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 Portsmouth Lawson Run Wastewater Treatment Plant (WWTP)

Public Notice No.: 15-02-013
Public Notice Date: February 6, 2015
Comment Period Ends: March 8, 2015

Ohio EPA Permit No.: 0PD00013*MD
Application No.: OH0027197

Name and Address of Applicant:

City of Portsmouth
728 Second Street
Portsmouth, OH

Name and Address of Facility Where Discharge Occurs:

Portsmouth Lawson Run WWTP
2040 Charles Street
Portsmouth, OH

Receiving Water: Ohio River

Subsequent
Stream Network: Ohio River to Mississippi River

Introduction

Development of a fact sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations (CFR), Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency (Ohio EPA), as well as the methods by which the public can participate in the process of finalizing those actions.

This fact sheet is prepared in order to document the technical basis and risk management decisions that are considered in the determination of water quality based NPDES permit effluent limitations. The technical basis for the fact sheet may consist of evaluations of promulgated effluent guidelines, existing effluent quality, instream biological, chemical and physical conditions, and the relative risk of alternative effluent limitations. This fact sheet details the discretionary decision-making process empowered to the Director by the Clean Water Act (CWA) and Ohio Water Pollution Control Law, Chapter 6111 of the Ohio Revised Code (ORC). Decisions to award variances to water quality standards (WQS) or promulgated effluent guidelines for economic or technological reasons will also be justified in the fact sheet where necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the 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 have changed: flow, temperature, dissolved oxygen, 5-day carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), ammonia, total phosphorus, orthophosphate, nitrate+nitrite, total Kjeldahl nitrogen (TKN), oil and grease, pH, total residual chlorine, cadmium, chromium, dissolved hexavalent chromium, copper, lead, nickel, and zinc.

The permittee submitted a mercury variance on 10/27/14. The associated variance showed that the permittee is not currently able to meet WQS for mercury without costly end of pipe investments. Under the variance, Portsmouth WWTP may discharge monthly concentrations less than or equal to 18.4 ng/L. The facility will also perform a plan to mitigate mercury concentrations highlighted in Part II, Item W of the permit and shall begin influent monitoring for mercury.

Current monitoring requirements for silver are being removed from the permit because there were no detections of silver over the past five years of data from the facility and only one detection of 0.21 µg/L in Ohio EPA data.

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

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; and outfall signage.

Table of Contents

List of Figures

List of Tables

Procedures for Participation in the Formulation of Final Determinations

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

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

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

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

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

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

The Ohio EPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

Citizens may conduct file reviews regarding specific companies or sites. Appointments are necessary to conduct file reviews, because requests to review files have increased dramatically in recent years. The first 250 pages copied are free. For requests to copy more than 250 pages, there is a five-cent charge for each page copied. Payment is required by check or money order, made payable to Treasurer State of Ohio.

For additional information about this fact sheet or the draft permit, contact Andy Bachman, (614) 644-3075, andrew.bachman@epa.ohio.gov.

Information Regarding Certain Water Quality Based Effluent Limits

This draft permit may contain proposed water quality based effluent limitations (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 Section 6111.03(J)(3), the Director established these water quality based effluent limits 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 Rule 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 Rule 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

Portsmouth WWTP discharges to the Ohio River at river mile (RM) 627.4 (Ohio River Valley Water Sanitation Commission [ORSANCO] River Point 356). Figure 1 shows the approximate location of the facility.

This segment of the Ohio River is described by Ohio EPA River Code: 25-250, U.S. EPA River Reach #: 05090103-081, County: Scioto, Ecoregion: Western Alleghany Plateau. The Ohio River is designated for the following uses under Ohio's WQS (OAC 3745-1-18): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), public water supply (PWS), and Bathing Waters (BW) recreational use.

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 BW, swimming/canoeing (Primary Contact) and wading only (Secondary Contact - generally waters too shallow for swimming or canoeing).

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

Facility Description

Facility Processes:

The Portsmouth WWTP was originally constructed in 1952, and upgraded in 2011 when the aerobic digester was installed onsite. The Portsmouth WWTP facility is an advanced treatment facility with an average design flow of 6.5 million gallons per day (MGD). The treatment plant includes the following equipment and/or wet processes:

- Influent Pumping
- Bar Screens
- Grit Removal
- Scum Removal
- Primary Sedimentation
- Trickling Filter with Plastic Media
- Secondary Clarification
- Chlorination and Dechlorination
- Ultraviolet Lights (this process is currently not being utilized because of high turbidity issues)

The plant serves parts of the City of Portsmouth, New Boston, and Clay Township. The total population served is estimated to be 23,498. There is currently no pretreatment program in place at Portsmouth WWTP and no industrial dischargers contributing flow to Portsmouth WWTP.

Sludge Processing:

Sludge processing previously included hauling sludge to landfill. In 2011, aerobic digesters were installed at the WWTP and the facility hopes to achieve either exceptional quality or Class B sludge that may be land applied. Table 1 shows the total tons of sludge removed from Portsmouth WWTP from 2009 through 2013, based upon discharge monitoring reports (DMR) data.

Table 1: Sludge Removed from Portsmouth WWTP 2009-2013

Year	Dry Tons Removed
2009	889.66
2010	135.17
2011	238.83
2012	269.76
2013	324.94

Collection System:

The collection system for Portsmouth WWTP is 100 percent combined and sanitary sewers.

