

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for Toledo Water Reclamation Facility (WRF)

Public Notice No.: 16-06-033
Public Notice Date: June 23, 2016
Comment Period Ends: July 23, 2016

Ohio EPA Permit No.: 2PF00000*ND
Application No.: OH0027740

Name and Address of Applicant:

City of Toledo Bay View Water Reclamation
3900 North Summit Street, Building #1
Toledo, Ohio 43611-3097

Name and Address of Facility Where

Discharge Occurs:

Toledo Bay View Water Reclamation
3900 North Summit Street, Building #1
Toledo, Ohio
Lucas County

Receiving Water: Maumee River

Subsequent Stream Network: Maumee Bay to Lake Erie

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

Lower effluent limits are proposed for summer ammonia, both from June to September and from March to May & October and November. Ammonia limits are based upon downstream temperature and pH values. The 75th percentile of downstream temperature and pH data were calculated from station 901. Due to decreases of summer pH, the allowable summer ammonia WLA decreased and a new summer ammonia limit is needed to protect aquatic life.

Lower water-quality-based limits are proposed for mercury. Current mercury limits are proposed to decrease from a monthly concentration of 6.6 ng/L to 4.8 ng/L as the mercury variance is renewed. Past effluent data shows the facility is able to meet this new limit as mercury concentrations have greatly decreased in the past five years.

New monitoring is proposed for selenium because this parameter was placed into Group 4 of Table 16.

New monitoring is proposed for dissolved orthophosphate (as P). Monitoring is proposed based upon implementation of Senate Bill 1 [ORC 6111.03].

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

For *Ceriodaphnia dubia*, quarterly monitoring for chronic toxicity monitoring with the determination of acute endpoints is proposed to continue based upon the procedures used under 40 CFR Part 132, Appendix F - Procedure 6. In accordance with Ohio Administrative Code (OAC) 3745-33-07, it has been determined that the effluent from Toledo WRF shows chronic toxicity to *Ceriodaphnia Dubia*. A Final Monthly Effluent limit of 1.4 TUc for *Ceriodaphnia Dubia* is proposed to become effective 54 months from the effective date of the permit.

Metals parameters are being removed from the downstream monitoring station 901 and the duration of discharge (parameter code 82517) parameter is being removed from all CSO monitoring stations as the Agency no longer needs the data collected at these stations for future data analysis.

This permit no longer authorizes the use of method 4500 CN-I from Standard Methods for free cyanide testing. As soon as possible, the permittee must begin using either ASTM D7237-10 or OIA-1677-09 both of which are approved methods for free cyanide listed in 40 CFR 136.

In Part II of the permit, special conditions are included that address sanitary sewer overflow (SSO) reporting; operator certification, minimum staffing and operator of record; whole effluent toxicity (WET) testing; storm water compliance; mercury variance; pretreatment program requirements; phosphorus optimization; 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 Ryan Gierhart at (419)352-8461 or Ryan.Gierhart@epa.ohio.gov; or Andy Bachman at (614)644-3075 or Andrew.Bachman@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

Toledo WRF discharges to the Maumee River at River Mile 1.0. Figure 1 shows the approximate location of the facility.

This segment of the Maumee River is described by Ohio EPA River Code: 04-001, Large River Assessment Unit: 04100009 90 02, County: Lucas, Ecoregion: Huron/Erie Lake Plain. The Maumee River is designated for the following uses under Ohio's WQS (OAC 3745-1-11): Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, and Class A Primary Contact Recreation. The Maumee River discharges to Lake Erie.

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

Toledo WRF was constructed in 1932 and last upgraded in 2014. The average design flow is 130 million gallons per day (MGD) and the peak hydraulic capacity is 195 MGD through the conventional treatment plant and 205 MGD through the high rate treatment system, for a total peak hydraulic capacity of 400 MGD. Toledo WRF serves the City of Toledo, Village of Walbridge, City of Northwood, City of Rossford, Northern Wood County, Lost Peninsula, MI, Republic, MI, The Village of Ottawa Hills, and Sylvania Township. Toledo WRF has the following treatment processes which are shown on Figure :

- Bar Screens
- Influent Pumping
- Grit Removal - Preaeration-Ferric Addition
- Scum Removal
- Primary Sedimentation
- High Rate Clarification
- Combined Biological Nitrification and BOD
- Secondary Clarification
- Neutralization
- Chlorination - Dechlorination

- Post Aeration - Outfall Pumping

Toledo WRF has 2 bypasses. Flow bypassing the facility via the plant headworks is reported under station 002. Flow that goes through advanced primary treatment and is disinfected but bypasses secondary treatment is reported under station 603. The City of Toledo has 80% separated sewers and 20% combined sewers in the collection system.

The City of Toledo does have an approved pretreatment program. The City has 24 categorical users that discharge 4.4 MGD of flow. The City has 47 significant non-categorical users that discharge 3.48 MGD of flow.

Toledo WRF utilizes the following sewage sludge treatment processes (Figure):

- Anaerobic Digestion
- Mechanical Dewatering - Filter Press
- Gravity Thickening
- Air Floatation Thickening
- Polymer Addition
- Digester Gas Utilization Facility
- Land Spreading/Landfill

Treated sludge is land applied or disposed of in a municipal landfill. Table 1 shows the last five years of sludge removed from Toledo WRF.

Toledo WRF is subject to a U.S. EPA Consent Order for wet weather related issues. On December 16, 2002, U.S. EPA, Ohio EPA and the City of Toledo entered into a Consent Decree to resolve a civil suit brought against the City for alleged violations of the Clean Water Act and noncompliance with the City's NPDES permit for the WRF. Among other things, the Consent Decree required the City to develop a Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP).

The City installed a separate treatment train at the WRF to manage wet weather flows, becoming operational in 2006. Wet weather treatment units include a pumping station, grit removal, ballasted flocculation, a 25 million gallon equalization basin (EQ basin), and a chlorine contact tank. Treated discharges from the wet weather facilities are monitored at station 603 after the chlorine contact tank, and combine with flow from the conventional treatment train (station 602) prior to the collection of samples at the final monitoring location (outfall 001). Table 5 shows the reported flows discharged from internal stations 602 and 603, and since 2011.

The LTCP and Consent Decree requires the City to implement additional projects, including:

- inflow reduction projects throughout the sewer system;
- for the Ottawa River, separation, transport and storage projects to reduce overflow frequency to 2 times per year;
- for the east side of the Maumee River, storage projects to reduce overflow frequency to 4 times or less per year;
- for the west side of the Maumee River, storage for currently uncontrolled outfalls, tunnel modification and improvements, and the addition of a tunnel disinfection system; and
- for Swan Creek, tunnel optimization to reduce volume and frequency of discharges and the addition of a tunnel disinfection system to achieve 3 or fewer untreated overflows per year.

Between 1988 and 1993 prior to the signing of the Consent Decree, the City constructed three CSO Control Tunnels. The tunnels include the Downtown Tunnel (controls a number of Maumee River overflows in the Downtown area), the Swan Creek North Tunnel and the Swan Creek South Tunnel (both on Swan Creek). These tunnels were constructed to provide storage of CSO discharge from the first flush of combined runoff. The

tributary storm water area to the tunnels is approximately 3,500 acres, representing 40% of the total combined area in the City. The tunnels provide 19.6 million gallons of storage.

The CSO reduction projects are implemented through the Toledo Waterways Initiative program. The program encompasses a total of 42 projects over an 18 year period with a completion date in the year 2020. Only 9 of the 42 projects still remain to be completed. The largest project, the Ottawa River Storage Facility, a 36 million gallon equalization basin, is currently under construction with a proposed final completion date of June 30, 2018. 8 CSOs have been eliminated, with 26 CSOs still remaining in the collection system.

DESCRIPTION OF EXISTING DISCHARGE

Toledo WRF had four effluent violations which are shown on Table 2.

Toledo WRF estimates there is an infiltration/inflow (I/I) rate to the collection system of 17 MGD. The average annual effluent flow rate for Toledo WRF for the previous five years is presented on Table 3. Toledo WRF performs the following activities to minimize I/I: Private Inflow Removal Program, periodic mainline sewer lining projects, closed circuit television inspection, smoke/dye testing, regular sewer inspections, and regular sewer repairs.

Toledo WRF reports SSOs at station 300. The number of SSOs recorded over the previous five years is presented in Table 4

Toledo WRF reports bypasses at station 002. No bypasses occurred at outfall 002 over the previous five years. The number of station 603 discharge occurrences, which monitors effluent that is treated with ballasted flocculation facilities during wet weather events, and dates reported is presented on Table 5.

Toledo WRF had 27 known active combined sewer overflows (CSOs) in the last 5 year period. The number of CSOs and dates reported is presented on Table 6

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.

Table 7 presents chemical specific data compiled from data reported in annual pretreatment reports and data collected by Ohio EPA.

