Median value
Mercury	ng/L		0	No representative data available.
Molybdenum	µg/L		0	No representative data available.
Nickel	µg/L		1	Ohio EPA; 2010-2015; n=18; 13<MDL; Lake Erie STORET Station 300895; Median value
Nitrate-N + Nitrite-N	mg/L		0.56	Ohio EPA; 2010-2015; n=33; 1<MDL; Lake Erie STORET Station 300895; Median value
Silver	µg/L		0	No representative data available.
Zinc	µg/L		0	Ohio EPA; 2010-2015; n=18; 18<MDL; Lake Erie STORET Station 300895; Median value
Selenium	µg/L		0	Ohio EPA; 2010-2015; n=18; 18<MDL; Lake Erie STORET Station 300895; Median value
Thallium	µg/L		0	No representative data available.

MDL = analytical method detection limit

n = number of samples

STORET = USEPA "STORage and RETrieval" database repository for water quality monitoring data.

**Table 10. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria**

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Average				Maximum Aquatic Life	
		Wildlife	Human Health	Agri-culture	Aquatic Life		
Arsenic	µg/L	--	6380	1100	1650	--	680
Cadmium	µg/L	--	8030	550	31	--	11
Chlorine, Total Residual	mg/L	--	--	--	0.12	--	0.038
Chromium	µg/L	--	154000	1100	1089	--	4200
Hexavalent Chromium (Dissolved)	µg/L	--	154000	--	121	--	31
Copper	µg/L	--	703990	5490	111	--	33
Cyanide - free	mg/L	--	528	--	0.057	--	0.044
Total Dissolved Solids	mg/L	--	--	--	14800	--	--
Lead	µg/L	--	--	1100	88	--	310
Mercury	ng/L	1.3	3.1	10000	910	--	3400
Molybdenum	µg/L	--	110000	--	220000	--	370000
Nickel	µg/L	--	472990	2190	650	--	1100
Nitrate-N + Nitrite-N	mg/L	--	--	1094	--	--	--
Silver	µg/L	--	121000	--	14	--	4.3
Zinc	µg/L	--	385000	275000	1540	--	280
Selenium	µg/L	--	34100	550	55	--	--
Thallium	µg/L	--	--	--	187	--	160



**Table 12. Final Effluent Limits for Outfall 3PE00009001**

Parameter	Units	Concentration		Loading (kg/day) <sup>a</sup>		Basis <sup>b</sup>
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Water Temperature	°C	----- Monitor -----				M <sup>c</sup>
Flow Rate	MGD	----- Monitor -----				M <sup>c</sup>
pH	SU	6.5 - 9.0		--	--	WQS
Dissolved Oxygen	mg/L	----- Monitor -----				M <sup>c</sup>
Total Suspended Solids	mg/L	20	30 <sup>d</sup>	1703	2555 <sup>d</sup>	PD
Oil & Grease	mg/L	--	10	--	--	PD
Ammonia (as N) - Summer	mg/L	----- Monitor -----				BTJ
Ammonia (as N) - Winter	mg/L	----- Monitor -----				BTJ
Total Kjeldahl Nitrogen	mg/L	----- Monitor -----				BTJ
Nitrate+Nitrite (as N)	mg/L	----- Monitor -----				BTJ
Phosphorus	mg/L	1.0	1.5 <sup>d</sup>	85	128 <sup>d</sup>	PTS
Dissolved Orthophosphate	mg/L	----- Monitor -----				SB1
Total Filterable Residue	mg/L	----- Monitor -----				BTJ
Nickel	µg/L	----- Monitor -----				BTJ
Zinc	µg/L	----- Monitor -----				BTJ
Cadmium	µg/L	----- Monitor -----				BTJ
Lead	µg/L	----- Monitor -----				BTJ
Chromium	µg/L	----- Monitor -----				BTJ
Copper	µg/L	----- Monitor -----				RP
Hexavalent Chromium (Dissolved)	µg/L	----- Monitor -----				BTJ
Mercury	ng/L	4.3	1700	0.00037	0.14	VAR
Free Cyanide	µg/L	----- Monitor -----				BTJ
<i>E. coli</i>	#/100 ml	126	284 <sup>d</sup>	--	--	WQS
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	15	23 <sup>d</sup>	1277	1959 <sup>d</sup>	PD
Acute Toxicity						
<i>Ceriodaphnia dubia</i>	TU <sub>a</sub>	--	1.0	--	--	WET/WLA
<i>Pimephales promelas</i>	TU <sub>a</sub>	----- Monitor -----				WET
Chronic Toxicity						
<i>Ceriodaphnia dubia</i>	TU <sub>c</sub>	11.0	--	--	--	WET/WLA
<i>Pimephales promelas</i>	TU <sub>c</sub>	----- Monitor -----				WET

<sup>a</sup> Effluent loadings based on average design discharge flow of 22.5 MGD.

<sup>b</sup> Definitions:  
 BTJ = Best Technical Judgment  
 M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges  
 OAC = Ohio Administrative Code  
 PD = Plant Design (OAC 3745-33-05(E))

PTS = Phosphorus Treatment Standards (OAC 3745-33-06 (C))

RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in permits (OAC 3745-33-07(A))

VAR = Mercury variance (OAC 3745-33-07(D)(10)(a))

WET = Whole Effluent Toxicity (OAC 3745-33-07(B))

WLA = Wasteload Allocation procedures (OAC 3745-2)

WQS = Ohio Water Quality Standards (OAC 3745-1)

- ° Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.
- ° 7 day average limit.

