National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for Jackson Wastewater Treatment Plant (WWTP)

Public Notice No.: 16-04-028
Public Notice Date: April 22, 2016
Comment Period Ends: May 22, 2016

Ohio EPA Permit No.: 0PD00008*KD
Application No.: OH0020834

Name and Address of Applicant:
City of Jackson
145 Broadway Street
Jackson, OH 45640

Name and Address of Facility Where Discharge Occurs:
Jackson WWTP
225 Wood Ave.
Jackson, OH 45640
Jackson County

Receiving Water: Salt Lick Creek

Subsequent Stream Network: Salt Creek, Scioto River, Ohio River

Introduction

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

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

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 previous permit, although some monitoring frequencies have changed: flow, temperature, dissolved oxygen, CBOD5, total suspended solids, ammonia-nitrogen, total phosphorus, nitrite+nitrate-nitrogen, total Kjeldahl nitrogen, oil and grease, pH, total residual chlorine, total precipitation, free cyanide, cadmium, total chromium, lead, nickel, E. coli, zinc, selenium, copper, and silver.

Limits are proposed to be removed for low level mercury, bis(2-ethylhexyl)phthalate, and total dissolved solids because effluent data show that they no longer have the reasonable potential to contribute to exceedances of water quality standards. Monitoring is proposed to continue.

New monitoring is proposed for dissolved orthophosphate. This monitoring is required by Ohio Senate Bill 1, which was signed by the Governor on April 2, 2015. Monitoring for orthophosphate is proposed to further develop nutrient datasets for dissolved reactive phosphorus and to assist stream and watershed assessments and studies.

New monitoring requirements are proposed for arsenic, dissolved hexavalent chromium, and molybdenum at outfalls 001 and 601 and barium at outfall 001. Additional data is needed to evaluate its status in the Jackson effluent.

Monitoring for thallium is proposed to be removed. Effluent data show that it does not pose an environmental hazard in the Jackson plant effluent.

Annual chronic toxicity monitoring with the determination of acute endpoints is proposed for the life of the permit. This satisfies the minimum testing requirements of Ohio Administrative Code (OAC) 3754-33-07(B)(11) and will adequately characterize toxicity in the plant's effluent.

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.

To ensure that data is obtained that allows Ohio EPA to make water quality-related decisions regarding cadmium, selenium, silver and lead; a special condition is proposed in Part II of the permit that provides guidance on the analytical method detection limits (MDLs) the permittee should use in analyzing for these contaminants.

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; pretreatment program requirements; and outfall signage.

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Procedures for Participation in the Formulation of Final Determinations

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

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

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

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

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

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

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

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

For additional information about this fact sheet or the draft permit, contact Jack Knapp, (740) 380-5268, jack.knapp@epa.ohio.gov .

Information Regarding Certain Water Quality Based Effluent Limits

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

available at the time the permit was drafted, which included the contents of the timely submitted NPDES permit renewal application, along with any and all pertinent information available to the Director.

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

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

Should the applicant need additional time to review, obtain or develop site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness of achieving compliance with these limitations, 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 Jackson WWTP discharges to Salt Lick Creek at River Mile 22.1. Figure 1 shows the approximate location of the facility.

This segment of the Salt Lick Creek is described by Ohio EPA River Code: 02-610, U.S. EPA River Reach Code: 05060002-031, County: Jackson, Ecoregion: Western Allegheny Plateau. The Salt Lick Creek is designated for the following uses under Ohio's WQS (OAC 3745-1- 9): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Class B Primary Contact Recreation (PCR).

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

Use designations for aquatic life protection include habitats for coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal CWA. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the CWA goals because of human-caused conditions that cannot be remedied without causing fundamental changes to land use and widespread economic impact. The dredging and clearing of some small streams to support agricultural or urban drainage is the most common of these conditions. These streams are given Modified Warmwater or Limited Resource Water designations.

Recreation uses are defined by the depth of the waterbody and the potential for wading or swimming. Uses are defined for bathing waters, swimming/canoeing (Primary Contact Recreation) and wading only (Secondary Contact which are generally waters too shallow for swimming or canoeing).

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

Facility Description

The Jackson WWTP was constructed in 1951 and last upgraded in 2009. The average design flow is 3.79 million gallons per day (MGD). The Jackson WWTP has the following treatment processes which are shown on Figure 2:

- Screening
- Grit Removal
- Comminution
- Flow Equalization
- Primary Settling

Plant 1 (ADF of 2.0 MGD):

- Aeration Basin
- Membrane Bioreactor

Plant 2 (ADF of 1.79 MGD):

- Oxidation Ditches
- Final Clarification
- Tertiary Filtration

Disinfection and Nutrient Removal:

- Post Aeration
- Chemical Precipitation
- Chlorination
- Dechlorination

The City of Jackson has 100% separated sewers in the collection system.

The City of Jackson does have an approved pretreatment program. Based on information from their 2015 NPDES renewal application, the City of Jackson has 10 industrial users including 1 categorical facility and 1 significant non-categorical facility that collectively discharge approximately 0.5948 MDG to the Jackson WWTP.

The City of Jackson's potable water comes from a surface water reservoir owned by the city.

The Jackson WWTP utilizes the following sewage sludge treatment processes:

- Sludge Storage Tank
- Aerobic Digestion
- Sand Drying Beds

Treated sludge is land applied. Table 1 shows the last five years of sludge removed from the Jackson WWTP.

The City of Jackson is subject to the following additional conditions: a Ohio EPA Consent Order that addressed its pretreatment program; treatment plant upgrades and bypass elimination; capacity, management, operation and maintenance of its collection system (CMOM); developing an overflow emergency response plan; elimination of sanitary sewer overflows in the downtown area; and development of a system evaluation and capacity assurance plan (SECAP).