Table 8 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period December 2010 through November, 2015, and current permit limits are provided for comparison.

Table 9 summarizes the chemical specific data for outfall 001 by presenting the average and maximum PEQ values.

Table 10 summarizes the results of acute and chronic WET tests of the final effluent.

Table 11 summarizes the screening results of Ohio EPA bioassay sampling of the final effluent.

ASSESSMENT OF IMPACT ON RECEIVING WATERS

The Maumee River Mainstem (Beaver Creek to Maumee Bay) large river assessment unit, which includes the Maumee River in the vicinity of Toledo WRF, is listed as impaired for human health, recreation, aquatic life and public drinking water supply on Ohio's 303(d) list.

The attainment status of the Maumee River is reported in the *Biological and Water Quality Study of the Maumee River and Auglaize River 2012-2013*. An assessment of the impact of a permitted point source on the immediate receiving waters includes an evaluation of the available chemical/physical, biological, and habitat data which have been collected by Ohio EPA pursuant to the Five-Year Basin Approach for Monitoring and NPDES Reissuance. Other data may be used provided it was collected in accordance with Ohio EPA methods and protocols as specified by the Ohio WQS and Ohio EPA guidance documents. Other information which may be evaluated includes, but is not limited to: NPDES permittee self-monitoring data; effluent and mixing zone bioassays conducted by Ohio EPA, the permittee, or U.S. EPA.

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

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

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

The most recent data available for the Maumee River is from 2012, and according to this report the Maumee River is impaired. The causes and sources of the impairment can be found in Table 12. Toledo WRF is likely contributing to the impairments in Maumee River due to combined sewer overflows, sanitary sewer overflows, and the municipal point source discharge. The full water quality study is available through the Ohio EPA, Division of Surface Water website at: http://www.epa.state.oh.us/Portals/35/documents/MaumeeTSD_2014.pdf.

DEVELOPMENT OF WATER-QUALITY-BASED EFFLUENT LIMITS

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

Parameter Selection

Effluent data for the Toledo WRF 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)	December 2010 through November 2015
Pretreatment data	2011-2014
Ohio EPA compliance sampling data	4/8/13 and 5/20/13

Statistical Outliers and Other Non-representative Data

The data were examined and the following values were removed from the evaluation as non-representative data: Total Dissolved Solids - 8 mg/L, 7/4/11, the value was significantly lower than the rest of the data. Free Cyanide – 0.04 mg/L, 6/5/2014, the value was found to be higher than the influent Total Cyanide value of 0.008 mg/L that was collected on 6/4/2014. The City of Toledo submitted a letter on May 25, 2016, indicating that the discrepancy in the values was likely due to the sampling methodology that used double filtration, which may have caused contamination.

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 9)

The PEQ values are used according to Ohio rules to compare to applicable WQS and allowable WLA values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no WLA is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required (see Table 13).

Wasteload Allocation

For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not break down in the receiving water. Based upon the results of the “City of Toledo Mixing Zone Study and Water Quality-Based Effluent Limit Evaluation”, wasteload allocations for the Toledo WRF have been determined using the following general equation:

$$\text{Discharger WLA} = (\text{dilution factor} \times \text{WQS}) - ([\text{dilution factor} - 1] \times \text{background concentration}).$$

The dilution factor used for chronic (or average) criteria is 2.5, while 1.5 is the dilution factor used for acute (or maximum) criteria. (See Table 14)

Wasteload allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

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

Whole Effluent Toxicity Wasteload Allocation

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 a dilution ratio of 1:2.5 for the average and the acute toxicity unit (TU_a) and a dilution ratio of 1:1.5 for the maximum. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For Toledo WRF, the WLA values are 0.9 TU_a and 2.5 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 (IC₂₅):

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

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

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

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 (LC₅₀) 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:

<u>Dilution Ratio</u> <u>(downstream flow to discharger flow)</u>	<u>Allowable Effluent Toxicity</u> <u>(percent effects in 100% effluent)</u>
up to 2 to 1	30
greater than 2 to 1 but less than 2.7 to 1	40
2.7 to 1 to 3.3 to 1	50

$$\text{Stream Dilution Ratio} = \frac{1.5 \text{ cfs}}{1.0 \text{ cfs}} = 1.5$$

The acute WLA for Toledo WRF is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.5 to 1.

REASONABLE POTENTIAL/EFFLUENT LIMITS/MANAGEMENT DECISIONS

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 15. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 9 and the PEL_{max} is compared to the PEQ_{max} . Based on the calculated percentage of the allocated value [$(PEQ_{avg} \div PEL_{avg}) \times 100$, or $(PEQ_{max} \div PEL_{max}) \times 100$], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 16.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 17 presents the final effluent limits and monitoring requirements proposed for Toledo WRF outfall 001 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

Dissolved Oxygen, Total Suspended Solids, and 5-Day Carbonaceous Biochemical Oxygen

The limits proposed for dissolved oxygen, total suspended solids, and 5-day carbonaceous biochemical oxygen demand are all based on plant design criteria. These limits are protective of WQS.

Ammonia

The current ammonia limits have been evaluated using the WLA procedures and are not protective of WQS for ammonia toxicity. Ammonia limits are based upon downstream temperature and pH values. The 75th percentile of downstream temperature and pH data were calculated from station 901 for data over the previous ten years, as was done in the previous permit renewal process. Due to decreases of summer pH, the allowable summer ammonia WLA decreased and a new summer ammonia limit is needed to protect aquatic life.

Both pH and temperature data were compiled into the June through September timeframe, the March through May and October through November timeframe, and the December through February timeframe, as the tiered ammonia limits in the current permit are set up. The 75th percentile of this information was calculated and evaluated based upon Table 7-5 of OAC 3745-1-07. Dilution factors and background information were then applied to determine the following:

Ammonia limits are proposed to decrease during the period from June through September. Monthly limits are proposed to decrease from 2.5 mg/L to 1.7 mg/L and weekly limits are proposed to decrease from 3.8 mg/L to 2.6 mg/L.

Ammonia limits are also proposed to decrease during the period from March through May and October through November. Monthly limits are proposed to decrease from 4.7 mg/L to 2.4 mg/L and weekly limits are proposed to decrease from 7.1 mg/L to 3.6 mg/L.

Ammonia limits for December to February are proposed to continue from the previous permit.

The previous permit cycle was evaluated to determine if Toledo WRF would have had violations if the facility had to meet these more stringent limits. Over the previous five years, there were no effluent concentrations from June through September that were above the proposed concentration limit of 1.7 mg/L. As the concentration never exceeded this threshold, no violations over the previous five years would have occurred from June through September. The period from March through May and October through November was also evaluated. Over the previous five years, there were 13 data points above the monthly limit of 2.4 mg/L. These data points would not have led to any permit violations of the proposed monthly concentration limit of 2.4 mg/L. Over the previous five years, the month that came closest to the proposed monthly concentration limit of 2.4 mg/L was April 2012, when the average ammonia concentration at outfall 001 was 2.06 mg/L, still less than the proposed limit for March through May and October through November.

As the data above suggests, the facility is currently able to meet the proposed ammonia limits that are more stringent than current ammonia limits. Therefore, no schedule of compliance is proposed in the permit.

Nitrate + Nitrite and Total Kjeldahl Nitrogen

The *Biological and Water Quality Study of the Maumee River and Auglaize River 2012-2013* (Ohio EPA) lists the Maumee River watershed as impaired for aquatic life. Nutrients and eutrophication are listed as causes, and major municipal point sources are listed among the sources. Considering this information and the fact that municipal WRFs discharge a nutrient load to the river, monthly monitoring for nitrate + nitrite and total Kjeldahl nitrogen is proposed based on best technical judgment. Monitoring for nitrate + nitrite at the upstream and downstream stations also is proposed. The purpose of the monitoring is to maintain a nutrient data set for use in the future total maximum daily loads (TMDL) study.

Oil and Grease, pH, and *Escherichia coli*

Limits proposed for oil and grease, pH, and *Escherichia coli* are based on WQS (OAC 3745-1-07). Class A PCR *E. coli* standards apply to the Maumee River.

Total Phosphorus

Total phosphorus is limited based on provisions of OAC 3745-33-06(C). The 1.0 mg/L monthly limit and 1.5 mg/L weekly limit are proposed to continue. Also, Part I.C of the permit contains a schedule of compliance under Part A. Evaluation for Reducing Discharge of Phosphorus. Under this schedule of compliance, the permittee should evaluate collected effluent data, possible source reduction measures, operational improvements, and minor facility modifications that will optimize reductions in phosphorus discharges from the facility.

Free Cyanide

The Ohio EPA risk assessment (Table 16) places free cyanide in group 4. This placement, as well as the data in Tables 8 and 9, support that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2).

