

National Pollutant Discharge Elimination System (NPDES) Permit Program

F A C T S H E E T

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

Public Notice No.: 16-02-009                      Ohio EPA Permit No.: 2PB00042\*PD  
Public Notice Date: February 12, 2016              Application No.: OH0025771  
Comment Period Ends: March 13, 2016

<u>Name and Address of Applicant:</u>	<u>Name and Address of Facility Where Discharge Occurs:</u>
Mayor and Council Village of Hicksville 111-113 South Main Street Hicksville, Ohio 43526	Village of Hicksville 500 South Bryan St. Hicksville, Ohio 43526 Defiance County
Receiving Water: Mill Creek	Subsequent Stream Network: Middle Fork Gordon Creek 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, Chapter 6111 of the Ohio Revised Code (ORC). Decisions to award variances to water quality standards (WQS) or promulgated effluent guidelines for economic or technological reasons will also be justified in the fact sheet where necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the Clean Water Act. Many of these have already been established by the United States Environmental Protection Agency (U.S. EPA) in the effluent guideline regulations (a.k.a. categorical regulations) for industry categories in 40 CFR Parts 405-499. Technology-based regulations for publicly-owned treatment works are listed in the secondary treatment regulations (40 CFR Part 133). If regulations have not been established for a category of dischargers, the director may establish technology-based limits based on best professional judgment (BPJ).

Ohio EPA reviews the need for water-quality-based limits on a pollutant-by-pollutant basis. Wasteload allocations (WLAs) are used to develop these limits based on the pollutants that have been detected in the discharge, and the receiving water's assimilative capacity. The assimilative capacity depends on the flow in the water receiving the discharge, and the concentration of the pollutant upstream. The greater the upstream flow, and the lower the upstream concentration, the greater the assimilative capacity is. Assimilative capacity may represent dilution (as in allocations for

metals), or it may also incorporate the break-down of pollutants in the receiving water (as in allocations for oxygen-demanding materials).

The need for water-quality-based limits is determined by comparing the WLA for a pollutant to a measure of the effluent quality. The measure of effluent quality is called Projected Effluent Quality (PEQ). This is a statistical measure of the average and maximum effluent values for a pollutant. As with any statistical method, the more data that exists for a given pollutant, the more likely that PEQ will match the actual observed data. If there is a small data set for a given pollutant, the highest measured value is multiplied by a statistical factor to obtain a PEQ; for example if only one sample exists, the factor is 6.2, for two samples - 3.8, for three samples - 3.0. The factors continue to decline as samples sizes increase. These factors are intended to account for effluent variability, but if the pollutant concentrations are fairly constant, these factors may make PEQ appear larger than it would be shown to be if more sample results existed.

### Summary of Permit Conditions

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the current permit, although some monitoring frequencies have changed: flow, temperature, dissolved oxygen, 5-day carbonaceous biochemical oxygen demand (CBOD<sub>5</sub>), total suspended solids (TSS), ammonia-nitrogen, oil and grease, pH, free cyanide, cadmium, copper, lead, nickel, and zinc.

Lower water-quality-based limits are proposed for mercury. Current mercury limits are proposed to decrease from a monthly concentration of 14.72 mg/L to 10.1 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.

Loading limits are based on 4.0 MGD, due to wet weather stress results and the combined sewer overflow long term Control Plan (LTCP), which documents the Village of Hicksville's intent to control overflows and plant bypasses. To allow the facility to treat as much wastewater as possible during wet weather events without violations, loadings are calculated using 4.0 MGD rather than the design flow of 0.95 MGD.

The proposed phosphorus limits for Hicksville WWTP are consistent with all majors in the Lake Erie basin. Monthly and weekly phosphorus limits are proposed to take effect after a three year compliance schedule.

New monthly monitoring is proposed for dissolved orthophosphate (as P).

Final effluent limits are proposed for *Escherichia coli*. New water quality standards for *E. coli* became effective in March 2010 and take the place of fecal coliform limits.

New monitoring requirements are proposed for nitrate+nitrite and total Kjeldahl nitrogen (TKN). The facility already monitors for nitrate and nitrite separately and the adaptation of the nitrate+nitrite and TKN is to determine concentrations of nutrient-related parameters and develop a dataset for such parameters.

Annual chronic toxicity monitoring with the determination of acute endpoints monitoring is proposed for the life of the permit for both species *Ceriodaphnia dubia* and *Pimephales promelas*. This satisfies the minimum testing requirements of rule 3745-33-07(B)(11) of the Ohio Administrative Code (OAC) for Whole Effluent Toxicity (WET) and will adequately characterize toxicity in the plant's effluent.