Description of Existing Discharge

The Jackson WWTP had several effluent violations which are shown on Table 2.

The City of Jackson estimates there is an infiltration/inflow (I/I) rate to the collection system of 0.13 MGD. The average annual effluent flow rate for the Jackson WWTP for the previous five years is presented on Table 3. The City of Jackson performs the following activities to minimize I/I: smoke/dye testing, regular sewer inspections, regular sewer repairs, video mapping, and micro-flow monitoring.

The City of Jackson reports SSOs at station 300. The number of SSOs and dates recorded is presented on Table 4.

Table 5 presents chemical specific data compiled from data reported in annual pretreatment reports.

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

Table 7 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period of January 2012 to September 2015, and current permit limits are provided for comparison.

Table 8 summarizes the chemical specific data for outfall 001 by presenting the average and maximum PEQ values.

Table 9summarizes the results of acute and chronic WET tests of the final effluent.

Under the provisions of 40 CFR 122.21(j), the Director has waived the requirement for submittal of expanded effluent testing data as part of the NPDES renewal application. Ohio EPA has access to substantially identical information through the submission of annual pretreatment program reports and/or from Ohio EPA effluent testing conducted.

Assessment of Impact on Receiving Waters

The Horse Creek – Little Salt Creek watershed assessment unit, which includes Salt Lick Creek in the vicinity of the Jackson WWTP is listed as impaired for recreation and aquatic life on Ohio's 303(d) list.

A Total Daily Maximum Load (TMDL) report was approved for the Salt Creek Watershed 0n 08/12/09. The March 24, 2015, Supreme Court of Ohio decision *Fairfield Cty. Bd. of Commrs. v. Nally, Slip Opinion No. 2015-Ohio-991* vacated all previously approved TMDLs. As of February 3, 2015, this TMDL is considered a technical guidance document pending final TMDL approval.

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

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

Three attainment status results are possible at each sampling location -full, partial, or non-attainment. Full attainment means that all of the applicable indices meet the biocriteria. Partial attainment means that one or more of the applicable indices fails meet the biocriteria. Nonattainment means that either none of the applicable indices meet the biocriteria or one of the organism groups indicates poor or very poor performance. An aquatic life use attainment table (see Table 10) is constructed based on the sampling results and is arranged from upstream to downstream and includes the sampling locations indicated by river mile, the applicable biological indices, the use attainment status (i.e., full, partial, or non), the Qualitative Habitat Evaluation Index, and comments and observations for each sampling location.

The Salt Lick Creek watershed is impaired due to the following: nutrients, sedimentation, organic enrichment, stream alteration, and storm water runoff. The full TMDL report can be found at this website: http://epa.ohio.gov/portals/35/tmdl/SaltSciotoTMDL_final_jun09.pdf

The city of Jackson's WWTP was evaluated during the 2009 TMDL. The four sites evaluated downstream of the outfall were listed as partial attainment due to the discharge from the WWTP. This impairment was addressed through a Category 4B demonstration. Following upgrades at the Jackson WWTP, a special study performed 2011 showed full attainment of aquatic life standards in Salt Lick Creek.

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 Jackson WWTP were used to determine what parameters should undergo WLA. The parameters discharged are identified by the data available to Ohio EPA DMR data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	January 2012 through August 2015
Pretreatment data	2012, 2013, 2014
Ohio EPA compliance sampling data	2014

Statistical Outliers and Other Non-representative Data
The data were examined and the following values were removed from the evaluation to give a more reliable PEQ: Summer Ammonia – 19.1 mg/l on 8/14/13, the reason for this exclusion was a high statistical outlier; Copper – 14.8 ug/l on 12/17/12, the reason for this exclusion was a high statistical outlier.

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95th percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95th percentile of all data points (See Table 8).

The PEQ values are used according to Ohio rules to compare to applicable WQS and allowable WLA values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no WLA is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required (See Table 14).

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

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

Aquatic life (Warmwater Habitat)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10

Ammonia	Maximum Average	Annual 1Q10 Summer 30Q10 Winter 30Q10
Agricultural Water Supply		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 12, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

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

Whole Effluent Toxicity WLA

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

WQS for WET are expressed in Ohio's narrative "free from" WQS rule [OAC 3745-1-04(D)]. These "free froms" are translated into toxicity units (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 the Jackson WWTP, the WLA values are 0.3 TU_a and 1.06 TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the estimate of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms (IC_{25}):

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

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

TU_c = 100/geometric mean of No Observed Effect Concentration and Lowest Observed Effect Concentration

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

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

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

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

Dilution Ratio	Allowable Effluent Toxicity
(downstream flow to discharger flow)	(percent effects in 100% effluent)

Up to 2 to 1	30
Greater than 2 to 1 but less than 2.7 to 1	40
2.7 to 1 to 3.3 to 1	50

The acute WLA for Jackson WWTP is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.0 to 1.

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 13. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 8, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [($PEQ_{avg} \div PEL_{avg}$) X 100, or ($PEQ_{max} \div PEL_{max}$) X 100)], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 14.

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

Water Temperature, Total Precipitation, and Flow Rate
Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

Dissolved Oxygen, Total Suspended Solids, Ammonia and 5-day Carbonaceous Biochemical Oxygen Demand
The limits proposed for dissolved oxygen, total suspended solids, copper, ammonia and 5-day carbonaceous biochemical oxygen demand are all based on plant design criteria. These limits are protective of WQS.