Chlorine

Although the current WLA would allow slightly higher limits for chlorine (0.038 mg/L compared to 0.031 mg/L), anti-backsliding provisions in the OAC prevent the imposition of less stringent limits than those in the existing permit unless specific conditions have been satisfied. In the case of the Toledo WRF, none of those conditions have been satisfied, so the existing limits are proposed to continue. The anti-backsliding provisions of OAC 3745-33-05(F) require that an anti-degradation review must be completed before an existing permit limit can be made less stringent. The rule requires other conditions to be satisfied as well.

The effluent limit for chlorine at outfall 001 is less than the quantification level of 0.050 mg/L. However, a pollutant minimization program is not required because the dosing rate of dechlorination chemicals ensures that the water quality based effluent limit is being met.

Selenium

The Ohio EPA risk assessment (Table 16) places selenium in group 4. This placement, as well as the data in Tables 8 and 9, support that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2).

Selenium monitoring was not required in the previous permit. However, Ohio EPA bioassay sampling, compiled in Table 7, resulted in two detections of Selenium. While the detections were not high enough to trigger limits based upon reasonable potential, they were high enough to trigger a monitoring requirement. The WLA for selenium is 11µg/L. The MDL of the laboratory analytical method should be no more than approximately one third of the WLA, and so laboratory analytical methods with an MDL of 4 µg/L or less shall be used. Part II of the permit includes a condition requiring the Toledo WRF to use laboratory analytical methods with an appropriate MDL.

Cadmium, Chromium, Copper, Dissolved Hexavalent Chromium, Lead, Nickel, and Zinc

The Ohio EPA risk assessment (Table 16) places cadmium, chromium, copper, dissolved hexavalent chromium, lead, nickel, and zinc in groups 2 and 3. This placement, as well as the data in Tables 8 and 9, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Continued monitoring is proposed to document that these pollutants continue to remain at low levels.

Total Filterable Residue

The Ohio EPA risk assessment (Table 16) places total dissolved solids in group 3. This placement, as well as the data in Tables 8 and 9 support, that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Based on best technical judgment, monitoring is proposed for total filterable residue (total dissolved solids in the current permit. The purpose of the monitoring is to maintain data on the level and variability of total filterable residue in the effluent.

Arsenic, Barium, Bromodichloromethane, Bromomethane, Chloroform, Dibromochloromethane, Diethyl Phthalate, Iron, Methylene Chloride, Silver, and Strontium

The Ohio EPA risk assessment (Table 16) places arsenic, barium, bromodichloromethane, bromomethane, chloroform, dibromochloromethane, diethyl phthalate, iron, methylene chloride, silver, and strontium in groups 2 and 3. This placement, as well as the data in Tables 10 and 11, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. No new monitoring is proposed.

Water Temperature and Flow Rate

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

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.

Mercury

The Ohio EPA risk assessment (Table 16) places mercury in group 5. This placement, as well as the data in Tables 10 and 11, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For mercury, the PEQ is greater than 100 percent of the WLA. Pollutants that meet this requirement must have permit limits under OAC 3745-33-07(A)(1). The thirty day average concentration limit for mercury is based on a mercury variance described below. The proposed monthly concentration limit for mercury is based on the 95th percentile of eDMR data submitted by Toledo from November 2010 through

October 2015 at 4.8 ng/L. The daily maximum loading limit for mercury is based on WLA and is proposed to continue at 1700 ng/L.

The Toledo WRF permit was renewed on 5/1/11 to include a mercury variance, and variance-based limits for mercury. Based on the monitoring results from November 2010 through October 2015, and the new application information, the Toledo WRF has determined that the facility will not meet the 30-day average permit limit of 1.3 ng/L. However, the effluent data shows that the permittee can meet the mercury annual average value of 12 ng/L. The permittee's application has also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based upon these demonstrations, the Toledo WRF is eligible for the mercury variance under OAC 3745-33-07(D)(10)(a).

Toledo WRF submitted information supporting the renewal of the variance. The permittee has implemented household and school collection/recycling, mercury thermometer exchange, and mercury outreach to reduce the amount of mercury being discharged. Toledo also uses low level mercury sampling, GIS mapping, and best management plans for pretreatment facilities. The calculation of the PEQ_{avg} value from November 2010 through October 2015 compared to the PEQ_{avg} calculated at the time the original variance was issued shows a reduction from 6.6 ng/L to 4.8 ng/L. The Pollutant Minimization Program (PMP) schedule developed from the original variance continues to be implemented, and further reductions in mercury may be possible.

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

- A variance-based monthly average effluent limit of 4.8 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 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.

Whole Effluent Toxicity Reasonable Potential

Evaluating the acute and chronic toxicity results in Table 10 and Table 11 under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, the maximum toxicity value of 2.6 TU_c for *Ceriodaphnia Dubia* was evaluated and used in the calculations associated with the above procedure. Reasonable potential for toxicity is demonstrated, since this value exceeds the WLA values of 2.5 TU_c . Consistent with Procedure 6 and OAC 3745-33-07(B), a monthly average limit of 2.5 TU_c is proposed for *Ceriodaphnia Dubia*. It is proposed that the final effluent limits for toxicity become effective 54 months from the effective date of the permit. Quarterly monitoring with a trigger to conduct a toxicity reduction evaluation (TRE) is proposed as the interim condition.

The acute and chronic toxicity results in Table 10 and Table 11 show that there have been no detections of toxicity for *Pimephales promelas*. Under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, no PEQ values can be calculated. Reasonable potential for toxicity is not demonstrated for *Pimephales promelas*. 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 for *Pimephales promelas*. The proposed monitoring will adequately characterize toxicity in the plant's effluent.

Additional Monitoring Requirements

Metals parameters are being removed from the downstream monitoring station 901 and the duration of discharge (parameter code 82517) parameter is being removed from all CSO monitoring stations as the Agency no longer needs the data collected at these stations for future data analysis.

Nutrient parameters including total phosphorus, nitrate + nitrite, and total Kjeldahl nitrogen have also been added to the monitoring requirements at both upstream and downstream stations.

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

Sludge

Limits and monitoring requirements proposed for the disposal of sewage sludge by the following management practices are based on OAC 3745-40: 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.

Whole Effluent Toxicity - A 54 month compliance schedule is proposed for the Toledo WRF to meet the new whole effluent toxicity limits for the species *Ceriodaphnia dubia*. Details are in Part I.C, Item D of the permit.

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

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 Toledo WRF to have a Class IV 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 for Selenium

Part II of the permit includes a condition requiring the Toledo WRF to use laboratory analytical methods with an appropriate MDL.

Part III

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

Storm Water Compliance

To comply with industrial storm water regulations, the permittee submitted a form for "No Exposure Certification" which was signed on 2/17/14. The certification number is 2GRN00237*EG. Compliance with the industrial storm water regulations must be re-affirmed every five years. No later than 2/17/19, 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 the Maumee River, Ottawa River, and Swan Creek providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