In Part II of the permit, special conditions are included that address sanitary sewer overflow (SSO) reporting; operator certification, minimum staffing and operator of record; whole effluent toxicity testing; tracking of group 4 parameters; storm water compliance; outfall signage; downstream public water supply notification; and pretreatment program requirements.

## Table of Contents

	Page
Introduction.....	1
Summary of Permit Conditions .....	2
Table of Contents.....	3
Procedures for Participation in the Formulation of Final Determinations .....	4
Information Regarding Certain Water Quality Based Effluent Limits .....	5
Location of Discharge/Receiving Water Use Classification.....	6
Facility Description.....	6
Description of Existing Discharge .....	8
Assessment of Impact on Receiving Waters.....	8
Development of Water Quality Based Effluent Limits .....	9
Reasonable Potential / Effluent Limits / Hazard Management Decisions .....	11
Other Requirements .....	13

## List of Figures

Figure 1. Location of Hicksville WWTP.....	15
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## List of Tables

Table 1. Sludge Removal Rates .....	6
Table 2. CSO Data for Outfalls 002 through 006 .....	7
Table 3. Flow Rates for Outfall 001 .....	8
Table 4. Effluent Characterization Using Self-Monitoring Data .....	16
Table 5. Projected Effluent Quality Values .....	19
Table 6. Summary of Acute and Chronic Toxicity Test Results .....	19
Table 7. Water Quality Criteria in the Study Area.....	20
Table 8. Instream Conditions and Discharger Flow.....	21
Table 9. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria .....	22
Table 10. Parameter Assessment .....	23
Table 11. Final Effluent Limits and Monitoring Requirements.....	24

## 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 Dana Martin-Hayden (419)373-3067, [Dana.Martin-Hayden@epa.ohio.gov](mailto:Dana.Martin-Hayden@epa.ohio.gov), or Andy Bachman, (614)644-3075, [Andrew.Bachman@epa.ohio.gov](mailto:Andrew.Bachman@epa.ohio.gov).

## Information Regarding Certain Water Quality Based Effluent Limits

This draft permit may contain proposed water quality based effluent limitations for parameters that **are not** priority pollutants. (See the following link for a list of the priority pollutants: [http://epa.ohio.gov/portals/35/pretreatment/Pretreatment\\_Program\\_Priority\\_Pollutant\\_Detection\\_Limits.pdf](http://epa.ohio.gov/portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf) ). In accordance with Ohio Revised Code Section 6111.03(J)(3), the Director established these water quality based effluent limits after considering, to the extent consistent with the Federal Water Pollution Control Act, evidence relating to the technical feasibility and economic reasonableness of removing the polluting properties from those wastes and to evidence relating to conditions calculated to result from that action and their relation to benefits to the people of the state and to accomplishment of the purposes of this chapter. This determination was made based on data and information available at the time the permit was drafted, which included the contents of the timely submitted National Pollutant Discharge Elimination System (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 water quality based effluent limitations 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 water quality standard(s) used to develop the proposed effluent limitation in accordance with the terms and conditions set forth in Ohio Administrative Code (OAC) Rule 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.

Alternately, the applicant may propose the development of site-specific water quality standard(s) pursuant to OAC Rule 3745-1-35. The permittee shall submit written notification regarding their intent to develop site specific water quality standards 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

Hicksville WWTP discharges to Mill Creek at river mile (RM) 2.0. Figure 1 shows the approximate location of the facility.

This segment of the Mill Creek is described by Ohio EPA River Code: 04-075, U.S. EPA River Reach #: 041000050204, County: Defiance, Ecoregion: Eastern Corn Belt Plains. The Mill Creek is designated for the following uses under Ohio's WQS (OAC 3745-1-18): Modified Warmwater Habitat (MWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Secondary Contact Recreation (SCR).

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

Water supply uses are defined by the actual or potential use of the waterbody. 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 AWS and IWS.

## Facility Description

The Hicksville WWTP was originally constructed in 2006. The Hicksville WWTP facility is an advanced treatment facility with an average design flow of 0.95 million gallons per day (MGD). The peak hydraulic flow determined via stress testing of the facility is 4.0 MGD. The treatment plant includes the following equipment and/or wet processes:

Year	Dry Tons Land Applied	Dry Tons to Landfill	Total Dry Tons Removed
2010	0	215.54	215.54
2011	0	0	0
2012	62.3	128.05	190.35
2013	159.9	43.53	203.43
2014	0	146.27	146.27

- Bar Screen
- Grit Removal
- Influent Pumping
- Activated Sludge with Extended Aeration
- Secondary Clarification
- Alum Addition
- Post Aeration
- Ultraviolet Disinfection

Sludge processing includes sludge digestion and sand filters. Table 1 shows the total tons of sludge removed from Hicksville WWTP from 2010 through 2014, based

upon discharge monitoring reports (DMR) data.