There are ten combined sewer overflows (CSOs) across the collection system. CSO 002 is the CSO that allows influent to bypass the plant and discharge to the Ohio River during wet weather related high flows as a CSO discharge. Table 2a below shows occurrence and quality of the discharge that occurs at CSO 002. Data for CSO occurrences at outfalls 003 through 011 are included in Table 2b.

Table 2a: CSO Occurrences at Outfall 002 2009-2013

Year	# of Occurrences	Median Value for:		
		Flow Rate (MGD)	TSS (mg/L)	$CBOD_5$ (mg/L)
2009	10	4.60	80.50	78.34
2010	16	5.55	133.33	110.00
2011	33	8.37	35.00	75.00
2012	37	8.80	35.00	75.00
2013	49	7.70	87.00	49.17

Table 2b: CSO Occurrences at Outfalls 003 through 011: 2009-2013

Year	CSO Outfall Number								
	003	004	005	006	007	008	009	010	011
2009	7	4	11	9	11	8	0	10	11
2010	2	2	3	1	2	5	0	5	3
2011	13	6	19	11	11	11	2	30	31
2012	6	0	4	4	9	1	0	7	8
2013	11	14	30	30	40	1	0	25	20

As can be seen in the above data, there have been numerous CSO occurrences across the sewer system over the previous five years, especially during the wet years of 2011 and 2013. Flow meters have recently been installed at several CSO outfalls which will result in better data collection for CSO flows in the future. Portsmouth WWTP is currently working with the Army Corps of Engineers and U.S. EPA to develop a plan and schedule to address CSO discharges during wet weather. An administrative consent order was signed on 9/27/13; and under these orders the WWTP is developing a description and characterization of the existing system, evaluating inflow and infiltration, maximizing flow through the plant, and working on several projects across the system under a Sewer Systems Management Operation and Maintenance Program submitted to U.S. EPA on 5/15/14.

The City recently amended the approach to address SSOs at the Munn's Run Pumping Station. An evaluation of alternatives to include replacement of the upstream trunk sewer and various modifications is underway. A televised sewer assessment and continued flow monitoring have also been continued.

Description of Existing Discharge

Table 3: Effluent Flow Rates for Outfall 001 2009-2013

Year	Annual Flow in MGD		
	50th Percentile	95th Percentile	Maximum
2009	4.42	8.50	14.40
2010	4.15	7.58	9.27
2011	5.64	9.59	10.15

2012	4.54	8.83	10.85
2013	4.17	7.91	9.46

Table 3 shows the annual effluent flow rates for the Portsmouth WWTP based upon DMR data. The flow rates have been stable across this period, which is expected as the facility believes there is minimal inflow and infiltration and sends flow through CSO 002 during heavy rains.

Table 4 presents chemical specific data compiled from data reported in annual pretreatment reports.

Table 5 presents a summary of unaltered DMR data for outfall 0PD00013001. Data are presented for the period from January, 2009 through December 2013, and current permit limits are provided for comparison.

Table 6 summarizes the chemical specific data for outfall 0PD00013001 by presenting the average and maximum PEQ values.

Table 7 summarizes the results of acute WET tests of the final effluent.

Portsmouth WWTP reports SSO occurrences under station 300 in its NPDES permit. There were 46 overflow occurrences in 2010, 54 in 2011, 13 in 2012, and 19 in 2013.

Assessment of Impact on Receiving Waters

The most recent ORSANCO survey of the Ohio River Meldahl Pool was conducted in 2012. The results of that study are included in a one page summary. This ORSANCO summary showed that the 95.2 mile section of the Ohio River containing the Portsmouth WWTP discharge has an overall rating of "good" and downstream of the Portsmouth WWTP was "very good." The summary is available at the following Internet site: http://www.orsanco.org/images/stories/files/biologicalSurveys/1pgpoolsum/2012_Meldahl_Assessment_Summary.pdf

ORSANCO also published *Biennial Assessment of Ohio River Water Quality Conditions* in September, 2008. This report includes several analyses for the complete Ohio River based on data collected in 2006 and 2007. Using downstream sites closest to RM 356, the report shows that the area downstream of the Portsmouth WWTP meets *E. coli* standards, fully supports recreational use, and passes 2007 fish indexes. The complete report is available at the following internet site: http://www.orsanco.org/images/stories/files/publications/305b/docs/2008305b.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 Portsmouth WWTP was used to determine what parameters should undergo WLA. The parameters discharged are identified by the data available to Ohio EPA - DMR data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	January 2009 through December 2013
Ohio EPA Bioassay Studies	7/25/11 and 4/9/12

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95th percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95th percentile of all data points. The average and maximum PEQ values are presented in Table 6.

The data were examined, and the following values were removed from the evaluation to give a more reliable PEQ: nickel 158 µg/L (8/1/13), total residual chlorine 0.21 mg/L and 1.01 mg/L (1/5/10 and 10/1/11), and the month of February 2009 for oil and grease, zinc, and copper as this month was inaccurately recorded by the facility.

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 for a summary of the screening results

Wasteload Allocation

For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. WLAs using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations.

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

Aquatic life (WWH)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
AWS		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 9, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

Ohio's WQS implementation rules [OAC 3745-2-05(A)(2)(d)(iv)] required a phase out of mixing zones for bioaccumulative chemicals of concern (BCCs) as of November 15, 2010. This rule applied statewide. Mercury is a BCC. The mixing zone phase-out means that as of November 15, 2010 all dischargers requiring mercury limits in their NPDES permit must meet WQS at the end-of-pipe, which are 12 ng/L (average) and 1700 ng/L (maximum) in the Ohio River basin.