Figure 1a. Location of Toledo WRF

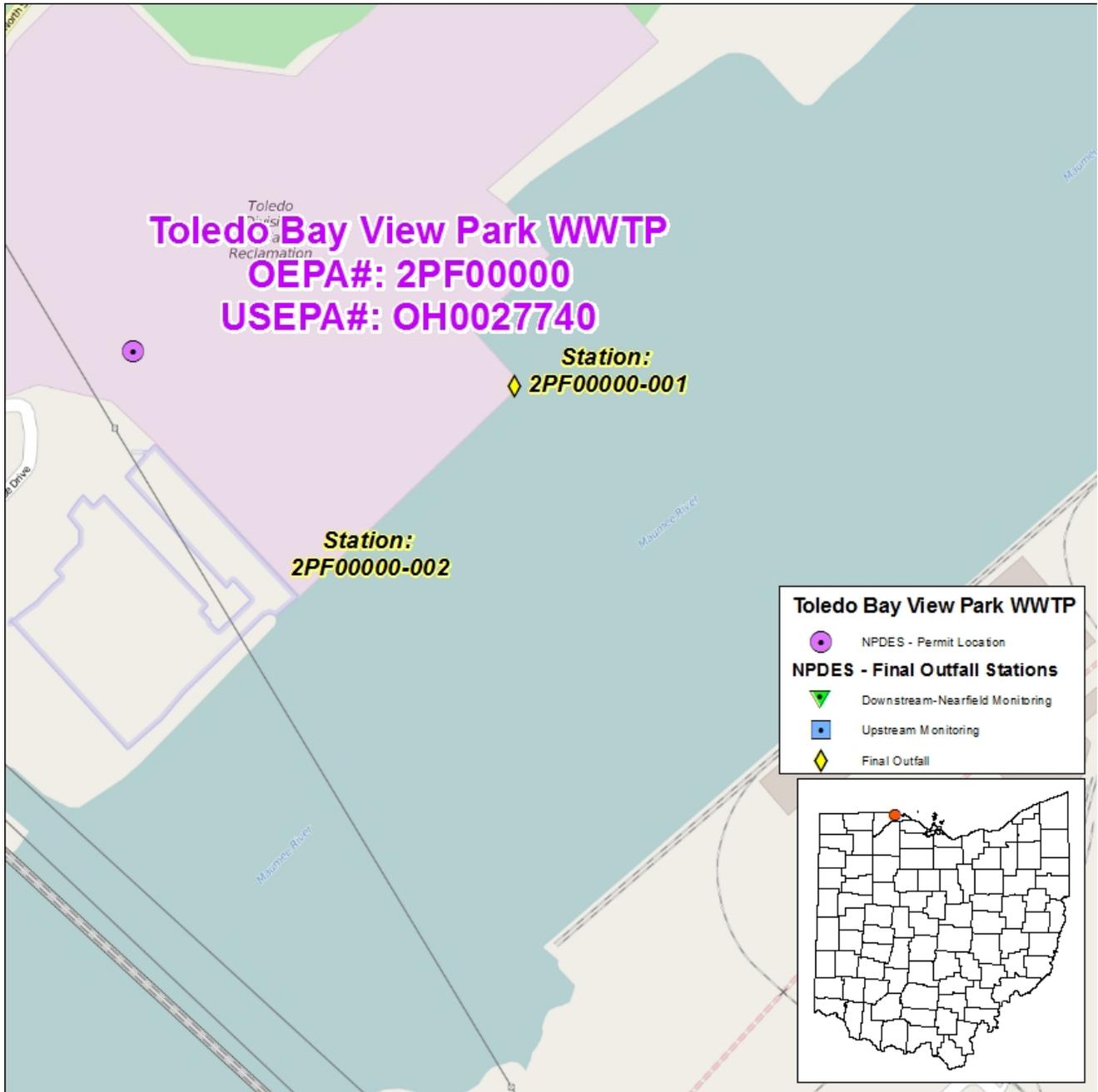


Figure 1b. Location of Toledo WRF and CSO Stations

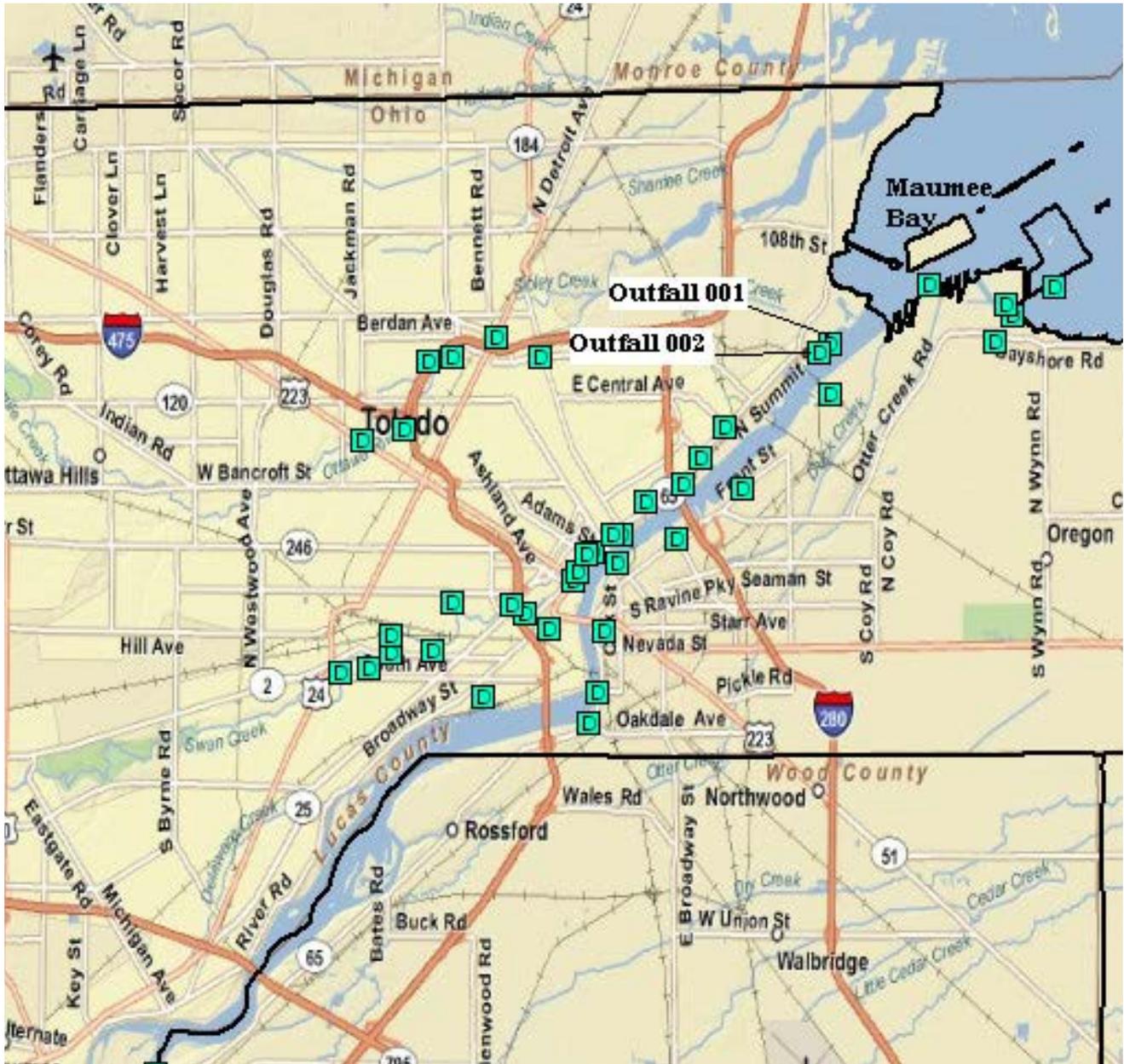


Figure 2. Diagram of Wastewater Treatment System

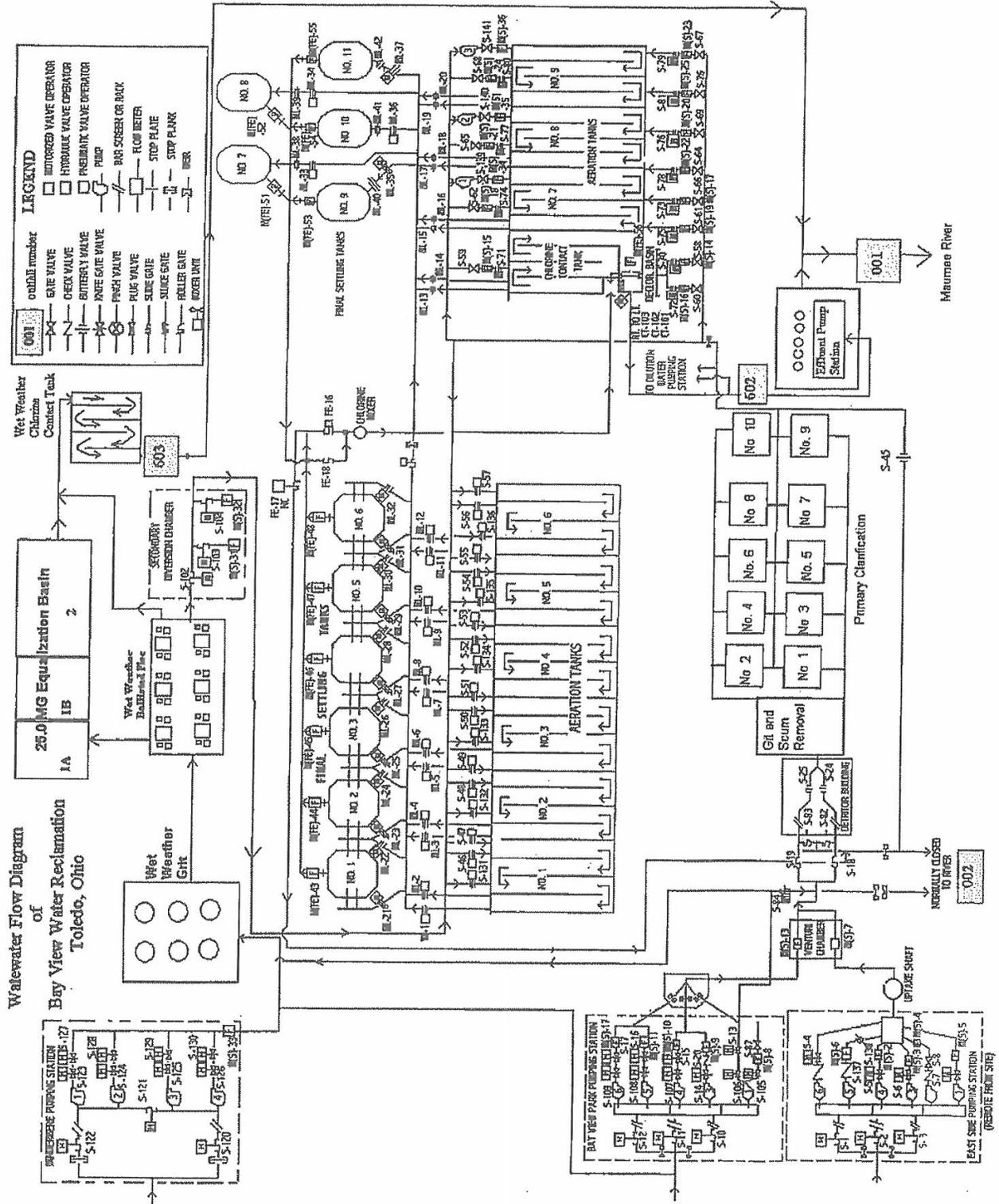


Figure 3. Sewage Treatment Diagram

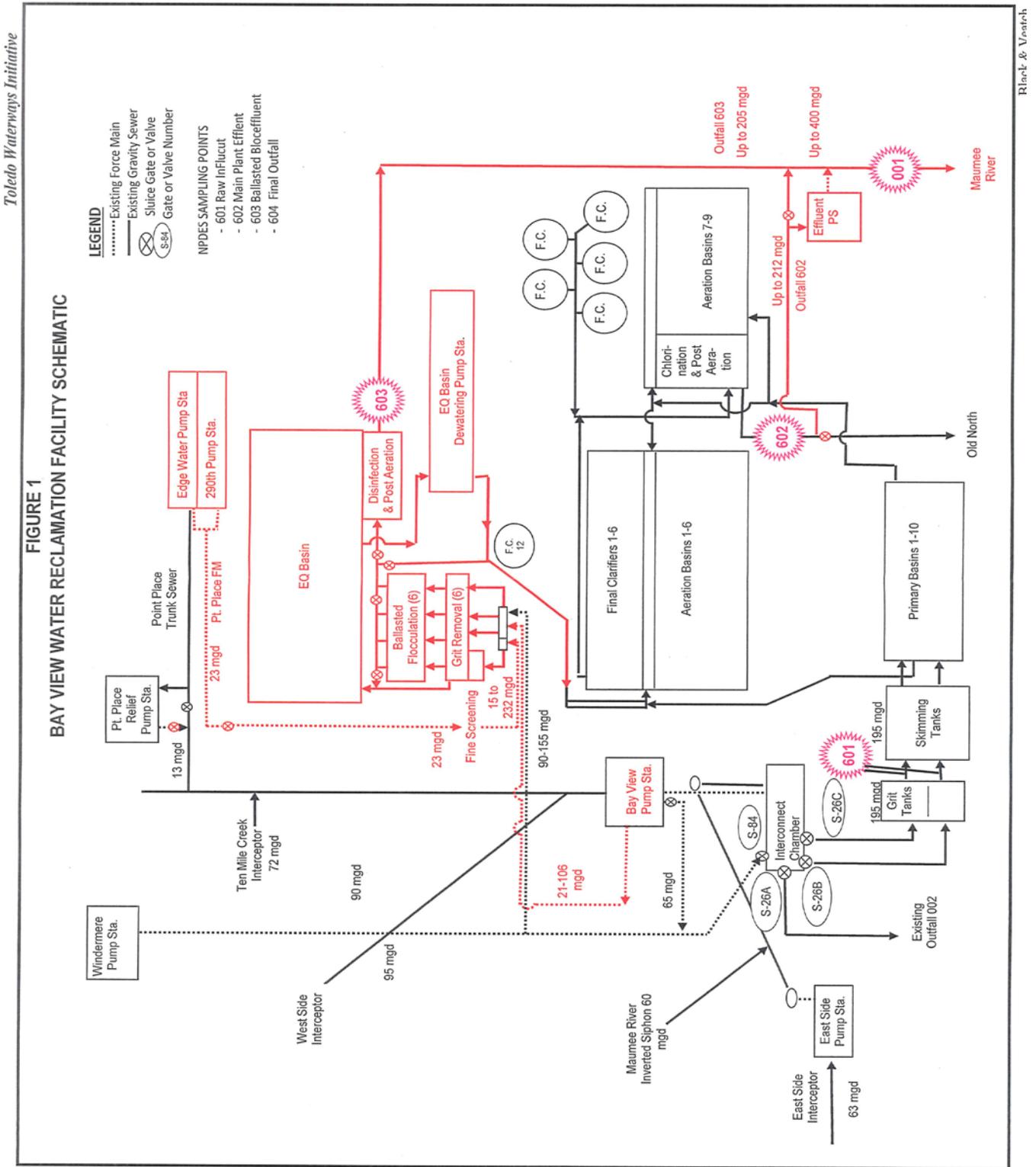


Table 1. Sewage Sludge Removal

Year	To Municipal Landfill	Transferred	Total
2012	1.36	9,948.78	9,950.14
2013		12,363.96	12,363.96
2014	727.58	10,300.8	11,028.38

Table 2. Effluent Violations for Outfall 001

Parameter	2011	2012	2013	2014	2015
Chlorine	0	0	1	0	2
Total Phosphorus	0	1	0	0	0
Total	0	1	1	0	2

Table 3. Annual Effluent Flow Rates

Year	Annual Flow in MGD		
	50th Percentile	95th Percentile	Maximum
2011	69.7	190.18	476.6
2012	47.8	119.1	270.8
2013	50	130.36	300.6
2014	56.2	143.96	294.7
2015*	55.9	180	353.3

*through 11/30/15, MGD = million gallons per day.

Table 4. Sanitary Sewer Overflows Discharges

Year	Number
2011	25
2012	15
2013	39
2014	12
2015*	15

*through 11/30/15

Table 5. Secondary Effluent Discharges (1/1/11-11-31-15)

602	Year	# of Discharges	Total Volume (MG)
	2011	24	3852.2
	2012	1	208
	2013	8	1469.8
	2014	8	1292.4
	2015	9	1658.8
603	2011	24	903
	2012	1	63.8
	2013	8	236
	2014	8	213
	2015	9	426.4
603/602 Ratio		# of Discharges	Percentage of Bypass in Blended Effluent
	2011	24	19.0%
	2012	1	23.5%
	2013	8	13.8%
	2014	8	14.1%
	2015	9	20.4%