The plant serves the Village of Hicksville. The total population served is estimated to be 3,581. The collection system for Hicksville WWTP is an estimated 15 percent separate sanitary sewers and 85 percent CSOs. The inflow/infiltration rate

for the collection system is estimated to be 0.5 MGD. According to the permit renewal application, there are 9 significant industrial users responsible for 0.15 MGD of daily flow into the plant. All of these facilities are non-categorical users.

The facility has completed wet weather stress testing to determine how much additional flow the plant can handle. This testing has assisted the Village in the completion of the preparation of the combined sewer overflow long term control plan (LTCP). Since the ultraviolet disinfection system capacity was not expanded until after the completion of the wet weather stress test, the Village of Hicksville verified that the plant can meet concentration limits for flows up to 4.0 MGD. As a result of this testing, and due to OAC 3745-1-5(D)(1)(C) of the anti-degradation rules, the plants concentration limits will remain the same and the loading limits will remain from the previous permit, calculated using 4.0 MGD as the flow. All loadings in the permit are based upon a discharge flow of 4.0 MGD.

The LTCP that the facility has in the current permit involves complete separation of the system. Due to a hydrologic study conducted by a third party and associated costs with complete sewer separation, the Village has chosen to pursue a different method to substantially reduce the number of CSO discharges occurring in the combined sewer collection system via an updated LTCP. The Village submitted the first revision on September 18, 2013 and a revision on January 14, 2014. The revised LTCP includes a three phased approach. The new plan involves an approach where the facility will look to separate portions of the system and remove inflow and infiltration, replace and reconstruct existing lift stations, and install a high rate treatment facility. OEPA has approved this plan and a schedule of compliance to implement the LTCP is included in part 1.C of the permit. This new addendum to the LTCP has gone through antidegradation review and the addendum was approved by Ohio EPA on 12/17/15.

The City reports CSO occurrences under Stations 2PB00042002, 2PB00042003, 2PB00042004, 2PB00042005, and 2PB00042006 in its NPDES permit. DMR data for the five CSO outfalls listed in the Hicksville NPDES permit is shown in Table 2.

Table 2a: CSO Data for Outfalls 002 and 003 2011-2015

Year	CSO 002				CSO 003			
	# of Occurrences	Mean Value for:			# of Occurrences	Mean Value for:		
		Flow (MG)	TSS (mg/L)	CBOD <sub>5</sub> (mg/L)		Flow (MG)	TSS (mg/L)	CBOD <sub>5</sub> (mg/L)
2011	4	0.15	41.63	7.09	15	2.17	152.11	53.93
2012	0	N/A	N/A	N/A	5	1.02	180.52	64.52
2013	6	0.06	57.00	7.32	8	2.46	135.83	24.41
2014	1	0.05	31.30	16.00	4	1.16	50.85	25.15
2015	6	0.14	106.50	30.45	11	1.80	51.93	40.68

Table 2b: CSO Data for Outfalls 004 and 005 2011-2015

Year	CSO 004				CSO 005			
	# of Occurrences	Mean Value for:			# of Occurrences	Mean Value for:		
		Flow (MG)	TSS (mg/L)	CBOD <sub>5</sub> (mg/L)		Flow (MG)	TSS (mg/L)	CBOD <sub>5</sub> (mg/L)
2011	4	0.32	63.43	17.87	4	0.39	34.60	17.60
2012	0	N/A	N/A	N/A	1	0.00	135.00	0.44
2013	5	0.12	254.00	118.00	4	0.69	N/A	N/A
2014	1	0.3	81	5.2	0	N/A	N/A	N/A
2015	2	0.43	N/A	N/A	0	N/A	N/A	N/A

Year	CSO 006			
	# of Occurrences	Mean Value for:		
		Flow (MG)	TSS (mg/L)	CBOD <sub>5</sub> (mg/L)
2011	3	1.24	57.00	45.53
2012	3	0.66	103.87	28.27
2013	5	1.49	46.50	21.40
2014	2	0.38	125.00	11.10
2015	3	0.83	N/A	1.00

Description of Existing Discharge

Table 3 shows the annual effluent flow rates for the Hicksville WWTP based upon DMR data. The flow rates have been very variable across this period. Heavy rains in 2011 contributed to increased flow rates in this year.

Table 4 presents a summary of unaltered DMR data for final effluent outfall 2PB00042001 and CSO outfalls 2PB00042002, 2PB00042003, 2PB00042004, 2PB00042005, and 2PB00042006. Data are presented for the period from January, 2009 through December 2013, and current permit limits are provided for comparison.