Oil and Grease, pH, Phosphorus and Escherichia coli
Limits proposed for oil and grease, pH, and *Escherichia coli* are based on WQS (OAC 3745-1-07). Class B PCR *E. coli* standards apply to Salt Lick Creek.

Based on best technical judgment, it is proposed that the current limits for total phosphorus be continued. The limits are design criteria for the Jackson treatment plant.

Chlorine
The proposed limit for total residual chlorine is based on WLA (Table 13) and is a continuation of the existing permit limit .

Selenium and Silver
The Ohio EPA risk assessment (Table 14) places Selenium and Silver in group 5, which recommends limits to protect water quality. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), monitoring rather than limits is proposed for these parameters. The PEQ values calculated for Selenium and Silver (Table 8) may not be representative of their actual levels in the plant effluent since they were based on 1 data point. The purpose of the proposed monitoring is to collect additional data on the frequency of occurrence and variability of these pollutants in the plant's effluent.

For both of these parameters, the MDLs (minimum detection limits) reported on the DMRs are not low enough to determine if the plant effluent is protective of water quality standards. To address this, a special condition is proposed in Part II of the permit that specifies MDLs the City must use when conducting analyses for these parameters. A tracking condition is also proposed that requires the City to notify Ohio EPA when results greater than the WLAs are reported. If certain conditions are met, the City is required to take action to reduce the level of the pollutants in the plant discharge.

Total Kjeldahl Nitrogen and Nitrite+Nitrate
Monitoring is proposed to continue for total kjeldahl nitrogen (TKN), nitrite+nitrate, and phosphorus in order to assist in the evaluation of effluent quality in accordance with Ohio EPA guidance. Monitoring for these parameters is important in order to provide data for potential nutrient sources in the Salt Creek watershed.

Dissolved Orthophosphate
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. Monitoring for orthophosphate is proposed to further develop nutrient datasets for dissolved reactive phosphorus and to assist stream and watershed assessments and studies. Ohio EPA monitoring, as well as other in-stream monitoring, is taken via grab sample, orthophosphate is proposed to be collected by grab sample to maintain consistent data to support watershed and stream surveys. Monitoring will be done by grab sample, which must be filtered within 15 minutes of collection using a 0.45-micron filter. The filtered sample must be analyzed within 48 hours.

Nickel, Zinc, Cadmium, Lead, Chromium, Mercury, Copper, and Free Cyanide
The Ohio EPA risk assessment (Table 14) places these parameters in groups 2 and 3. This placement, as well as the data in Tables 7 and 8, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring at a low frequency is proposed to document that these pollutants continue to remain at low levels.

Total Filterable Residue, Bis(2-ethylhexyl)phthalate, and Barium
The Ohio EPA risk assessment (Table 14) places total filterable residue, Bis(2-ethylhexyl)phthalate, and barium in group 4. This placement, as well as the data in Tables 7 and 8, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2). Limits for total filterable residue and Bis(2-ethylhexyl)phthalate are proposed to be removed but monitoring will continue at the same frequency

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

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

New monitoring is proposed for hexavalent chromium, arsenic and molybdenum at final outfall 001 and influent station 601. Jackson implements an approved pretreatment program, and these are parameters the city must evaluate as part of its local limit technical justification. Quarterly monitoring is proposed.

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.

Other Requirements

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

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

Operator Certification and Operator of Record
Operator certification requirements have been included in Part II of the permit in accordance with rules adopted in December 2006 (OAC 3745-7-02). These rules require the Jackson WWTP to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001. These rules also require the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

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 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.

Method Detection Limit

The reported data for cadmium, lead, selenium and silver shows that the Jackson WWTP used an analytical method with a MDL that is not sensitive enough to properly evaluate the discharge with regard to the WLA for these parameters. As a result, Part II of the permit includes a condition requiring the Jackson WWTP to use an analytical methods with an appropriate MDL.

Storm Water Compliance
To comply with industrial storm water regulations, the permittee submitted a form for "No Exposure Certification" which was signed on October 22, 2015. Compliance with the industrial storm water regulations must be re-affirmed every five years. No later than October 22, 2020, the permittee must submit a new form for "No Exposure Certification" or make other provisions to comply with the industrial storm water regulations.