*Note that stations 602 and 603 are monitored during wet weather events. 602 station is effluent that has gone through secondary clarifier treatment and joins the 603 station effluent flow from ballasted flocculation facilities.

Table 6. Combined Sewer Overflow Discharges (5/1/11 - 11/31/15)

CSO Station #	Receiving Waters	# of Discharges	Total Volume (MG)
002 (Bypass)	Maumee River	0	0
004	East Side Maumee River	76	40.761
005	East Side Maumee River	80	96.501
006	East Side Maumee River	113	69.832
007	East Side Maumee River	194	318.629
008	East Side Maumee River	77	31.293
009	East Side Maumee River	122	252.506
011	East Side Maumee River	4	67.79
023	West Side Maumee River	37	218.94
024*	West Side Maumee River	21	3.701
025*	West Side Maumee River	19	2.213
026	West Side Maumee River	134	29.969
027	West Side Maumee River	112	11.568
028	West Side Maumee River	61	10.302
029	West Side Maumee River	60	46.358
030	West Side Maumee River	72	33.184
031	West Side Maumee River	60	21.185
032*	West Side Maumee River	0	0
033	West Side Maumee River	149	94.176
042	Swan Creek	43	14
043	Swan Creek	50	87.37
044*	Swan Creek	0	0
045	Swan Creek	43	12.52
046	Swan Creek	57	11.226
047	Swan Creek	36	26.64
048	Swan Creek	38	26.923
050*	Swan Creek	17	1.58
061	Ottawa River	134	199.953
062	Ottawa River	196	834.494
063*	Ottawa River	15	22.22
064*	Ottawa River	40	261.201
065	Ottawa River	47	48.89
066*	Ottawa River	0	0
067*	Ottawa River	36	62.025
068	West Side Maumee River	44	120.082
069	Swan Creek	24	63.67
070*	West Side Maumee River	23	3.46