Table 5 summarizes the chemical specific data for outfall 2PB00042001 by presenting the average and maximum PEQ values.

Table 6 summarizes the results of acute and chronic WET tests of the final effluent.

Hicksville WWTP reports SSO occurrences under station 300 in its NPDES permit. There were 6 overflow occurrences in 2011.

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

Year	Annual Flow in MGD		
	50th Percentile	95th Percentile	Maximum
2011	0.78	3.17	5.00
2012	0.43	1.68	2.81
2013	0.56	2.42	3.36
2014	0.64	2.58	3.99
2015	0.82	2.26	3.58

Assessment of Impact on Receiving Waters

The Division of Surface Water Watershed Assessment Unit Summary for the Gordon Creek assessment unit shows that the stream is in non-attainment in two sampling locations near the industrial park and hospital in Hicksville collected in 2008. Possible pollutant sources include: channelization, minor municipal point source pollutants, non-irrigated crop production, removal of riparian vegetation and streambank destabilization. This report can be found at the following Internet site: <http://wwwapp.epa.ohio.gov/dsw/ir2012/wau.php?hu=041000050204>

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

Self-monitoring data (DMR)

November 2011 - October 2015

The data were examined, and the following values were removed from the evaluation to give a more reliable projection of effluent quality: copper 1 µg/L (11/2/10) and lead 27µg/L (3/3/11)

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ<sub>avg</sub>) values represent the 95<sup>th</sup> percentile of monthly average data, and maximum PEQ (PEQ<sub>max</sub>) values represent the 95<sup>th</sup> percentile of all data points. The average and maximum PEQ values are presented in Table 5.

The PEQ values are used according to Ohio rules to compare to applicable WQS and allowable WLA values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no WLA is done for that parameter. If either PEQ<sub>avg</sub> or PEQ<sub>max</sub> is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Table 10 for a summary of the screening results

### *Wasteload Allocation*

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

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

Aquatic life (MWH)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia	Average	Summer 30Q10
		Winter 30Q10
Wildlife		Annual 90Q10
Agricultural Water Supply		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 8, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

Ohio's WQS implementation rules [OAC 3745-2-05(A)(2)(d)(iv)] required a phase out of mixing zones for bioaccumulative chemicals of concern (BCCs) as of November 15, 2010. This rule applied statewide. Mercury is a BCC. The mixing zone phase-out means that as of November 15, 2010 all dischargers requiring mercury limits in their NPDES permit must meet WQS at the end-of-pipe, which are 1.3 ng/L (average) and 1700 ng/L (maximum) in the Lake Erie basin.

The data used in the WLA are listed in Table 7 and Table 8. The WLA results to maintain all applicable criteria are presented in Table 9. Current ammonia limits were not found to be protective of aquatic life.

#### Whole Effluent Toxicity WLA

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

WQS for WET are expressed in Ohio's narrative "free from" WQS [OAC 3745-1-04(D)]. These "free froms" are translated into toxicity units (TUs) by the associated WQS Implementation (OAC 3745-2-09). WLAs can then be calculated using TUs as if they were water quality criteria.

The WLA calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit ( $TU_c$ ) and 7Q10 flow for the average and the acute toxicity unit ( $TU_a$ ) and 1Q10 flow for the maximum. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For Hicksville WWTP, the WLA values are 0.3  $TU_a$  and 1.0  $TU_c$ .

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

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

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

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

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

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

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

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

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

Dilution Ratio ( <u>downstream flow to discharger flow</u> )	Wasteload Allocation ( <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

The acute WLA for Hicksville 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 9. The average PEL (PEL<sub>avg</sub>) is compared to the average PEQ (PEQ<sub>avg</sub>) from Table 5, and the PEL<sub>max</sub> is compared to the PEQ<sub>max</sub>. Based on the calculated percentage of the allocated value [(PEQ<sub>avg</sub> ÷ PEL<sub>avg</sub>) X 100, or (PEQ<sub>max</sub> ÷ PEL<sub>max</sub>) X 100]), the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 10.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 11 presents the final effluent limits and monitoring requirements proposed for Hicksville WWTP outfall 2PB00042001 and the basis for their recommendation.

***Oil and Grease, pH, and Dissolved Oxygen***

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

***Escherichia coli***

Effluent limits are being proposed for *Escherichia coli* (*E. coli*). WQS for *E. coli* became effective in March 2010 and take the place of fecal coliform testing. Monthly and weekly geometric mean limits of 161 and 362 per 100 ml respectively, have been recommended in the permit for final effluent tables. Secondary Contact Recreation *E. coli* standards apply to Mill Creek.