**Attachment 1. Supplemental Discharge Monitoring Report (DMR) Data**

Parameter	Season	Units	# Obs.	Percentiles		Data Range
				50 <sup>th</sup>	95 <sup>th</sup>	
<b>Headworks Bypass 3PE00009002</b>						
Bypass Occurrence	Annual	No./Day	14	1	1.7	1-3
Bypass Total Hours Per Day	Annual	Hrs/Day	17	2.8	6.48	0.25-8.82
Total Suspended Solids	Annual	mg/L	17	252	460	32-506
Flow Rate	Summer	MGD	8	0.656	2.85	0.001-3.78
Flow Rate	Winter	MGD	3	0.3	1.13	0.22-1.22
Flow Rate	Annual	MGD	11	0.636	2.5	0.001-3.78
Bypass Volume	Annual	MGAL	6	0.54	1.41	0.0449-1.62
CBOD 5 day	Summer	mg/L	11	39	69.5	15-79
CBOD 5 day	Winter	mg/L	4	22.5	54.5	17-60
<b>SSO Station 3PE00009300</b>						
Overflow Occurrence	Annual	No./Month	197	2	3	1-16
<b>Sludge Station 3PE00009581</b>						
Ammonia (NH3) In Sludge	Annual	mg/kg	172	5000	7190	378-13600
Nitrogen Kjeldahl, Total In Sludge	Annual	mg/kg	172	32800	41800	19100-50400
Phosphorus, Total In Sludge	Annual	mg/kg	172	30600	42400	19300-48400
Potassium In Sludge	Annual	mg/kg	137	976	1260	219-1600
Arsenic, Total In Sludge	Annual	mg/kg	174	7.3	17	0-36.1
Cadmium, Total In Sludge	Annual	mg/kg	174	1.71	5.07	0-22.7
Copper, Total In Sludge	Annual	mg/kg	174	423	533	119-855
Lead, Total In Sludge	Annual	mg/kg	174	35.7	59.1	0-88.2
Nickel, Total In Sludge	Annual	mg/kg	171	29.8	51.5	9.42-64.2
Zinc, Total In Sludge	Annual	mg/kg	174	733	857	192-969
Selenium, Total In Sludge	Annual	mg/kg	174	2.8	7.6	0-19
Sludge Fee Weight	Annual	dry tons	867	6.39	13.1	0-15.1
Sludge Weight	Annual	Dry Tons	867	6.39	13.1	0-15.1
Mercury, Total In Sludge	Annual	mg/kg	174	0.855	2.12	0-3.19
Molybdenum In Sludge	Annual	mg/kg	172	8.47	16	0-23
<b>Sludge Station 3PE00009586</b>						
Sludge Fee Weight	Annual	dry tons	5	511	817	133-887
<b>Influent Station 3PE00009601</b>						
pH, Maximum	Annual	S.U.	275	8.3	9.6	6.9-11.1
pH, Minimum	Annual	S.U.	275	7	7.4	4.54-7.7

Total Suspended Solids	Annual	mg/L	1265	156	268	40-1010
Cyanide, Total	Annual	mg/L	89	0	0	0-0.01
Nickel, Total Recoverable	Annual	µg/L	252	6.5	15	0-110
Zinc, Total Recoverable	Annual	µg/L	250	75.5	140	10-200
Cadmium, Total Recoverable	Annual	µg/L	253	0	0.328	0-2.2
Lead, Total Recoverable	Annual	µg/L	253	2.1	6.78	0-166
Chromium, Total Recoverable	Annual	µg/L	253	0	0	0-8.6
Copper, Total Recoverable	Annual	µg/L	253	35	61	0-98
Chromium, Dissolved Hexavalent	Annual	µg/L	88	0	0	0-7
Mercury, Total (Low Level)	Annual	ng/L	51	52.2	775	5.29-2000
Mercury, Total (Low Level, PQL=1000)	Annual	ng/L	9	36.7	1390	23.7-2220
pH, Maximum	Annual	S.U.	1552	8	8.8	6.5-78
pH, Minimum	Annual	S.U.	1552	7	7.36	6-7.85
CBOD 5 day	Summer	mg/L	624	104	150	7-220
CBOD 5 day	Winter	mg/L	597	85	130	28-170
<b>Internal Bypass 3PE00009602</b>						
Overflow Occurrence	Annual	No./Month	2	1	1	1-1
Overflow Volume	Annual	Million Gallons	2	0.2	0.217	0.18-0.219
<b>Internal Bypass 3PE00009603</b>						
Bypass Occurrence	Annual	No./Day	56	1	1	1-2
Bypass Total Hours Per Day	Annual	Hrs/Day	71	6.25	22.9	0.1-24
Total Suspended Solids	Annual	mg/L	77	56	106	4-372
Flow Rate	Summer	MGD	40	3.37	37.8	0.025-46.2
Flow Rate	Winter	MGD	35	2.12	22.4	0.001-25.4
Flow Rate	Annual	MGD	75	2.58	29.6	0.001-46.2
CBOD 5 day	Summer	mg/L	39	26	48.1	12-57
CBOD 5 day	Winter	mg/L	30	23	82.3	6-163

## **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