The data used in the WLA are listed in Table 8 and Table 9. The WLA results to maintain all applicable criteria are presented in Table 10. Current ammonia limits were not found to be protective of aquatic life.

Whole Effluent Toxicity WLA

WET is the total toxic effect of an effluent on aquatic life measured directly with a toxicity test. Acute WET measures short term effects of the effluent while chronic WET measures longer term and potentially more subtle effects of the effluent.

WQS for WET are expressed in Ohio's narrative "free from" WQS [OAC 3745-1-04(D)]. These "free froms" are translated into toxicity units (TUs) by the associated WQS Implementation (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 Portsmouth WWTP, the WLA values are 3.5 TU_a and 106.41 TU_c.

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

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

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations except when the following equation is more restrictive (*Ceriodaphnia dubia* only):

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

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

The acute toxicity unit (TU_a) is defined as 100 divided by the concentration of effluent that is lethal to 50 percent of the exposed organisms (LC_{50}) for the most sensitive test species:

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

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

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 10. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 6, 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 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 Portsmouth WWTP outfall 0PD00013001 and the basis for their recommendation.

Oil and Grease and pH

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

Ammonia

Monitoring for ammonia is proposed to continue. Ammonia limits are typical of municipal wastewater treatment facilities. However, as Portsmouth WWTP discharges to the Ohio River, the dilution factors coupled with downstream pH and temperature values (per OAC 3745-1-07) allow for ammonia WLAs larger than the current effluent concentrations. Therefore, ammonia has no reasonable potential to exceed WQS and no limit is included.

TSS and $CBOD_5$

The limits for TSS and $CBOD_5$ that were approved for the treatment plant under the existing permit are proposed to continue. The concentration limits for these parameters are based upon the treatment technology associated with the plant design of Portsmouth WWTP. The loading limits are based upon the plant's average design flow of 6.5 MGD.

Fecal Coliform

The continuation of fecal coliform limits is proposed for both summer and winter. Summer fecal limits include a weekly limit of 400 colonies per 100 mL of effluent and monthly limit of 200 colonies per 100 mL of effluent. Winter fecal limits include a weekly limit of 2000 colonies per 100 mL of effluent and monthly limit of 1000 colonies per 100 mL of effluent. These are in accordance with ORSANCO and Ohio EPA policy for direct Ohio River dischargers.

Phosphorus, Orthophosphate, Nitrate+Nitrite and TKN

The continuation of monitoring for phosphorus, orthophosphate, nitrate+nitrite and TKN is proposed based on best engineering judgment. The purpose of the monitoring is to maintain a data set tracking nutrient levels in the Ohio River.

Chloroform, Silver, Total Filterable Residue, Strontium, Toluene, Free Cyanide, Iron, Barium, and Phenolics

Ohio EPA risk assessment (Table 11) places chloroform, silver, total filterable residue, strontium, toluene, free cyanide, iron, barium, and phenolics in groups 2 and 3. This placement as well as the data in Tables 4, 5, and 6 supports that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring is not required for these parameters because there is no reasonable potential to contribute to WQS exceedances and is therefore not proposed at outfall 001.

Chromium, Nickel, Lead, and Dissolved Hexavalent Chromium

Ohio EPA risk assessment (Table 11) places chromium, nickel, lead, and dissolved hexavalent chromium in groups 2 and 3. This placement as well as the data in Tables 4, 5, and 6 supports that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring at a quarterly frequency is proposed to document that these pollutants continue to remain at low levels.

Cadmium and Zinc

Ohio EPA risk assessment (Table 11) places cadmium and zinc in group 4. This placement as well as the data in Tables 4, 5, and 6 supports 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 Rule 3745-33-07(A)(2). Monitoring at a monthly frequency is proposed for these parameters.

Copper

The Ohio EPA risk assessment (Table 11) places copper in group 5. This placement as well as the data in Tables 4, 5, and 6 supports that copper has the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For these parameters, the PEQ_{max} is greater than 100 percent of the wasteload allocation. Pollutants that meet this requirement must have permit limits under OAC Rule 3745-33-07(A)(1). The daily maximum limit for copper is based on the WLA IMZM (Table 10) and a continuation of the current permit.

Total Residual Chlorine

The daily maximum limit for total residual chlorine is based on WQS and is to continue at 0.038 mg/L. This is based on WLA as limited by the IMZM. The IMZM is a value calculated to avoid rapidly lethal conditions in the effluent mixing zone.

If Portsmouth WWTP develops the capability of using ultraviolet disinfection and no longer chlorinates effluent, this limit may be removed via permit modification or in a future NPDES permit renewal.

Whole Effluent Toxicity Reasonable Potential

Based on evaluating the WET data presented in Table 7 and other pertinent data under the provisions of OAC 3745-33-07(B), Portsmouth WWTP 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). The proposed monitoring will adequately characterize toxicity in the plant's effluent.

Mercury Reasonable Potential and Mercury Variance

The Ohio EPA risk assessment (Table 11) places mercury in group 5. This placement as well as the data in Table 5, Table 9, and Table 10 indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality.

To comply with mercury limits, the permittee has applied for coverage under the general mercury variance, Rule 3745-33-07(D)(10) of the OAC. Based on the results of low-level mercury monitoring, the permittee has determined that its wastewater treatment plant cannot meet the 30-day average WQBEL of 12 ng/L. However, the permittee believes that the plant will be able to achieve an annual average mercury effluent concentration of 12 ng/L. The variance application 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 on these factors, the permittee is eligible for coverage under the general mercury variance.