***TSS, Ammonia, and CBOD<sub>5</sub>***

The limits for TSS, ammonia, and CBOD<sub>5</sub> that were approved for the treatment plant under the existing permit are proposed to continue. The concentration limits for these parameters are based upon the treatment technology associated with the plant design of Hicksville WWTP. The loading limits are based upon the plant’s stress test results of 4.0 MGD.

***Total Phosphorus***

New limits for total phosphorus are proposed for this permit. Phosphorus treatment to maintain effluent with a 1.0mg/L concentration is required under OAC 3745-33-06(C) for all facilities with a design flow above 1.0 MGD or considered a major in the Lake Erie basin. Hicksville WWTP is a major NPDES permit and, despite having a dry weather daily design flow of 0.95 MGD, often discharges more than 1.0 MGD. In accordance with the above rule, monthly and weekly limits for phosphorus are included in the permit. In part 1.C of the permit there is a compliance schedule allowing the permittee three years to meet the new total phosphorus limit.

***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.

#### ***Nitrate+Nitrite and TKN***

The monitoring for nitrate+nitrite is proposed to take the place of nitrate based on best engineering judgment. Monitoring nitrate+nitrite at the upstream and downstream stations is also proposed. The purpose of the monitoring is to maintain a data set tracking nutrient levels in the Maumee River and may be used for future permit decisions relating to nutrients.

New monitoring for TKN is proposed based on best engineering judgment. Monitoring TKN at the upstream and downstream stations is also proposed. The purpose of the monitoring is to maintain a data set tracking nutrient levels in the Maumee River area and may be used for future permit decisions relating to nutrients

#### ***Chromium, Dissolved Hexavalent Chromium, Nickel, Cadmium, and Zinc***

Ohio EPA risk assessment (Table 10) places chromium, dissolved hexavalent chromium, and nickel in group 2 and places cadmium and zinc in group 3. This placement as well as the data in Tables 4 and 5 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 continued frequency is proposed to document that these pollutants continue to remain at low levels.

#### ***Copper and Lead***

Ohio EPA risk assessment (Table 10) places copper and lead in group 4. This placement as well as the data in Tables 4 and 5 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 Rule 3745-33-07(A)(2).

#### ***Whole Effluent Toxicity Reasonable Potential***

The acute and chronic toxicity results in Table 6 show that there have been no detections of toxicity. 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. 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.

#### ***Mercury Reasonable Potential and Mercury Variance***

The Ohio EPA risk assessment (Table 10) places mercury in group 5. This placement as well as the data in Table 4, Table 8, and Table 9 indicates that the reasonable potential to exceed WQS exists, and limits are necessary to protect water quality.

To comply with mercury limits, the permittee has applied for coverage under the general mercury variance, Rule 3745-33-07(D)(10) of the OAC. Based on the results of low-level mercury monitoring, the permittee has determined that its wastewater treatment plant cannot meet the 30-day average water quality-based effluent limit (WQBEL) of 1.3 ng/L. However, the permittee believes that the plant will be able to achieve an annual average mercury effluent concentration of 12 ng/L. The variance application also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based on these factors, the permittee is eligible for coverage under the general mercury variance.

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

- A variance-based monthly average effluent limit of 10.1 ng/L, which was developed from sampling data submitted by the permittee;
- A requirement that the permittee make reasonable progress to meet the water-quality-based effluent limit for mercury by implementing the plan of study, which has been developed as part of the Pollutant Minimization Program (PMP);
- Low-level mercury monitoring of the plant's influent and effluent;
- A requirement that the rolling 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 water quality-based effluent limit for mercury has not been achieved.

### *Sludge*

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

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

### Other Requirements

#### *Compliance Schedules*

In Part 1.C of the permit there are two compliance schedules. These schedules address the need for a long term control plan and a new pollutant limit for total phosphorus effective in this permit. The permittee has scheduled milestones to begin implementation of the long term control plan and address new limits for total phosphorus.

#### *Sanitary Sewer Overflow Reporting*

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

#### *Operator Certification*

Operator certification requirements have been included in Part II, Item A of the permit in accordance with rules adopted in December 2006. These rules require Hicksville WWTP to have a Class II wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 2PB00042001.