* = Eliminated CSO Outfall that is no longer in the Renewed NPDES Permit

Table 7. Effluent Characterization Using Pretreatment Data and Ohio EPA Data

PARAMETER	Ohio EPA 5/20/2013	Ohio EPA 4/8/2013	PT 6/6/2014	PT 6/20/2013	PT 6/28/2012	PT 6/22/2011
Total Dissolved Solids (mg/L)	898	906	NT	NT	NT	NT
Antimony	NT	NT	AA (8)	AA (8)	AA (8)	AA (8)
Arsenic	4.5	4.2	AA (8)	AA (8)	AA (8)	AA (8)
Beryllium	NT	NT	AA (1)	AA (1)	AA (1)	AA (1)
Cadmium	AA (0.2)	AA (0.2)	AA (1)	AA (1)	AA (1)	AA (1)
Chromium	AA (2.0)	AA (2.0)	AA (4)	AA (4)	AA (4)	AA (4)
Copper	4.3	5.3	AA (4)	AA (4)	AA (4)	AA (4)
Lead	AA (2.0)	AA (2.0)	AA (5)	AA (5)	AA (5)	AA (5)
Nickel	9.1	8.3	11	7	16	7
Selenium	2.7	2.7	AA (8)	AA (8)	AA (8)	AA (8)
Silver	NT	NT	AA (4)	AA (4)	AA (4)	AA (4)
Thallium	NT	NT	AA (10)	AA (10)	AA (10)	AA (10)
Aluminum	AA (200)	AA (200)	NT	NT	NT	NT
Barium	26	23	NT	NT	NT	NT
Iron	260	175	NT	NT	NT	NT
Manganese	AA (10)	AA (10)	NT	NT	NT	NT
Strontium	821	719	NT	NT	NT	NT
Zinc	23	21	35	23	27	23
Mercury (µg/L)	NT	NT	AA (0.2)	AA (0.2)	AA (0.2)	AA (0.2)
Ammonia (mg/L)	0.139	0.102	NT	NT	NT	NT
Chloride (mg/L)	218	194	NT	NT	NT	NT
Nitrate + Nitrite (mg/L)	15.1	14.6	NT	NT	NT	NT
Diethylphthalate	33.8	AA (6.6)	AA (5)	AA (5)	AA (5)	AA (5)
Bromodichloromethane	4.34	4.98	5.9	4.6	3.2	2.1
Bromomethane	1.25	AA (0.5)	AA (1)	AA (1)	AA (1)	AA (1)
Methylene Chloride	AA (0.5)	AA (0.5)	AA (2)	2.2	AA (2)	AA (2)
Chloroform	5.18	4.64	11	9.4	5.7	6.2
Dibromochloromethane	1.72	2.19	2.9	2.2	2.3	AA (1)

PT = Pretreatment Test, AA = not-detected (analytical method detection limit), NT = No Test

Table 8. Effluent Characterization Using Self-Monitoring Data

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
<u>Outfall 001</u>								
Water Temperature	Annual	°C	--Monitor Only--		1826	17	24	8-28
Dissolved Oxygen	Annual	mg/L	Not Less than 5.0		1826	7.5	8.88	5.05-11.2
Total Suspended Solids	Annual	mg/L	25	40 ^a	1825	6	13	1-37
Oil and Grease	Annual	mg/L	Not More than 10		260	0	0	0-6
Ammonia ^b	June-Sept	mg/L	2.5	3.8 ^a	920	0.1	0.461	0-2.9
Ammonia ^b	Mar-May & Oct-Nov	mg/L	4.7	7.1 ^a	920	0.1	0.461	0-2.9
Ammonia	Dec-Feb	mg/L	6.8	10.2 ^a	906	0.08	0.865	0-8.82
Nitrite+Nitrate	Annual	mg/L	--Monitor Only--		126	11	17	3-21.2
Phosphorus	Annual	mg/L	1.0	1.5 ^a	523	0.5	1	0.14-1.72
Free Cyanide	Annual	mg/L	--Monitor Only--		60	0.004	0.014	0-0.04
Selenium	Annual	µg/L	--Monitor Only--		3	0	0	0-0
Nickel	Annual	µg/L	--Monitor Only--		82	9	17	0-33
Silver	Annual	µg/L	--Monitor Only--		6	0	0	0-0
Strontium	Annual	µg/L	--Monitor Only--		2	886	1160	581-1190
Zinc	Annual	µg/L	--Monitor Only--		76	26	45.3	10-64
Cadmium	Annual	µg/L	--Monitor Only--		76	0	0	0-0
Lead	Annual	µg/L	--Monitor Only--		76	0	0	0-0
Chromium	Annual	µg/L	--Monitor Only--		76	0	0	0-5
Copper	Annual	µg/L	--Monitor Only--		76	0	5	0-16
Dissolved Hexavalent Chromium	Annual	µg/L #/100	--Monitor Only--		60	0	0	0-0
<i>E. coli</i>	Annual	mL	126	284 ^a	996	38	503	0-11200
Flow Rate	Summer	MGD	--Monitor Only--		920	51.8	130	33.3-353
Chlorine	Annual	mg/L	--	0.031	1045	0.009	0.0208	0-0.112
Mercury	Annual	ng/L	6.6	1700	62	2.06	4.74	1.06-12.2
Acute Toxicity, <i>Ceriodaphnia dubia</i>	Annual	TU _a	--Monitor Only--		18	0	0.4	0-0.4
Chronic Toxicity, <i>Ceriodaphnia dubia</i>	Annual	TU _c	--Monitor Only--		20	0	1.46	0-2.6
Acute Toxicity, <i>Pimephales promelas</i>	Annual	TU _a	--Monitor Only--		5	0	0	0-0
Chronic Toxicity, <i>Pimephales promelas</i>	Annual	TU _c	--Monitor Only--		5	0	0	0-0
pH, Maximum	Annual	S.U.	Not More than 9.0		1826	7.5	7.82	6.96-8.89
pH, Minimum	Annual	S.U.	Not Less than 6.5		1826	7.3	7.59	6.57-7.87
Total Dissolved Solids	Annual	mg/L	--Monitor Only--		117	804	1040	8-1650
CBOD ₅	Summer	mg/L	25	40 ^a	1741	3.5	6.5	0-17

^a = weekly average.

^b = ammonia data including observations, 50th and 95th percentiles, and data range is for the entire summer monitoring period.

Table 9. Projected Effluent Quality for Outfall 001

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia - Summer	mg/L	610	317	0.18554	0.45044
Ammonia - Winter	mg/L	451	247	0.43924	1.0643
Arsenic	µg/L	7	2	11.68	16
Barium	µg/L	2	2	72.124	98.8
Bromodichloromethane	µg/L	7	7	8.614	11.8
Bromomethane	µg/L	7	1	1.825	2.5
Cadmium	µg/L	79	0	--	--
Chlorides	mg/L	2	2	604.732	828.4
Chlorine	mg/L	1045	1039	0.01199	0.002264
Chloroform	µg/L	7	7	16.06	22
Chromium	µg/L	83	2	3.285	4.5
Dissolved Hexavalent Chromium	µg/L	60	0	--	--
Copper	µg/L	83	13	4.7309	7.3832
Free Cyanide	mg/L	60	52	0.008392	0.012883
Dibromochloromethane	µg/L	7	5	4.234	5.8
Diethyl phthalate	µg/L	7	1	49.348	67.6
Total Dissolved Solids	mg/L	118	118	1007	1224.3
Iron	µg/L	2	2	721.24	988
Lead	µg/L	76	0	--	--
Mercury	ng/L	62	62	4.1831	6.0931
Methylene chloride (Dichloromethane)	µg/L	7	1	3.212	4.4
Nickel	µg/L	89	87	14.556	19.857
Nitrate + Nitrite	mg/L	128	128	12.3808	16.96
Selenium	µg/L	2	2	7.4898	10.26
Silver	µg/L	6	0	--	--
Strontium	µg/L	4	4	2258.62	3094
Zinc	µg/L	83	83	38.22	49.49

MDL = analytical method detection limit

PEQ = projected effluent quality

Table 10. Summary of Acute and Chronic Toxicity Results

Date	<i>Ceriodaphnia Dubia</i>		<i>Pimephales promelas</i>	
	TU _a	TU _c	TU _a	TU _c
12/9/2010	NT	1.4	NT	NT
3/10/2011	NT	AA	NT	NT
6/9/2011	0.2	AA	AA	AA
8/11/2011	0.2	AA	NT	NT
12/8/2011	AA	AA	NT	NT
3/8/2012	AA	AA	NT	NT
6/7/2012	0.4	AA	AA	AA
8/9/2012	0.4	1.4	NT	NT
12/6/2012	AA	AA	NT	NT
3/7/2013	AA	1.4	NT	NT
6/6/2013	AA	AA	AA	AA
8/8/2013	AA	AA	NT	NT
12/5/2013	AA	AA	NT	NT
3/27/2014	AA	AA	NT	NT
6/5/2014	AA	AA	AA	AA
8/7/2014	AA	AA	NT	NT
12/11/2014	AA	2.6	NT	NT
3/26/2015	AA	AA	NT	NT
6/18/2015	AA	AA	AA	AA
8/6/2015	AA	AA	NT	NT