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

Figure 1. Location of the Jackson WWTP

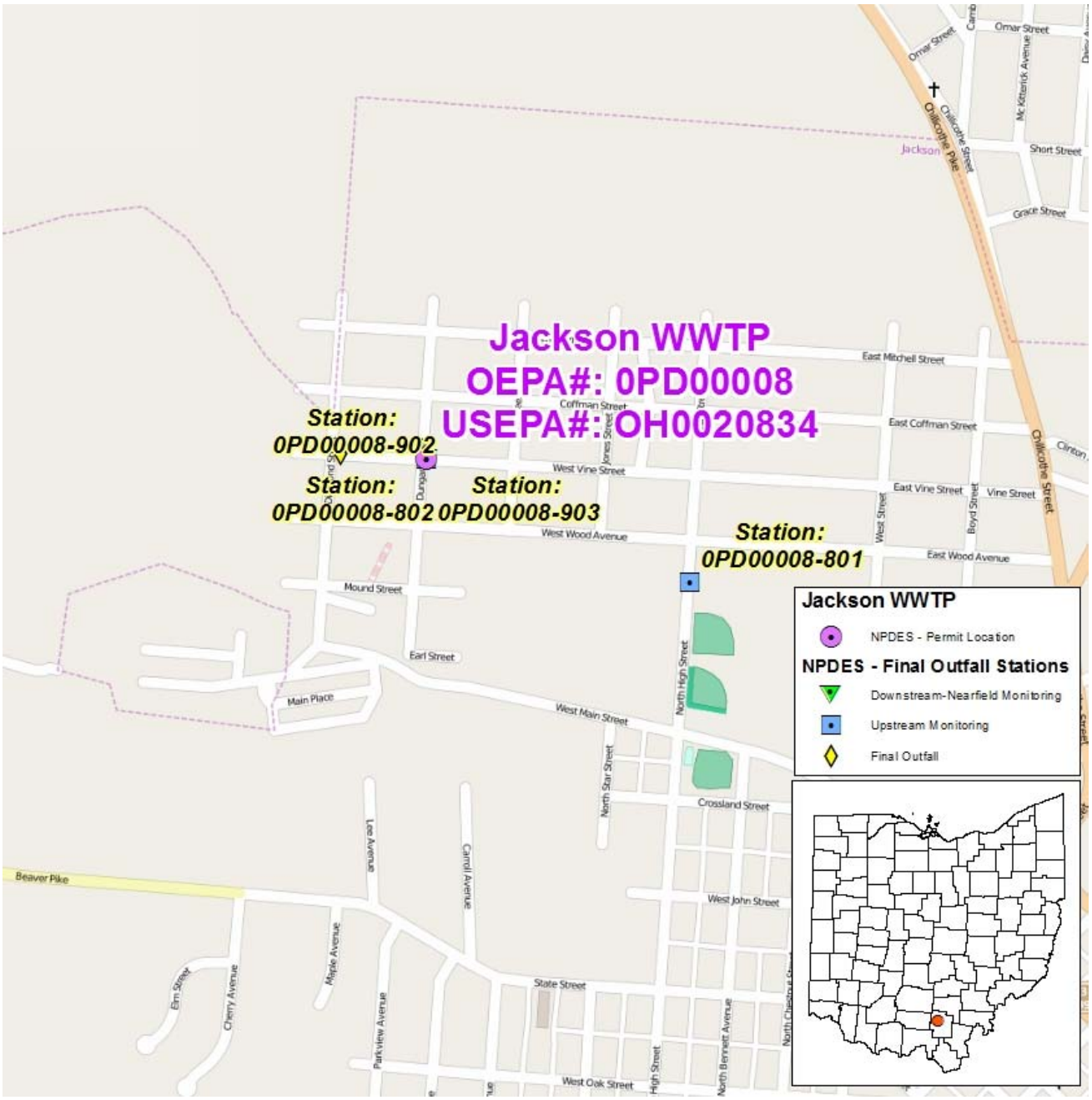

Figure 2. Diagram of Wastewater Treatment System

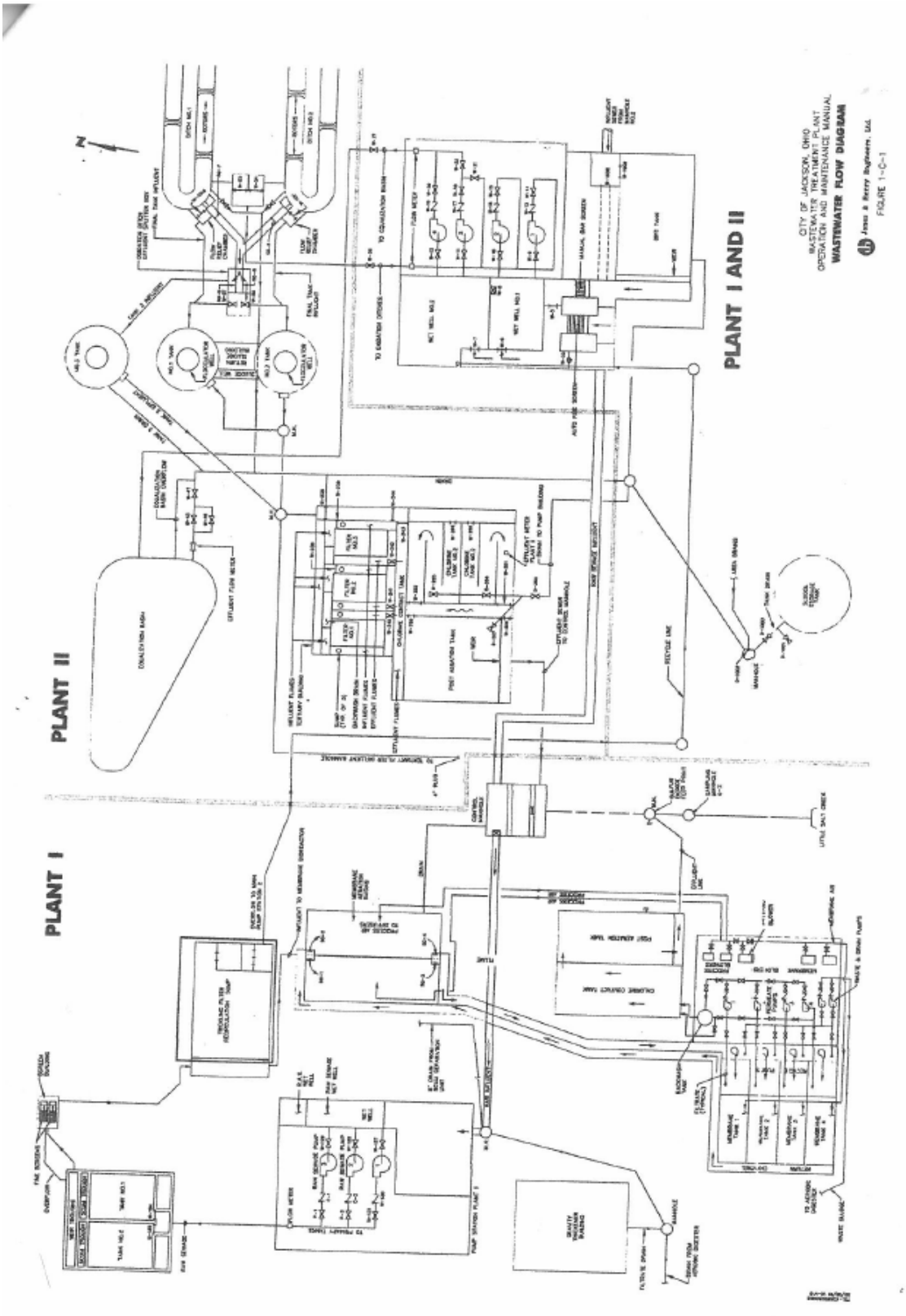

Table 1. Sewage Sludge Removal

Year	Dry Tons Removed
2010	359.42
2011	179.276
2012	452.01
2013	464.21
2014	383.35

Table 2. Effluent Violations for Outfall 001

Parameter	2012	2013	2014	2015
Carbonaceous Biochemical Oxygen Demand (5 day)		5		
Chlorine, Total Residual		3	5	6
Dissolved Oxygen	1			
E. Coli	1		1	1
Nitrogen Ammonia		9		
Phosphorus	1	4	2	
Total Suspended Solids		7		1
Total	3	28	8	8

Table 3. Average Annual Effluent Flow Rates

Year	Annual Flow in MGD		
	50th Percentile	95th Percentile	Maximum
2010	1.896	4.1	7.92
2011	2.29	5.48	8.46
2012	1.83	4.42	8.59
2013	1.87	3.73	5.85
2014	1.80	3.46	7.32

MGD = million gallons per day

Table 4. Sanitary Sewer Overflows Discharges

Year	Number
2010	23
2011	31
2012	11
2013	14
2014	6

Table 5. Effluent Characterization Using Pretreatment Data

Parameter (µg/L)	6/6/2012	6/3/2013	8/4/2014
Antimony	AA (5)	*	*
Arsenic	AA (5)	*	*
Beryllium	AA (0.5)	*	*
Bis(2-Ethylhexl) Phthalate	AA (6)	AA (6)	5.4