### *Operator of Record*

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

### *Storm Water Compliance*

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

### *Outfall Signage*

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

Figure 1. Location of Hicksville WWTP



**Table 4. Effluent Characterization Using Self-Monitoring Data**

Summary of current permit limits and unaltered discharge monitoring report data for Hicksville WWTP outfall 2PB00042001 (November 2011 - October 2015). All values are based on annual records unless otherwise indicated. \* = For minimum pH, 5th percentile shown in place of 50th percentile; \*\* = For dissolved oxygen, 5th percentile shown in place of 95th percentile; a = weekly average; CBOD 5 day = carbonaceous biochemical oxygen demand.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 <sup>th</sup>	95 <sup>th</sup>	
<b><u>Outfall 001</u></b>								
Water Temperature	Annual	°C	---- Monitor ----		1263	15.2	22.6	5.18-25.1
Dissolved Oxygen	Summer	mg/L	Not less than 5.0		640	9.05	12.2	6.18-18.1
Dissolved Oxygen	Winter	mg/L	Not less than 5.0		620	11.5	14.2	6.98-17.9
pH	Annual	S.U.	Between 6.5 and 9.0		1263	7.78	8.05	6.86-8.23
Total Suspended Solids	Annual	mg/L	12.0	18.0	480	2.3	6.62	0.6-13.6
Oil and Grease	Annual	mg/L	No More than 10.0		61	5	6.2	0-17
Nitrogen, Ammonia	Summer	mg/L	1.7	2.55	240	0.1	3.25	0-8.02
Nitrogen, Ammonia	Winter	mg/L	---- Monitor ----		240	0.06	0.676	0-9.16
Nitrogen, Nitrite	Annual	mg/L	---- Monitor ----		60	0.05	4.84	0-13.1
Nitrogen, Nitrate	Annual	mg/L	---- Monitor ----		60	3.46	9.83	0-579
Phosphorus	Annual	mg/L	---- Monitor ----		60	1.14	2.69	0.09-4.37
Nickel	Annual	µg/L	---- Monitor ----		20	0	8	0-8
Zinc	Annual	µg/L	---- Monitor ----		20	9	37.9	0-92
Cadmium	Annual	µg/L	---- Monitor ----		60	0	3	0-3
Lead	Annual	µg/L	---- Monitor ----		20	0	10.9	0-27
Copper	Annual	µg/L	---- Monitor ----		60	0	16.3	0-46
		#/100						
Fecal Coliform	Annual	mL	1000	2000	239	1	201	0-7000
Flow Rate	Annual	MGD	---- Monitor ----		1826	0.627	2.59	0.211-614
Mercury, Total (Low Level)	Annual	ng/L	---- Monitor ----		60	1.07	11.3	0-19.7
Acute Toxicity, Ceriodaphnia dubia	Annual	TU <sub>a</sub>	---- Monitor ----		5	0.2	12.4	0-15.3
Chronic Toxicity, Ceriodaphnia dubia	Annual	TU <sub>c</sub>	---- Monitor ----		5	1	1	0-1
Acute Toxicity, Pimephales promelas	Annual	TU <sub>a</sub>	---- Monitor ----		5	0.2	1.01	0-1.01
Chronic Toxicity, Pimephales promelas	Annual	TU <sub>c</sub>	---- Monitor ----		5	1	1.01	0-1.01
CBOD 5 day	Summer	mg/L	10.0	15.0	240	2.12	3.1	0-9.2
CBOD 5 day	Winter	mg/L	10.0	15.0	240	2.52	4.86	0-16.9

**Table 4. Effluent Characterization Using Self-Monitoring Data (Continued)**

Summary of current permit limits and unaltered discharge monitoring report data for Hicksville WWTP outfall 2PB00042002 through 2PB00042004 (November 2011 - October 2015). All values are based on annual records unless otherwise indicated. \* = For minimum pH, 5th percentile shown in place of 50th percentile; \*\* = For dissolved oxygen, 5th percentile shown in place of 95th percentile; a = weekly average; CBOD 5 day = carbonaceous biochemical oxygen demand.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 <sup>th</sup>	95 <sup>th</sup>	
<b><u>Outfall 002</u></b>								
Total Suspended Solids	Annual	mg/L	-----	Monitor -----	8	45.8	148	7-192
Overflow Occurrence	Annual	No./Month	-----	Monitor -----	12	1	3.45	1-4
		Million						
Overflow Volume	Annual	Gallons	-----	Monitor -----	17	0.047	0.62	0.0021-1.1
CBOD 5 day	Summer	mg/L	-----	Monitor -----	4	6.26	14.7	3.83-16
CBOD 5 day	Winter	mg/L	-----	Monitor -----	4	10.6	50	3.4-55.7
<b><u>Outfall 003</u></b>								
Total Suspended Solids	Annual	mg/L	-----	Monitor -----	23	82.4	310	15-505
Overflow Occurrence	Annual	No./Month	-----	Monitor -----	26	1	4	1-6
		Million						0.00002-
Overflow Volume	Annual	Gallons	-----	Monitor -----	36	0.775	9.09	16.3
CBOD 5 day	Summer	mg/L	-----	Monitor -----	11	36.9	128	8.44-169
CBOD 5 day	Winter	mg/L	-----	Monitor -----	12	36.1	112	5.58-155
<b><u>Outfall 004</u></b>								
Total Suspended Solids	Annual	mg/L	-----	Monitor -----	5	81	235	11-254
Overflow Occurrence	Annual	No./Month	-----	Monitor -----	9	1	2.6	1-3
		Million						0.00002-
Overflow Volume	Annual	Gallons	-----	Monitor -----	13	0.1	0.96	1.65
CBOD 5 day	Summer	mg/L	-----	Monitor -----	2	22.3	37.7	5.2-39.4
CBOD 5 day	Winter	mg/L	-----	Monitor -----	3	9.08	107	5.12-118