AA = non-detection; analytical method detection limit of 0.2 TU_a, 1.0 TU_c

NT = No Test

TU_a = acute toxicity unit

TU_c = chronic toxicity unit

Table 11. Ohio EPA Toxicity Screening Results for Outfall 001

Bioassay Number: 13-4267-NW

Sample	Time Collected Date: Time: (hours)	Test Start Date: Time: (hours)	Cumulative percent mortality (plus/or exhibiting other adverse effects)			
			<i>P. promelas</i> Time (hours)		<i>C. dubia</i> Time (hours)	
			24	48	24	48
Maumee River upstream	20 May 2013 0803	21 May 2013 0945	0	0	0	5
Manual mixing zone (1:1)	21 May 2013 0920	21 May 2013 0945	0	0	0	0
Grab 001	20 May 2013 0833	21 May 2013 0945	0	0	0	0
Rearing unit water control		21 May 2013 0945	0	0	-	-
Reconstituted water control		21 May 2013 0945	-	-	0	0
Grab 001	21 May 2013 0901	22 May 2013 0905	0	0	0	0
Composite 001	20-21 May 2013 0843-0828	22 May 2013 0905	0	0	5	10
Rearing unit water control		22 May 2013 0905	0	0	-	-
Reconstituted water control		22 May 2013 0905	-	-	0	0

Relevant information: A mixing zone sample was manually prepared in the laboratory by combining equal aliquots of upstream water and effluent. The ambient waters, 21 May effluent grab and composite effluent were clear with a yellow tinge. The 20 May effluent grab was clear. Upon receipt at the laboratory the total residual chlorine concentration of the effluents ranged from 0.01 to 0.02 mg/L making dechlorination unnecessary. After warming to the 25°C test temperature, the manual mixing zone and 20 May effluent grab were shaken vigorously for approximately 15 seconds to release supersaturated dissolved oxygen. Physicochemical parameters measured prior to test initiation and at test end are on the next page.

Sample	Time Collected Date: Time: (hours)	Test Start Date: Time: (hours)	Cumulative percent mortality (plus/or exhibiting other adverse effects)			
			<i>P. promelas</i> Time (hours)		<i>C. dubia</i> Time (hours)	
			24	48	24	48
Maumee River upstream	8 April 2013 0933	9 April 2013 0932	0	0	0	0
Manual mixing zone (1:1)	9 April 2013 0851	9 April 2013 0932	0	0	0	0
Grab 001	8 April 2013 0858	9 April 2013 0932	0	0	0	0
Rearing unit water control		9 April 2013 0932	0	0	-	-
Reconstituted water control		9 April 2013 0932	-	-	0	0
Grab 001	9 April 2013 0949	10 April 2013 1018	0	0	0	0
Composite 001	8-9 April 2013 0909-0854	10 April 2013 1018	0	0	0	0
Rearing unit water control		10 April 2013 1018	0	0	-	-
Reconstituted water control		10 April 2013 1018	-	-	0	0

Relevant information: A mixing zone sample was manually prepared in the laboratory by combining equal aliquots of upstream water and effluent. The ambient waters and effluents were clear with a yellow tinge. Upon receipt at the laboratory the total residual chlorine concentration (TRC) of the 9 April effluent grab was 0.04 mg/L. The effluent was dechlorinated using one dose each of a sodium thiosulfate solution (3200 mg Na₂S₂O₃·5H₂O/L deionized water) added at a rate of 1.6 mL solution per liter of effluent. The TRC of the 8 April effluent grab and composite effluent were 0.03 and 0.02 mg/L, respectively, making dechlorination unnecessary. After warming to the 25°C test temperature, the ambient waters and effluents were shaken vigorously for approximately 15 seconds to release supersaturated dissolved oxygen. Physicochemical parameters measured prior to test initiation and at test end are on the next page.

Table 12. Use Attainment Table

Location	River Mile	Use	Status	Causes	Sources
At Toledo, at Anthony Wayne bridge	5.8	WWH	NON	-Nutrient and Eutrophication -Biological Indicators -Sedimentation and Siltation	-Agriculture -Dam or Impoundment -Combined Sewer Overflows -Sanitary Sewer Overflows (collection system failures)
At Toledo, downstream I-280	3.6	WWH	NON	-Direct Habitat Alterations -Other Flow Regime Alterations	-Discharges from Municipal Separate Storm Sewer Systems (MS4) -On-site Treatment Systems (septic systems and similar decentralized systems)
At Toledo, Near Mouth	0.5	WWH	NON		-Municipal Point Source Discharges -Dredging

*From pages 17 and 18 of Biological and Water Quality Study of the Maumee River and Auglaize River 2012-2013

Note all locations had the same causes and sources and were hence only listed once.

WWH = warmwater habitat, NON = Non-Attainment

Table 13. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Wildlife	Average					
			Human Health	Agri-culture	Aquatic Life			
Ammonia - Summer	mg/L	--	--	--	0.7	--	--	
Ammonia - Winter	mg/L	--	--	--	3.5	--	--	
Arsenic	µg/L	--	580	100	150	340	680	
Barium	µg/L	--	160000	--	220	2000	4000	
Bromodichloromethane	µg/L	--	180 ^c	--	340	3100	6200	
Bromomethane	µg/L	--	2600	--	16	38	75	
Cadmium	µg/L	--	730	50	4.1	9.5	19	
Chlorides	mg/L	--	--	--	--	--	--	
Chlorine	mg/L	--	--	--	0.011	0.019	0.038	
Chloroform	µg/L	--	1700 ^c	--	140	1300	2600	
Chromium	µg/L	--	14000	100	150	3100	6200	
Dissolved Hexavalent Chromium	µg/L	--	14000	--	11	16	31	
Copper	µg/L	--	64000	500	16	26	52	
Free Cyanide	mg/L	--	48	--	0.0052	0.022	0.044	
Dibromochloromethane	µg/L	--	150 ^c	--	320	2900	5800	
Diethyl phthalate	µg/L	--	--	--	220	980	2000	
Total Dissolved Solids	mg/L	--	--	--	1500	--	--	
Iron	µg/L	--	--	5000	--	--	--	
Lead	µg/L	--	--	100	15	280	570	
Mercury	ng/L	1.3	3.1	10000	910	1700	3400	
Methylene chloride (Dichloromethane)	µg/L	--	2600 ^c	--	1900	11000	22000	
Molybdenum	µg/L	--	10000	--	20000	190000	370000	
Nickel	µg/L	--	43000	200	91	820	1600	
Nitrate + Nitrite	mg/L	--	--	100	--	--	--	
Selenium	µg/L	--	3100	50	5	--	--	
Silver	µg/L	--	11000	--	1.3	5	10	
Strontium	µg/L	--	1400000	--	21000	40000	81000	
Zinc	µg/L	--	35000	25000	210	210	420	

^c = carcinogen

Table 14. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	0.5	Value used to result in dilution ratio of 1:1.5
7Q10	cfs	annual	1.5	Value used to result in dilution ratio of 1:2.5 **Note that below values reflect dilution ratios based upon 2003 Mixing Zone Study
30Q10	cfs	summer	1.5	Value used to result in dilution ratio of 1:2.5
		winter	1.5	Value used to result in dilution ratio of 1:2.5
90Q10	cfs	annual	1.5	
Harmonic Mean	cfs	annual	1.5	Value used to result in dilution ratio of 1:2.5
Hardness	mg/L	annual	194	901 Station, n=54, 2010-15, Median
pH	S.U.	Dec-Feb	8.0	901 Station, n=86, 2006-15, 75 percentile
		June-Sept	8.1	901 Station, n=173, 2006-15, 75 percentile
		Mar-May and Oct-Nov	8.1	901 Station, n=218, 2006-15, 75 percentile
Temperature	°C	Dec-Feb	5.0	901 Station, n=81, 2006-15, 75 percentile
		June-Sept	25.3	901 Station, n=173, 2006-15, 75 percentile
		Mar-May and Oct-Nov	16.25	901 Station, n=219, 2006-15, 75 percentile
Toledo WRF flow	cfs	annual	1	Value used to result in dilution ratios above

Table 14. Instream Conditions and Discharger Flow (Continued)