Bromodichloromethane	7.15	7.55	AA (5)
Cadmium	AA (2)	*	*
Chloroform	7.43	9.25	AA (5)
Chromium	AA (5)	*	*
Copper	5.02	*	*
Dibromochloromethane	AA (5)	6.07	AA (5)
Lead	AA (5)	*	*
Mercury	AA (0.2)	*	*
Nickel	AA (5)	*	*
Selenium	AA (10)	*	*
Silver	AA (0.5)	*	*
Thallium	AA (1)	*	*
Zinc	10.3	*	*

*Data already reported on discharge monitoring reports.

Table 6. Effluent Characterization Using Ohio EPA data

Parameter	Units	Outfall 001
Aluminum	µg/L	273
Ammonia	mg/L	AA (0.05)
Arsenic	µg/L	AA (2)
Barium	µg/L	28
Bromodichloromethane	µg/L	AA (0.5)
Cadmium	µg/L	AA (0.2)
Calcium	mg/L	56
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	AA (2)
Chloride	mg/L	265
Chloroform	µg/L	AA (0.5)
Chromium	µg/L	AA (2)
Copper	µg/L	4.1
Cyanide, Free	mg/L	AA (5)
Dibromochloromethane	µg/L	AA (0.5)
Iron	µg/L	63
Lead	µg/L	AA (2)
Magnesium	µg/L	31
Manganese	µg/L	AA (10)
Mercury	µg/L	AA (0.2)
Nickel	µg/L	6.1
Nitrate+Nitrite	mg/L	19.7
Oil & Grease	mg/L	AA (2.3)
Phosphorus	mg/L	0.351
Selenium	µg/L	AA (2)
Strontium	µg/L	228
Total Filterable Residue (Dissolved Solids)	mg/L	882
Total Kjeldahl Nitrogen	mg/L	0.56
Total Suspended Solids	mg/L	AA (5)
Zinc	µg/L	10