**Table 4. Effluent Characterization Using Self-Monitoring Data (Continued)**

Summary of current permit limits and unaltered discharge monitoring report data for Hicksville WWTP outfall 2PB00042005 and 2PB00042006 (November 2011 - October 2015). All values are based on annual records unless otherwise indicated. \* = For minimum pH, 5th percentile shown in place of 50th percentile; \*\* = For dissolved oxygen, 5th percentile shown in place of 95th percentile; a = weekly average; CBOD 5 day = carbonaceous biochemical oxygen demand.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 <sup>th</sup>	95 <sup>th</sup>	

**Outfall 005**

Total Suspended Solids	Annual	mg/L	----	Monitor	----	2	84.8	130	34.6-135
Overflow Occurrence	Annual	No./Month	----	Monitor	----	5	1	3	1-3
		Million							0.00076-
Overflow Volume	Annual	Gallons	----	Monitor	----	7	0.11	1.25	1.35
CBOD 5 day	Summer	mg/L	----	Monitor	----	0	0	0	0-0
CBOD 5 day	Winter	mg/L	----	Monitor	----	2	9.02	16.7	0.44-17.6

**Outfall 006**

Total Suspended Solids	Annual	mg/L	----	Monitor	----	8	72.8	151	0-165
Overflow Occurrence	Annual	No./Month	----	Monitor	----	13	1	3	0-3
		Million							
Overflow Volume	Annual	Gallons	----	Monitor	----	18	0.465	3.1	0-6.51
CBOD 5 day	Summer	mg/L	----	Monitor	----	3	11.1	70.2	1-76.8
CBOD 5 day	Winter	mg/L	----	Monitor	----	5	16.6	46.9	14.3-53.3

**Table 5. Effluent Data for the Hicksville WWTP- Projected Effluent Quality Values**

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia-Summer	mg/L	160	140	2.3634	2.9287
Ammonia-Winter	mg/L	120	106	0.75645	1.2002
Cadmium	µg/L	60	11	2.19	3
Copper	µg/L	59	17	14.736	23.078
Lead	µg/L	20	4	10.22	14
Mercury	ng/L	60	50	10.12	14.69
Nickel	µg/L	19	2	8.176	11.2
Nitrite	mg/L	60	36	9.563	13.1
Zinc	µg/L	20	11	61.901	108.19

\*MDL = Method Detection Level, PEQ = Projected Effluent Quality

**Table 6. Summary of Acute and Chronic Toxicity Test Results for Hicksville WWTP**

Test Date	<i>Ceriodaphnia dubia</i> 48 hours	<i>Fathead Minnows</i> 96	<i>Ceriodaphnia dubia</i> 7 days	<i>Fathead Minnows</i> 7 days
	TU <sub>a</sub> <sup>a</sup>	TU <sub>a</sub> <sup>a</sup>	TU <sub>c</sub> <sup>a</sup>	TU <sub>c</sub> <sup>a</sup>
6/1/2011	BD	BD	BD	BD
6/6/2012	BD	BD	BD	BD
6/18/2013	BD	BD	BD	BD
6/24/2014	BD	BD	BD	BD
6/16/2015	BD	BD	BD	BD

<sup>a</sup> TU<sub>a</sub> = acute toxicity units, TU<sub>c</sub> = chronic toxicity units

BD = Below Detection

**Table 7. Water Quality Criteria in the Mill Creek 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	--	--	--	1.8	--	--	
Ammonia-Winter	mg/L	--	--	--	3.6	--	--	
Cadmium	µg/L	--	730	50	7	20	41	
Copper	µg/L	--	64000	500	29	49	98	
Lead	µg/L	--	--	100	35	670	1300	
Mercury <sup>A</sup>	ng/L	1.3	3.1	10000	910	1700	3400	
Nickel	µg/L	--	43000	200	160	1500	2900	
Nitrite	mg/L	--	--	--	--	--	--	
Zinc	µg/L	--	35000	25000	370	370	740	