Ohio EPA has reviewed the mercury variance application and has determined that it meets the requirements of the OAC. Items W, X, and Y in Part II of the draft NPDES permit list the provisions of the mercury variance, and includes the following requirements:

- A variance-based monthly average effluent limit of 18.4 ng/L, which was developed from sampling data submitted by the permittee;
- 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 Pollutant Minimization Program (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 summary of the elements of 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.
- Additional monitoring of mercury in the plant influent at outfall 601.

The variance-based monthly average effluent limit of 18.4 ng/L was calculated as the 95th percentile value for the previous mercury effluent values from 8/5/09 through 5/1/14, totaling 58 observations.

On October 16, 2015, the Pollution Control Standards (PCS) of the ORSANCO eliminate pertaining to mixing zones for of bioaccumulative chemicals of concern (BCCs) become effective. These rules include prohibition of mixing zones for BCCs (Chapter 4, Paragraph F of the ORSANCO PCS); unless an individual variance is granted by ORSANCO. Mercury is a BCC. The permittee may need to apply for a variance through ORSANCO to be compliant with ORSANCO Pollution Control Standards. The facility should immediately apply for variance under ORSANCO if it wishes to be in compliance with ORSANCO PCS.

The complete ORSANCO PCS can be found at the following Internet site:
http://www.orsanco.org/images/stories/files/pollutionControlStandards/2013/final/2013standards.pdf

Sludge

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

Additional tables have been included in this NPDES permit renewal including Monitoring Stations 581 and 584. These may be used to complete sludge monitoring required to designate sludge as either "exceptional quality" or "Class B" sludge for land application purposes.

Additional monitoring requirements proposed at the final effluent, influent, and upstream/downstream stations are included for all facilities in Ohio and vary according to the type and size of the discharge. In addition to permit compliance, this data is used to assist in the evaluation of effluent quality and treatment plant performance and for designing plant improvements and conducting future stream studies.

Other Requirements

Sanitary Sewer Overflow Reporting

Provisions for reporting SSOs are again proposed in this permit. These provisions include: the reporting of the system-wide number of SSO occurrences on monthly operating reports; telephone notification of Ohio EPA and the local health department, and 5-day follow up written reports for certain high risk SSOs; and preparation of an annual report that is submitted to Ohio EPA and made available to the public. Many of these provisions were already required under the "Noncompliance Notification", "Records Retention", and "Facility Operation and Quality Control" general conditions in Part III of Ohio NPDES permits.

Operator Certification

Operator certification requirements have been included in Part II, Item A of the permit in accordance with rules adopted in December 2006. These rules require Portsmouth WWTP to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 0PD00013001. This facility was previously classified as a Class IV facility, however under OAC 3745-7-4(B)(2)(b), the facility average daily design flow and associated limits for TSS, $CBOD_5$, and ammonia are concurrent with a Class III facility. The plant is proposed to be reclassified as a Class III facility.

Operator of Record

In December 2006, rule revisions became effective that affect the requirements for certified operators for sewage collection systems and treatment works regulated under NPDES permits. Part II, Item A of this NPDES permit is included to implement OAC 3745-7-02. It requires the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