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

Table 7. Effluent Characterization Using Self-Monitoring Data

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50th	95th	
Outfall 001								
Water Temperature	Annual	C	Monitor Only		1337	20.7	29.9	1.7-32.5
Total Precipitation	Annual	Inches	Monitor Only		1339	0	0.723	0-3.67
Dissolved Oxygen	Summer	mg/l	6.0 Minimum		673	8.25	9.27	5.27-10.4
	Winter	mg/l			664	9.93	11.1	6.14-18.2
Total Suspended Solids	Annual	mg/l	10	15	559	2.9	8.65	0.7-185
Oil and Grease, Hexane Extr Method	Annual	mg/l	10 Maximum		87	0	0	0-4.67
Nitrogen, Ammonia (NH3)	Summer	mg/l	1.6	2.4	279	0	0.261	0-19.1
Nitrogen, Ammonia (NH3)	Winter	mg/l	3	4.5	268	0	2.83	0-10.4
Nitrogen Kjeldahl, Total	Annual	mg/l	Monitor Only		44	0	2.87	0-17.6
Nitrite Plus Nitrate, Total	Annual	mg/l	Monitor Only		44	29.2	46.7	7.01-120
Phosphorus, Total (P)	Annual	mg/l	1	1.5	380	0.685	1.15	0.234-2.16
Cyanide, Free	Annual	mg/l	Monitor Only		16	0	0	0-0
Selenium, Total Recoverable	Annual	ug/l	Monitor Only		46	0	0	0-13.2
Thallium, Total Recoverable	Annual	ug/l	Monitor Only		46	0	0	0-0
Nickel, Total Recoverable	Annual	ug/l	Monitor Only		15	0	4.2	0-14
Silver, Total Recoverable	Annual	ug/l	Monitor Only		15	0	0.798	0-2.66
Zinc, Total Recoverable	Annual	ug/l	Monitor Only		15	10.2	14.6	0-15.3
Cadmium, Total Recoverable	Annual	ug/l	Monitor Only		15	0	0	0-0
Lead, Total Recoverable	Annual	ug/l	Monitor Only		15	0	0	0-0
Chromium, Total Recoverable	Annual	ug/l	Monitor Only		15	0	0	0-0
Copper, Total Recoverable	Annual	ug/l	Monitor Only		15	0	9.47	0-14.8
E. coli	Annual	#/100 ml	161	362	270	24.5	595	1-52000
Bis(2-ethylhexyl) Phthalate	Annual	ug/l	8.8	1128	15	0	1.46	0-2.47
Flow Rate	Annual	MGD	Monitor Only		1339	1.84	4.36	0.881-8.61
Chlorine, Total Residual	Annual	mg/l	0.020 Maximum		469	0	0	0-1.56
Mercury, Total (Low Level)	Annual	ng/l	12	(1700 Max)	45	0.98	4.64	0-6.76
Acute Toxicity, Ceriodaphnia dubia	Annual	TUa	Monitor Only		5	0	0	0-0
Acute Toxicity, Pimephales promelas	Annual	TUa	Monitor Only		5	0	0.952	0-1.19
pH, Maximum	Annual	S.U.	9		916	7.87	8.17	7.35-8.81
pH, Minimum	Annual	S.U.	6.5		916	7.76	7.98	7.15-8.28
Residue, Total Filterable	Annual	mg/l	1565	-	87	880	1180	500-1380
CBOD 5 day	Summer	mg/l	10	15	273	0	2.7	0-5.4
CBOD 5 day	Winter	mg/l			277	0	11.3	0-207

Table 8. Projected Effluent Quality

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia-S	mg/l	184	14	0.15993	0.35257
Ammonia-W	mg/l	139	13	0.30267	0.41461
Barium	ug/l	1	1	126.728	173.6
Bis(2-ethylhexyl)phthalate	ug/l	16	3	5.913	8.1
Bromodichloromethane	ug/l	4	2	14.3299	19.63
Cadmium	ug/l	17	0	--	--
Chlorine	mg/l	469	14	0.21508	0.14418
Chloroform	ug/l	4	2	17.5565	24.05
Chromium	ug/l	17	0	--	--
Copper	ug/l	16	7	6.0189	8.1353
Cyanide - Free	mg/l	16	0	--	--
Dibromochloromethane	ug/l	4	1	11.52086	15.782
Dissolved solids (ave)	mg/l	88	88	1080.6	1310.4
Iron		1	1	285.138	390.6
Lead	ug/l	17	0	--	--
Mercury	ug/l	47	30	3.2659	5.2773
Nickel	ug/l	16	2	15.33	21
Nitrate-N + Nitrite-N	mg/l	45	45	46.672	66.884
Phosphorus	mg/l	381	381	0.89742	1.303
Selenium	ug/l	48	1	10.5996	14.52
Silver	ug/l	17	1	2.71852	3.724
Strontium	ug/l	1	1	1031.928	1413.6
Thallium	ug/l	48	0	--	--
TKN	mg/l	45	20	3.8662	5.528
Zinc	ug/l	17	10	13.79	17.833

MDL = analytical method detection limit
PEQ = projected effluent quality

Table 9.a. Summary of Acute and Chronic Toxicity Results

	Ceriodaphnia Dubia		*Pimephales promelas*	
Date	**TU_a**	**TU_c**	**TU_a**	**TU_c**
3/23/2010	AA	AA	AA	AA
6/20/2010	AA	AA	AA	AA
8/1/2010	AA	1.72	AA	AA
12/5/2010	AA	AA	AA	AA
3/11/2011	AA	AA	AA	AA
6/10/2011	AA	AA	AA	AA
8/12/2011	AA	1.41	AA	AA
12/9/2011	AA	AA	AA	AA
3/16/2012	AA	AA	AA	AA
6/3/2012	AA	AA	AA	AA
8/15/2012	AA	AA	AA	2.3
12/16/2012	AA	AA	AA	AA
3/22/2013	AA	1.41	1.19	1.56

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

* An upset of the Bellisio pretreatment system led to the high results reported on 3/22/13.

Table 9.b. Summary of Ohio EPA Acute Screening Toxicity Test

	Pimephales promelas %M		*Ceriodaphnia dubia* %M	
Date	24 hours	48 hours	24 hours	48 hours
2/4/2014	0	0	0	0
2/5/2014	0	0	0	0
2/4/14-2/5/14[a]	0	0	0	0