Parameter	Units	Value	Basis
<i>Background Water Quality</i>			
Ammonia - Summer	mg/L	0.225	801 Station; 2010-15; n=20; 5<MDL; Median
Ammonia - Winter	mg/L	0.194	801 Station; 2010-15; n=9; 1<MDL; Mean
Arsenic	µg/L	5	STORET; 2012-2015; n=4; 0<MDL; Station 301641, Mean
Barium	µg/L	47.25	STORET; 2012-2015; n=4; 0<MDL; Station 301641, Mean
Bromodichloromethane	µg/L		No representative data available.
Bromomethane	µg/L		No representative data available.
Cadmium	µg/L	0.1	STORET; 2012-2015; n=4; 4<MDL; Station 301641, 1/2 of MDL
Chlorides	mg/L	44.4	STORET; 2012-2015; n=25; 0<MDL; Station 301641, Median
Chlorine	mg/L		No representative data available.
Chloroform	µg/L		No representative data available.
Chromium Dissolved Hexavalent	µg/L	1	STORET; 2012-2015; n=4; 4<MDL; Station 301641, 1/2 of MDL
Chromium	µg/L		No representative data available.
Copper	µg/L	2.775	STORET; 2012-2015; n=4; 0<MDL; Station 301641, Mean
Free Cyanide	mg/L		No representative data available.
Dibromochloromethane	µg/L		No representative data available.
Diethyl phthalate	µg/L	2.65	STORET; 2012-2015; n=1; 1<MDL; Station 301641, 1/2 of MDL
Total Dissolved Solids	mg/L	330	STORET; 2012-2015; n=25; 0<MDL; Station 301641, Median
Iron	µg/L	939.5	STORET; 2012-2015; n=4; 0<MDL; Station 301641, Mean
Lead	µg/L	1	STORET; 2012-2015; n=4; 0<MDL; Station 301641, Mean
Mercury	ng/L		No representative data available.
Methylene chloride (Dichloromethane)	µg/L		No representative data available.
Nickel	µg/L	4.775	STORET; 2012-2015; n=4; 0<MDL; Station 301641, Mean
Nitrate + Nitrite	mg/L	2.65	STORET; 2012-2015; n=25; 0<MDL; Station 301641, Median
Selenium	µg/L	1	STORET; 2012-2015; n=4; 4<MDL; Station 301641, 1/2 of MDL
Silver	µg/L		No representative data available.
Strontium	µg/L	930.25	STORET; 2012-2015; n=4; 0<MDL; Station 301641, Mean
Zinc	µg/L	5	STORET; 2012-2015; n=4; 4<MDL; Station 301641, Mean

MDL = analytical method detection limit

n = number of samples

NPDES = National Pollutant Discharge Elimination System

Ohio EPA = Ohio Environmental Protection Agency

WRF = wastewater treatment plant

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

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Wildlife	Average					
			Human Health	Agri- culture	Aquatic Life			
Ammonia - Summer	mg/L	--	--	--	1.4	--	--	
Ammonia - Winter	mg/L	--	--	--	--	--	--	
Arsenic	µg/L	--	1442	242	367	508	680	
Barium	µg/L	--	399929	--	479	2976	4000	
Bromodichloromethane	µg/L	--	450	--	850	4650	6200	
Bromomethane	µg/L	--	6500	--	40	57	75	
Cadmium	µg/L	--	1825	125	10	14	19	
Chlorides	mg/L	--	--	--	--	--	--	
Chlorine	mg/L	--	--	--	0.027	0.028	0.038	
Chloroform	µg/L	--	4250	--	350	1950	2600	
Chromium	µg/L	--	34998	248	373	4650	6200	
Dissolved Hexavalent Chromium	µg/L	--	35000	--	27	24	31	
Copper	µg/L	--	159996	1246	36	38	52	
Free Cyanide	mg/L	--	120	--	0.013	0.033	0.044	
Dibromochloromethane	µg/L	--	375	--	800	4350	5800	
Diethyl phthalate	µg/L	--	--	--	546	1469	2000	
Total Dissolved Solids	mg/L	--	--	--	3255	--	--	
Iron	µg/L	--	--	11091	--	--	--	
Lead	µg/L	--	--	248	36	420	570	
Mercury	ng/L	1.3	3.1	10000	910	1700	3400	
Methylene chloride (Dichloromethane)	µg/L	--	6500	--	4750	16500	22000	
Molybdenum	µg/L	--	25000	--	50000	285000	370000	
Nickel	µg/L	--	107493	493	220	1228	1600	
Nitrate + Nitrite	mg/L	--	--	246	--	--	--	
Selenium	µg/L	--	7748	123	11	--	--	
Silver	µg/L	--	27500	--	3.2	7.5	10	
Strontium	µg/L	--	3498605	--	51105	59535	81000	
Zinc	µg/L	--	87492	62492	517	312	420	

Table 16. Parameter Assessment

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

Chlorides

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

Arsenic	Bromodichloromethane	Bromomethane
Cadmium	Chloroform	Chromium
Silver	Dibromochloromethane	Diethyl phthalate
Iron	Lead	Methylene chloride (Dichloromethane)
Nickel	Nitrate + Nitrite	Dissolved Hexavalent Chromium
Strontium	Zinc	Molybdenum

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

Barium	Chlorine	Copper
Total Dissolved Solids		

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.

Selenium	Free Cyanide
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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

<u>Parameter</u>	<u>Units</u>	<u>Period</u>	<u>Recommended Effluent Limits</u>	
			<u>Average</u>	<u>Maximum</u>
Ammonia	mg/L	June-September	1.7	--
Ammonia	mg/L	Mar-May&Oct-Nov	2.4	--
Mercury	ng/L		1.3	1700

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

Table 17. 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 -----		-----		M ^c
Flow Rate	MGD	----- Monitor -----		-----		M ^c
pH	SU	6.5 - 9.0		--	--	WQS
Dissolved Oxygen	mg/L	--	5.0 (min.)	--	--	M/EP ^c
Total Suspended Solids	mg/L	25	40 ^d	12300	19700 ^d	EP/PD/BPT
Oil & Grease	mg/L	--	10	--	--	WQS
Ammonia						
June-Sept	mg/L	1.7	2.6 ^d	840	1280 ^d	WLA
Mar-May & Oct-Nov	mg/L	2.4	3.6 ^d	1190	1780 ^d	WLA
Dec-Feb	mg/L	6.8	10.2 ^d	3350	5020 ^d	EP/PD
Total Kjeldahl Nitrogen	mg/L	----- Monitor -----		-----		BTJ
Nitrate+Nitrite	mg/L	----- Monitor -----		-----		EP
Phosphorus	mg/L	1.0	1.5 ^d	493	740 ^d	PTS
Orthophosphate (as P)	mg/L	----- Monitor -----		-----		SB1
Total Filterable Residue	mg/L	----- Monitor -----		-----		EP/M
Nickel	µg/L	----- Monitor -----		-----		EP/M
Zinc	µg/L	----- Monitor -----		-----		EP/M
Cadmium	µg/L	----- Monitor -----		-----		EP/M
Lead	µg/L	----- Monitor -----		-----		EP/M
Chromium	µg/L	----- Monitor -----		-----		EP/M
Copper	µg/L	----- Monitor -----		-----		EP/M
Selenium	µg/L	----- Monitor -----		-----		RP
Free Cyanide	µg/L	----- Monitor -----		-----		EP/M
Dissolved Hexavalent Chromium	µg/L	----- Monitor -----		-----		EP/M VAR (avg.) WLA (max)
Mercury	ng/L	4.8	1700	0.0024	0.84	WLA (max)
<i>E. coli</i>	#/100 mL	126	284 ^d	--	--	WQS
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	25	40 ^d	12300	19700 ^d	EP/BPT
Chlorine, Total Residual	mg/L	--	0.031	--	--	EP/ABS
Acute Toxicity						
<i>Ceriodaphnia dubia</i>	TU _a	----- Monitor -----		-----		WET(2)
<i>Pimephales promelas</i>	TU _a	----- Monitor -----		-----		WET(1)
Chronic Toxicity						
<i>Ceriodaphnia dubia</i> - Initial	TU _c	----- Monitor -----		-----		WET(2)
<i>Ceriodaphnia dubia</i> - Final	TU _c	2.5	--	--	--	WET(2)
<i>Pimephales promelas</i>	TU _c	----- Monitor -----		-----		WET(1)

- ^a Effluent loadings based on average design discharge flow of 130 MGD.
- ^b Definitions:
- ABS = Antibacksliding Rule (OAC 3745-33-05(F) and 40 CFR Part 122.44(l))
 - BPT = Best Practicable Waste Treatment Technology, 40 CFR Part 133, Secondary Treatment Regulation
 - BTJ = Best Technical Judgment
 - CFR = Code of Federal Regulations
 - EP = Existing Permit
 - M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
 - NPDES = National Pollutant Discharge Elimination System
 - OAC = Ohio Administrative Code
 - PD = Plant Design (OAC 3745-33-05(E))
 - PTS = Phosphorus Treatment Standards (OAC 3745-33-06 (C))
 - RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in permits (OAC 3745-33-07(A))
 - SB1 = Implementation of Senate Bill 1 [ORC 6111.03]
 - VAR = Mercury variance (OAC 3745-33-07(D)(10)(a))
 - WET(1) = Whole effluent toxicity minimum requirements (OAC 3745-33-07(B))
 - WET(2) = Whole effluent toxicity required under [40 CFR Part 132, Appendix F, Procedure 6]
 - WLA = Wasteload Allocation procedures (OAC 3745-2)
 - WQS = Ohio Water Quality Standards (OAC 3745-1)
- ^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.
- ^d 7 day average limit.

Addendum 1. Acronyms

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