Storm Water Compliance

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

Outfall Signage

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

Figure 1. Location of Portsmouth WWTP

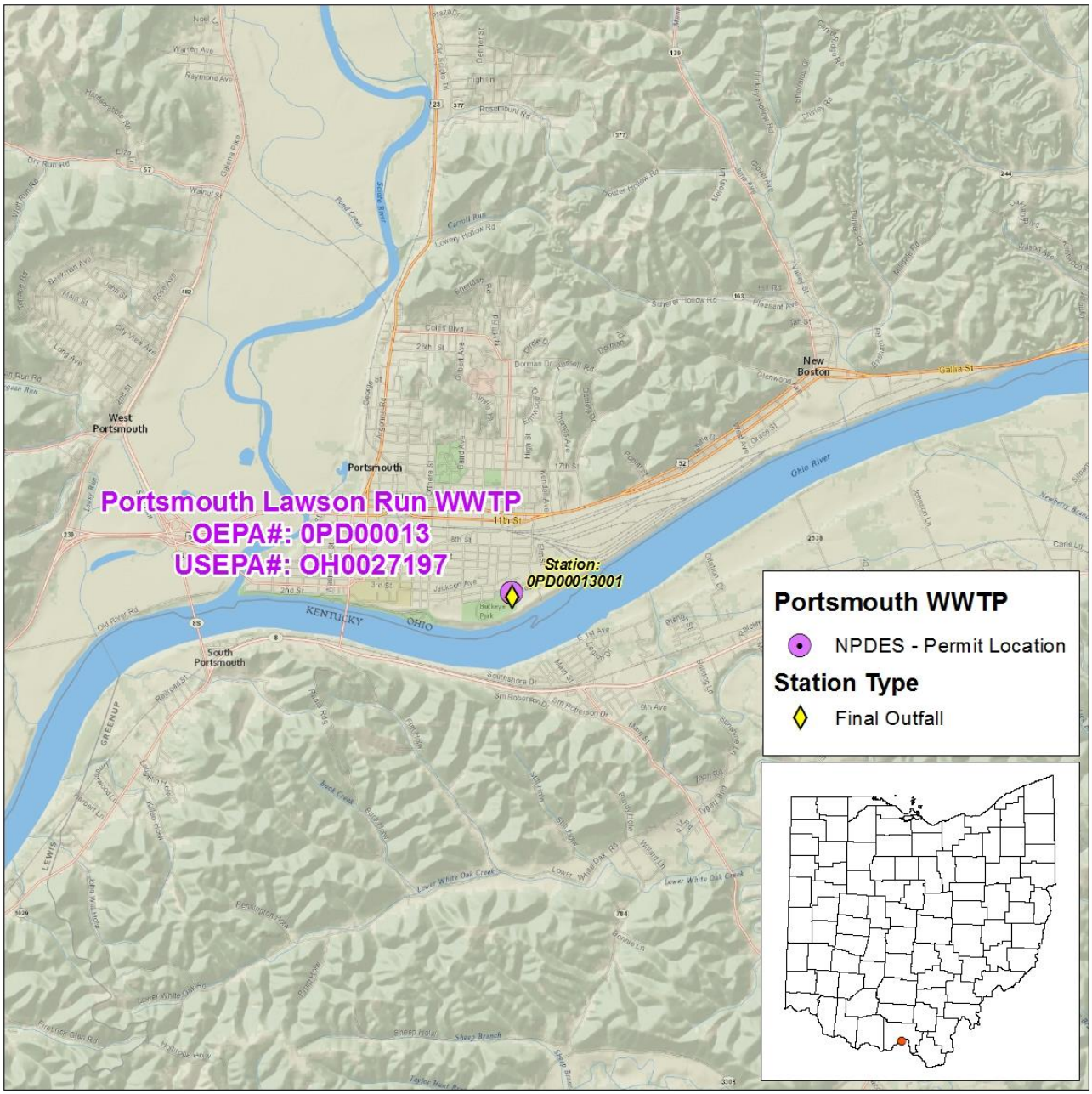

Figure 2. Location of CSO Outfalls

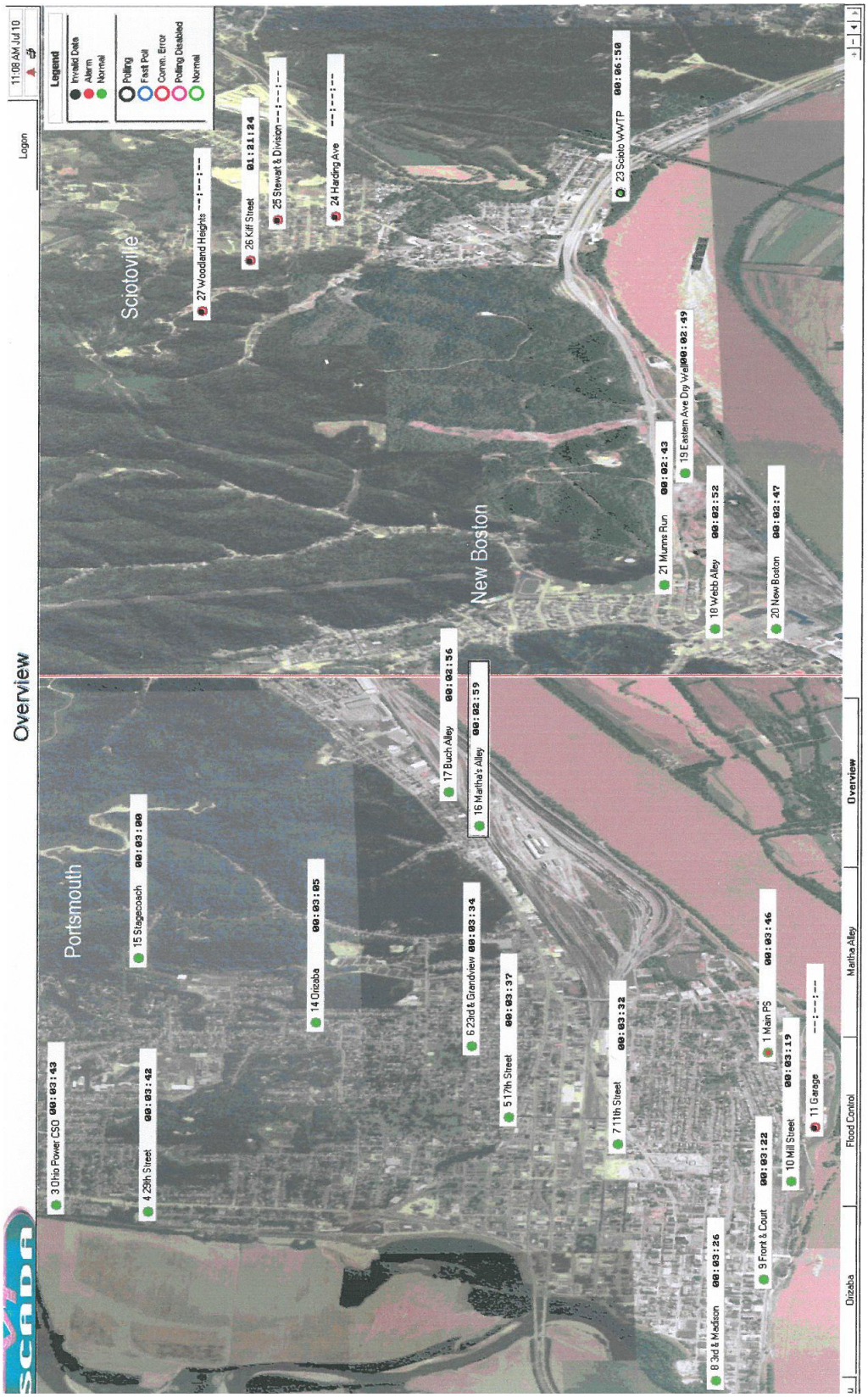

Table 4. Effluent Characterization Using Ohio EPA Data

Summary of analytical results for Portsmouth WWTP outfall 0PD00013001. AA = not detected (detection limit); NT = No Test