[a] = 24-hour composite sample
%M = percent mortality in 100% effluent

Table 10. Use Attainment Table

River Mile Fish/Invertebrate	IBI	MIwb[a]	ICI[b]	QHEI	Attainment Status[c]	Causes	Sources/ Comments
Salt Lick Creek (Trib to Salt Creek at RM 4.5)					*WAP Ecoregion - WWH Existing*		
27.9[H]	12*	N/A	P*	23.5	**NON**	Channelization Loss of trees in riparian corridor Siltation	Row crop (Agriculture)
26.8[H]/27.0	34*	N/A	30*	52	**NON**	Channelization Siltation Nutrient/organic enrichment	Row crop (Agriculture) Livestock access to stream
22.6[W]/22.5	46	8.6	F*	66	PARTIAL	Nutrient/organic enrichment	Failing sewage collection system (City of Jackson) Run-off from OSCO, possible toxic sediment
22.1[W]	46	8.7	22*	61	PARTIAL	Nutrient/organic enrichment	Failing sewage collection system (City of Jackson)
20.6[W]	45	7.2*	36	62.5	PARTIAL	Nutrient/organic enrichment	Failing sewage collection system (City of Jackson)
20.4[W]	44	7.8*	30*	62.5	PARTIAL	Nutrient/organic enrichment	Failing sewage collection system (City of Jackson)
19.5[W]	49	8.3[NS]	40	65.5	FULL		
18.2[W]	48	8.6	42	76.5	FULL		
16.7[W]/16.8	45	8.7	40	62.0	FULL		Historic Fish kills (IBI swing between passes)
14.7[W]/14.0	42[NS]	8.1[NS]	38	64.5	FULL		
7.2[W]/7.4	53	9.0	36	75.0	FULL		
--/0.5	--	--	36	55.5	(FULL)		

Ecoregion Biocriteria: Western Allegheny Plateau

	IBI			MIwb			ICI		
Site Type	WWH	EWH	MWH	WWH	EWH	MWH	WWH	EWH	MWH
Headwaters	44	50	24	N/A	N/A	N/A	36	46	22
Wading	44	50	24	8.4	9.4	4.0	36	46	22
Boat	40	48	24	8.6	9.6	4.0	36	46	22

H Headwater site.
W Wading site.
B Boat site.
a MIwb is not applicable to headwater streams with drainage areas ≤ 20 mi^2.
b A narrative evaluation of the qualitative sample based on attributes such as EPT taxa richness, number of sensitive taxa, and community composition was used when quantitative data were not available or considered unreliable due to sampling constraints. VP=Very Poor, P=Poor, LF=Low Fair, F=Fair, MG=Marginally Good, G=Good, VG=Very Good, E=Exceptional
c Attainment status is given for both existing and proposed use designations.
ns Nonsignificant departure from biocriteria (≤4 IBI or ICI units, or ≤0.5 MIwb units).
* Indicates significant departure from applicable biocriteria (>4 IBI or ICI units, or >0.5 MIwb units). Underlined scores are in the Poor or Very Poor range.
N/A Not applicable.

Table 11. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia-S	mg/l	--	--	1.6	--	--
Ammonia-W	mg/l	--	--	6.4	--	--
Arsenic	ug/l	--	100	150	340	680
Barium	ug/l	--	--	220	2000	4000
Bis(2-ethylhexyl)phthalate	ug/l	59c	--	8.4	1100	2100
Cadmium	ug/l	--	50	3.6	7.7	15
Chlorine	mg/l	--	--	0.011	0.019	0.038
Chromium	ug/l	--	100	130	2600	5300
Copper	ug/l	1300	500	14	22	44
Cyanide - free	mg/l	220	--	0.012	0.046	0.092
Dissolved solids (ave)	mg/l	--	--	1500	--	--
Lead	ug/l	--	100	12	220	450
Mercury	ng/l	12	10000	910	1700	3400
Molybdenum	ug/l	--	--	20000	190000	370000
Nickel	ug/l	4600	200	78	700	1400
Nitrate-N + Nitrite-N	mg/l	--	100	--	--	--
Selenium	ug/l	11000	50	5	--	--
Silver	ug/l	--	--	1.3	3.6	7.2
Thallium	ug/l	6.3	--	17	79	160
TKN	mg/l	--	--	--	--	--
Zinc	ug/l	69000	25000	180	180	360

Table 12. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	0.26	USGS Streamstats
7Q10	cfs	annual	0.36	USGS Streamstats
30Q10	cfs	summer	0.36	USGS Streamstats
		winter	0.63	USGS Streamstats
Harmonic Mean	cfs	annual	6.44	USGS Streamstats
Mixing Assumption	%	average	100	
	%	maximum	100	
Hardness	mg/l	annual	160	Station 901 (1/1/11 – 9/1/15)
pH	S.U.	summer	7.675	Station 901 (1/1/11 – 9/1/15)
		winter	7.61	Station 901 (1/1/11 – 9/1/15)
Temperature	C	summer	24.55	Station 901 (1/1/11 – 9/1/15)
		winter	10.2	Station 901 (1/1/11 – 9/1/15)
Jackson WWTP	cfs	annual	5.86313	Plant Daily Design Flow
Background Water Quality				
Ammonia - S	mg/L		0	Ohio EPA; 2011-2014; n=19;18<MDL; Station 801
Ammonia - W	mg/L		0	Ohio EPA; 2011-2014;n=1;1<MDL; Station 801
Barium	ug/L		62	EA3; (7/12/11,8/2/11,8/18/11,2/3/14); n=4; 0<MDL
Chromium	ug/L		1.325	EA3; (7/12/11,8/2/11,8/18/11,2/3/14); n=4; 3<MDL
Copper	ug/L		2.5	EA3; (7/12/11,8/2/11,8/18/11,2/3/14); n=4; 1<MDL
Dissolved Solids	mg/L		232	EA3; (7/12/11,8/2/11,8/18/11,2/3/14); n=4; 0<MDL
Iron	ug/L		2071.25	EA3; (7/12/11,8/2/11,8/18/11,2/3/14); n=4; 0<MDL
Lead	ug/L		1.75	EA3; (7/12/11,8/2/11,8/18/11,2/3/14); n=4; 3<MDL
Nickel	ug/L		3.625	EA3; (7/12/11,8/2/11,8/18/11,2/3/14); n=4; 0<MDL
Nitrate + Nitrite	mg/L		0.299	Ohio EPA; 2011-2014;n=51; 10<MDL; Station 801
Strontium	ug/L		145.75	EA3; (7/12/11,8/2/11,8/18/11,2/3/14); n=4; 0<MDL
Zinc	ug/L		8.25	EA3; (7/12/11,8/2/11,8/18/11,2/3/14); n=4; 3<MDL