Ohio EPA Data - Portsmouth WWTP			
Parameter	Units	7/25/2011	4/9/2012
Total Filterable Residue	mg/L	396	372
Lead	µg/L	3.3	2.5
Copper	µg/L	6.7	10
Nickel	µg/L	2.8	2.9
Aluminum	µg/L	268	AA (200)
Barium	µg/L	42	26
Iron	µg/L	752	903
Magnesium	mg/L	13	13
Manganese	µg/L	220	192
Strontium	µg/L	238	195
Zinc	µg/L	76	74
Nitrate + Nitrite	mg/L	1.43	7.28
Silver	µg/L	NT	0.21
Phenolics	µg/L	10.2	28.4
Toluene	µg/L	NT	0.74
Chloroform	µg/L	NT	0.82

Table 5. Effluent Characterization Using Self-Monitoring Data

Summary of current permit limits and unaltered discharge monitoring report data for Portsmouth WWTP outfall 0PD00013001 (January 2009 - May 2014). All values are based on annual records unless otherwise indicated. * = For minimum pH, 5th percentile shown in place of 50th percentile; ** = For dissolved oxygen, 5th percentile shown in place of 95th percentile; a = weekly average.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50th	95th	
Outfall 001								
Water Temperature	Annual	ºC	- - - - Monitor - - - -		2004	16	24	1-123
Dissolved Oxygen	Annual	mg/L	- - - - Monitor - - - -		2005	6.9	9.45	1.1-14.4
Total Suspended Solids	Annual	mg/L	30	45 [B]	791	14	29	1-67
Oil and Grease	Annual	mg/L	- - Less than 10 - -		158	0	7	0-7.1
Ammonia	Annual	mg/L	- - - - Monitor - - - -		792	5.80	16.8	0.134-29.2
Total Nitrogen Kjeldahl	Annual	mg/L	- - - - Monitor - - - -		61	6.9	15.9	1.2-20.6
Nitrite + Nitrate	Annual	mg/L	- - - - Monitor - - - -		61	5.8	12.4	1.85-13.6
Orthophosphate	Annual	mg/L	- - - - Monitor - - - -		20	1.09	2.18	0.52-2.6
Phosphorus	Annual	mg/L	- - - - Monitor - - - -		20	1.57	2.94	0.24-3.11
Free Cyanide	Annual	mg/L	- - - - Monitor - - - -		2	0	0	0-0
Nickel	Annual	µg/L	- - - - Monitor - - - -		22	0	0	0-158
Silver	Annual	µg/L	- - - - Monitor - - - -		59	0	0	0-0
Zinc	Annual	µg/L	- - - - Monitor - - - -		38	51	113	16-287
Cadmium	Annual	µg/L	- - - - Monitor - - - -		61	0	0	0-9
Lead	Annual	µg/L	- - - - Monitor - - - -		22	0	0	0-0
Chromium,	Annual	µg/L	- - - - Monitor - - - -		22	0	0	0-11
Copper	Annual	µg/L	--	36	77	15	31.8	0-37
Dissolved Hexavalent Chromium	Annual	µg/L	- - - - Monitor - - - -		61	0	0	0-0
Fecal Coliform	Summer	#/100 mL	200	400 [B]	793	8	138	7-2850
Fecal Coliform	Winter	#/100 mL	1000	2000 [B]	955	4.35	8.62	1.01-14.4
Flow Rate	Annual	MGD	- - - - Monitor - - - -		1975	4.62	8.82	0.1-14.4
Chlorine	Summer	mg/L	--	0.038	2006	0.01	0.02	0-1.01
Mercury	Annual	ng/L	- - - - Monitor - - - -		59	8	18.5	0-22
Acute Toxicity, *C. dubia*	May	TU_a	- - - - Monitor - - - -		5	0	0	0-0
Acute Toxicity, *P. promelas*	May	TU_a	- - - - Monitor - - - -		5	0	0.16	0-0.2
pH	Annual	S.U.	Between 6.0 and 9.5		4012	7.0	7.3	5.9-8.4
$CBOD_5$ [A]	Annual	mg/L	25	40 [B]	792	16.9	28.2	2-1780

A. $CBOD_5$ = 5-day carbonaceous biochemical oxygen demand
B. Weekly

Table 6. Effluent Data for the Portsmouth WWTP- Projected Effluent Quality Values

Parameter	Units	# of Samples	# > MDL	Average PEQ	Maximum PEQ
Aluminum	µg/L	2	1	743.432	1018.4
Ammonia-Summer	mg/L	240	240	12.397	25.995
Ammonia-Winter	mg/L	204	204	13.877	30.13
Barium	µg/L	2	2	116.508	159.6
Cadmium	µg/L	60	1	6.57	9
Chlorine	mg/L	1974	1192	0.0131	0.018
Chloroform	µg/L	1	1	3.71132	5.084
Chromium	µg/L	23	1	10.439	14.3
Dissolved Hexavalent Chromium	µg/L	60	0	--	--
Copper	µg/L	66	47	26.651	38.837
Free Cyanide	mg/L	2	0	--	--
Total Filterable Residue	mg/L	2	2	1098.504	1504.8
Iron	µg/L	2	2	2504.922	3431.4
Lead	µg/L	12	2	3.8544	5.28
Magnesium	mg/L	2	2	610.28	836
Manganese	µg/L	2	2	36.062	49.4
Mercury	ng/L	58	56	13.196	18.362
Nickel	µg/L	2	2	8.0446	11.02
Nitrate + Nitrite	mg/L	60	60	11.289	16.886
Phenolics	µg/L	2	2	78.7816	107.92
Silver	µg/L	34	1	0.18396	0.252
Strontium	µg/L	2	2	660.212	904.4
Toluene	µg/L	1	1	3.34924	4.588
Zinc	µg/L	27	27	116.47	167.97

[A.] Ohio EPA data were combined with the DMR data.
[B.] MDL = Method Detection Level, PEQ = Projected Effluent Quality

Table 7. Summary of Acute Toxicity Test Results for Portsmouth WWTP

Test Date	*Ceriodaphnia dubia 48*	*Fathead Minnows 96*
	TU_a[a]	TU_a[a]
6/3/10 (E)	BD	BD
5/4/11 (E)	BD	BD
7/25/11 (O)	BD	BD
4/9/12 (O)	BD	BD
5/3/12 (E)	BD	0.2
5/17/13 (E)	BD	BD
5/1/14 (E)	BD	BD

[a] TU_a = acute toxicity units
BD = Below Detection, NT = No Test, (E) = Entity Test, (O) = OEPA Test

Table 8. Water Quality Criteria in the Little Miami River Study Area

		Outside Mixing Zone Criteria				Inside
		Average			Maximum	Mixing
Parameter	Units	Human Health	Agri-culture	Aquatic Life	Aquatic Life	Zone Maximum
Aluminum	µg/L	--	--	--	--	--
Ammonia-Summer	mg/L	--	--	--	--	--
Ammonia-Winter	mg/L	--	--	--	--	--
Barium	µg/L	--	--	220	2000	4000
Cadmium	µg/L	--	50	3	6.1	12
Chlorine	mg/L	--	--	0.011	0.019	0.038
Chloroform	µg/L	57c	--	140	1300	2600
Chromium	µg/L	--	100	110	2200	4500
Dissolved Hexavalent Chromium	µg/L	--	--	11	16	31
Copper	µg/L	1300	500	12	18	36
Free Cyanide	mg/L	0.7	--	0.0052	0.022	0.044
Total Filterable Residue	mg/L	--	--	1500	--	--
Iron	µg/L	--	5000	--	--	--
Lead	µg/L	--	100	9.1	170	350
Magnesium	mg/L	--	--	--	--	--
Manganese	µg/L	--	--	--	--	--
Mercury [A]	ng/L	12	10000	910	1700	3400
Nickel	µg/L	610	200	66	590	1200
Nitrate + Nitrite	mg/L	10	100	--	--	--
Phenolics	µg/L	5	--	--	--	--
Silver	µg/L	50	--	1.3	2.5	5.1
Strontium	µg/L	--	--	21000	40000	81000
Toluene	µg/L	6800	--	62	560	1100
Zinc	µg/L	9100	25000	150	150	300

A. Bioaccumulative Chemical of Concern (BCC)

Table 9. Instream Conditions and Discharger Flow

Note USGS= United States Geological Survey, RM=River Mile, cfs=cubic feet per second, ORSANCO = Ohio River Valley Water Sanitation Commission, MDL=Method Detection Limit; ORSANCO = Ohio River Valley Water Sanitation Commission, MDL = Method Detection Level, OEPA = Ohio Environmental Protection Agency, DSW = Division of Surface Water, WWTP=Wastewater Treatment Plant

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	10600	DSW Permit Guidance #8
7Q10	cfs	annual	10600	DSW Permit Guidance #8
		summer	0	
		winter	0	
30Q10	cfs	summer	0	
		winter	0	
90Q10	cfs	annual	0	
Harmonic Mean	cfs	annual	42100	DSW Permit Guidance #8
Mixing Assumption	%	average	10	
	%	maximum	1	
Hardness	mg/L	annual	131	DSW Permit Guidance #8
pH	S.U.	summer	0	
		winter	0	
Temperature	ºC	summer	0	
		winter	0	
Portsmouth WWTP flow	cfs	annual	10.0555	

Table 9. Instream Conditions and Discharger Flow (continued)

Parameter (µg/L)	Value	Basis
Background Water Quality		
Aluminum	285	ORSANCO ; 6/06-7/11; n=37; 7<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Ammonia-Summer (mg/L)		No representative data available.
Ammonia-Winter (mg/L)		No representative data available.
Barium	47.6	ORSANCO ; 6/06-7/11; n=37; 7<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Cadmium	0.05	ORSANCO ; 6/06-7/11; n=37; 34<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Chlorine (mg/L)		No representative data available.
Chloroform		No representative data available.
Chromium	1.5	ORSANCO ; 6/06-7/11; n=37; 7<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Dissolved Hexavalent Chromium		No representative data available.
Copper	2.1	ORSANCO ; 6/06-7/11; n=37; 7<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Free Cyanide (mg/L)		No representative data available.
Total Dissolved Solids (mg/L)	382	OEPA; 1988; n=3755; 0<MDL; Unimpacted Stream Data, 50 Percentile
Iron	538	ORSANCO ; 6/06-7/11; n=37; 7<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Lead	0.6	ORSANCO ; 6/06-7/11; n=37; 7<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Magnesium (mg/L)	9.8	ORSANCO ; 6/06-7/11; n=37; 7<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Manganese	65.8	ORSANCO ; 6/06-7/11; n=37; 7<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Mercury (ng/L)	2	ORSANCO ; 6/06-7/11; n=37; 15<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Nickel	2.8	ORSANCO ; 6/06-7/11; n=37; 7<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Nitrate + Nitrite (mg/L)	0.73	OEPA; 1988; n=5852; 463<MDL; Unimpacted Stream Data, 50 Percentile
Phenolics		No representative data available.
Silver	0.05	ORSANCO ; 6/06-7/11; n=37; 37<MDL; Bimonthly Sampling and Clean Metals Summary Statistics
Strontium	685	OEPA; 1999-02; n=1730; 1730<MDL; OEPA Ba and St Study - 50th Percentile
Toluene		No representative data available.
Zinc	5.8	ORSANCO ; 6/06-7/11; n=37; 7<MDL; Bimonthly Sampling and Clean Metals Summary Statistics