MDL = analytical method detection limit
Ohio EPA = Ohio Environmental Protection Agency
USGS = United States Geological Survey

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

		Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
			Average		Maximum	
Parameter	Units	Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia-S	mg/l	--	--	--	--	--
Ammonia-W	mg/l	--	--	--	--	--
Arsenic	ug/l	--	210	159	355	680
Barium	ug/l	--	--	230	2086	4000
Bis(2-ethylhexyl)phthalate	ug/l	124	--	8.9	1149	2100
Cadmium	ug/l	--	105	3.8	8	15
Chlorine	mg/l	--	--	0.012	0.02	0.038
Chromium	ug/l	--	208	138	2715	5300
Copper	ug/l	2725	1046	15	23	44
Cyanide - free	mg/l	462	--	0.013	0.048	0.092
Dissolved solids (ave)	mg/l	--	--	1578	--	--
Lead	ug/l	--	208	13	230	450
Mercury	ng/l	12	10000	910	1700	3400
Molybdenum	ug/l	--	--	21228	198426	370000
Nickel	ug/l	9649	416	83	731	1400
Nitrate-N + Nitrite-N	mg/l	--	210	--	--	--
Selenium	ug/l	23082	105	5.3	--	--
Silver	ug/l	--	--	1.4	3.8	7.2
Thallium	ug/l	13	--	18	83	160
TKN	mg/l	--	--	--	--	--
Zinc	ug/l	144780	52451	191	188	360

Table 14. Parameter Assessment

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

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

Cadmium	Chromium	Cyanide - free
Chlorodibromomethane	Nickel	Thallium
Bromodichloromethane	Arsenic	Chrome VI-diss
Molybdenum	Zinc	Lead
Chloroform	Iron	Strontium

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

Mercury	Copper	Nitrate-N + Nitrite-N

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.

Bis(2-ethylhexyl)phthalate	Barium
Dissolved Solids (ave)	

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
Chlorine	mg/l		0.012	0.02
Selenium	ug/l		5.3	--
Silver	ug/l		1.4	3.8

PEL = preliminary effluent limit
PEQ = projected effluent quality
WLA = wasteload allocation
WQS = water quality standard

Table 15. Final Effluent Limits for Outfall 001

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Water Temperature	°C	Monitor Only				M[c]
Total Precipitation	Inches	Monitor Only				M[c]
Dissolved Oxygen	mg/L	6.0 Minimum				EP, PD
Total Suspended Solids	mg/L	10.0	15.0[d]	143	215[d]	EP, PD
Oil and Grease	mg/L	-	10	-	-	WQS
Ammonia - Summer	mg/L	1.6	2.4[d]	23.0	34.4[d]	EP, PD
Ammonia - Winter	mg/L	3.0	4.5[d]	43.0	64.6[d]	EP, PD
Total Kjeldahl Nitrogen	mg/L	Monitor Only				EP, M[c]
Nitrate+Nitrite	mg/L	Monitor Only				EP. M[c]
Phosphorus	mg/L	1.0	1.5[d]	14.3	21.5[d]	EP, PD
Orthophosphate, Dissolved (as P)	mg/L	Monitor Only				SB1
Cyanide-Free	mg/L	Monitor Only				EP, M[c]
Selenium	µg/L	Monitor Only				RP
Arsenic	µg/L	Monitor Only				BTJ
Barium	µg/L	Monitor Only				RP
Molybdenum	µg/L	Monitor Only				BTJ
Nickel	µg/L	Monitor Only				EP, M[c]
Silver	µg/L	Monitor Only				RP
Zinc	µg/L	Monitor Only				EP, M[c]
Cadmium	µg/L	Monitor Only				EP, M[c]
Lead	µg/L	Monitor Only				EP, M[c]
Chromium	µg/L	Monitor Only				EP, M[c]
Copper	µg/L	Monitor Only				EP, M[c]
Dissolved Hexavalent Chromium	µg/L	Monitor Only				BTJ
E. Coli	#/100mL	161	362[d]	-	-	WQS
Bis(2-ethylhexyl) Phthalate	µg/L	Monitor Only				RP
Flow Rate	MGD	Monitor Only				M[c]
Chlorine, Total Residual	mg/L	-	0.02	-	-	EP
Mercury	ng/L	Monitor Only				M[c]
Acute/Chronic Toxicity						
Ceriodaphnia dubia	TU_a/TU_c	Monitor Only				WET
Pimephales promelas	TU_a/TU_c	Monitor Only				WET
pH	SU	6.5 - 9.0		-	-	WQS
Residue, Total Filterable	mg/L	Monitor Only				RP
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	10.0	15.0[d]	143	215[d]	EP, PD

[a] Effluent loadings based on average design discharge flow of 3.79 MGD.

[b] Definitions:
BTJ = Best Technical Judgment
EP = Existing Permit
M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
PD = Plant Design, OAC 3745-33-05(E)
RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in permits (3745-33-07(A))
WET = Whole Effluent Toxicity (OAC 3745-33-07(B))
WQS = Ohio Water Quality Standards (OAC 3745-1)

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

[d] 7 day average limit.