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

Parameter	Units	Average		Maximum		Inside
		Human Health	Agri Supply	Aquatic Life	Aquatic Life	Mixing Zone Maximum
Aluminum	µg/L	--	--	--	--	--
Ammonia-Summer	mg/L	--	--	--	--	--
Ammonia-Winter	mg/L	--	--	--	--	--
Barium	µg/L	--	--	18394	22581	4000
Cadmium	µg/L	--	20963	314	70	12
Chlorine	mg/L	--	--	1.2	0.22	0.038
Chloroform	µg/L	23922	--	14898	15004	2600
Chromium	µg/L	--	41340	11548	25375	4500
Dissolved Hexavalent Chromium	µg/L	--	--	1171	185	31
Copper	µg/L	1369481	208959	1056	186	36
Free Cyanide	mg/L	739	--	0.55	0.25	0.044
Total Filterable Residue	mg/L	--	--	119354	--	--
Iron	µg/L	--	1873134	--	--	--
Lead	µg/L	--	41716	905	1956	350
Magnesium	mg/L	--	--	--	--	--
Manganese	µg/L	--	--	--	--	--
Mercury [A]	ng/L	12	10000	910	1700	3400
Nickel	µg/L	640690	82763	6728	6780	1200
Nitrate + Nitrite	mg/L	9782	41662	--	--	--
Phenolics	µg/L	5276	--	--	--	--
Silver	µg/L	52705	--	133	28	5.1
Strontium	µg/L	--	--	2162505	454439	81000
Toluene	µg/L	7175016	--	6598	6463	1100
Zinc	µg/L	9595746	10489480	15351	1670	300

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

Table 11. Parameter Assessment

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

Aluminum	Magnesium	Manganese

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

Chloroform	Chromium	Dissolved Hexavalent
Free Cyanide	Nickel	Chromium
Silver	Strontium	Toluene

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

Barium	Chlorine	Total Dissolved Solids
Iron	Lead	Nitrate + Nitrite
Phenolics		

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

Cadmium	Zinc

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

Limits to Protect Numeric Water Quality Criteria

			Recommended Effluent Limits	
Parameter	Units	Period	Average	Maximum
Copper	µg/L		--	36
Mercury	ng/L		12	1700

* WLA = Wasteload Allocation, WQS = Water Quality Standards, PEL = Projected Effluent Limit, PEQ = Projected Effluent Quality

Table 12. Final Effluent Limits and Monitoring Requirements

		Effluent Limitations				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Basis[b]
Temperature	°C	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M, EP
Dissolved Oxygen	mg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		WQS, EP
Total Suspended Solids	mg/L	30.0	45.0[c]	738.1	1107.1	PD, EP
Oil and Grease	mg/L	--	10.0	--	246.03	WQS, EP
Ammonia	mg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		PD, EP
Orthophosphate	mg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		ORSANCO
Total Kjeldahl Nitrogen	mg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M, EP
Nitrite + Nitrate	mg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M, EP
Phosphorus	mg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M, EP
Nickel	µg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M, EP
Zinc	µg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		RP
Cadmium	µg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		RP
Lead	µg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M, EP
Chromium	µg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M, EP
Copper	µg/L	--	36.0	--	0.886	RP
Dissolved Hexavalent Chromium	µg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M, EP
Fecal Coliform						
Summer	#/100mL	200	400[c]	--	--	ORSANCO
Winter	#/100mL	1000	2000[c]	--	--	ORSANCO
Flow	MGD	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M, EP
Chlorine	mg/L	--	0.038	--	--	WQS
Mercury	ng/L	18.4	1700	0.00046	0.0419	RP, VAR
Whole Effluent Toxicity – *Ceriodaphnia dubia* and *Pimephales promelas*						
Acute	TU_a	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		WET
pH	S.U.	- - - - - - - - - - - -	6.5 to 9.0	- - - - - - - - - - - -		WQS, EP
$CBOD_5$[d]	mg/L	25	40[c]	615.1	984.1	PD, EP

[a] Effluent loadings based on average design discharge flow of 6.5 MGD.

[b] Definitions: BEJ = Best Engineering Judgment;
EP = Existing Permit;
M = BEJ of Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges;
ORSANCO = Ohio River Valley Water Sanitation Commission guidance;
PD = Plant Design Criteria;
RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits [OAC 3745-33-07(A)];
VAR = Mercury variance-based limits [OAC 3745-33-07(D)(10)]
WET = Minimum testing requirements for whole effluent toxicity [OAC 3745-33-07(B)(11)]
WQS = Ohio Water Quality Standards (OAC 3745-1-07).

[c] Weekly average limit.

[d] $CBOD_5$ = 5-day carbonaceous biochemical oxygen demand