<sup>A</sup> Bioaccumulative Chemical of Concern (BCC)

**Table 8. Instream Conditions and Discharger Flow**

Note USGS= United States Geological Survey, RM=River Mile, cfs=cubic feet per second, OEPA=Ohio Environmental Protection Agency

<u>Parameter</u>	<u>Units</u>	<u>Season</u>	<u>Value</u>	<u>Basis</u>
<i>Stream Flows</i>				
1Q10	cfs	annual	0	
7Q10	cfs	annual	0	OEPA File - All Flows = 0
		summer	0	
		winter	0	
30Q10	cfs	summer	0	
		winter	0	
90Q10	cfs	annual	0	
Harmonic Mean	cfs	annual	0	
Mixing Assumption	%	average	100	
	%	maximum	100	
<i>Hardness</i>	mg/L	annual	380	901 Station n=49, Median
<i>pH</i>	S.U.	summer	7.99	901 Station n=17, 75th Percentile
		winter	7.8675	901 Station n=14, 75th Percentile
<i>Temperature</i>	°C	summer	22.5	901 Station n=17, 75th Percentile
		winter	12.225	901 Station n=14, 75th Percentile
<i>Village of Hicksville flow</i>	cfs	annual	1.46965	OEPA File

\*Note that background data was not assessed because low flows are zero.

**Table 9. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria**

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Wildlife	Average			Maximum	
			Human Health	Agri- culture	Aquatic Life	Aquatic Life	
Ammonia-Summer	mg/L	--	--	--	--	--	--
Ammonia-Winter	mg/L	--	--	--	--	--	--
Cadmium	µg/L	--	730	50	7	20	41
Copper	µg/L	--	64000	500	29	49	98
Lead	µg/L	--	--	100	35	670	1300
Mercury <sup>A</sup>	ng/L	1.3	3.1	10000	910	1700	3400
Nickel	µg/L	--	43000	200	160	1500	2900
Nitrite	mg/L	--	--	--	--	--	--
Zinc	µg/L	--	35000	25000	370	370	740

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

**Table 10. Parameter Assessment**

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

Nitrite

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

Nickel

*Group 3:* PEQ<sub>max</sub> < 50 percent of maximum PEL and PEQ<sub>avg</sub> < 50 percent of average PEL.  
No limit recommended; monitoring optional.

Cadmium

Zinc

*Group 4:* PEQ<sub>max</sub> >= 50 percent, but < 100 percent of the maximum PEL or  
PEQ<sub>avg</sub> >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

Copper

Lead

*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>
Mercury	ng/L		1.3	1700

**Table 11. Final Effluent Limits and Monitoring Requirements**

Parameter	Units	Effluent Limitations				Basis <sup>b</sup>
		Concentration		Loading (kg/day) <sup>a</sup>		
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Temperature	°C	----- Monitor -----				M, EP
Dissolved Oxygen	mg/L	----- Not less than 5.0 -----				WQS, EP
Total Suspended Solids	mg/L	12.0	18.0 <sup>c</sup>	182.0	273.0 <sup>c</sup>	PD, EP
Oil and Grease	mg/L	--	10.0	--	--	WQS, EP
Ammonia	mg/L					
Summer		1.7	2.55 <sup>c</sup>	25.8	38.7 <sup>c</sup>	PD, EP
Winter		----- Monitor -----				PD, EP
Total Kjeldahl Nitrogen	mg/L	----- Monitor -----				M
Nitrite + Nitrate	mg/L	----- Monitor -----				M
Phosphorus - Initial	mg/L	----- Monitor -----				M, EP
Phosphorus - Final	mg/L	1.0	1.5 <sup>c</sup>	15.2	22.8 <sup>c</sup>	PT
Orthophosphate, Dissolved (as P)	mg/L	----- Monitor -----				SB1
Nickel	µg/L	----- Monitor -----				M, EP
Silver	µg/L	----- Monitor -----				M, EP
Zinc	µg/L	----- Monitor -----				M, EP
Cadmium	µg/L	----- Monitor -----				M, EP
Lead	µg/L	----- Monitor -----				RP
Copper	µg/L	----- Monitor -----				RP
<i>E. coli</i> (Summer Only)	#/100ml	161	362 <sup>c</sup>	--	--	WQS
Flow	MGD	----- Monitor -----				M, EP
Mercury	ng/L	10.1	1700	0.000153	0.0258	VAR
Whole Effluent Toxicity – <i>Pimephales promelas</i> and <i>Ceriodaphnia dubia</i>						
Acute	TU <sub>a</sub>	----- Monitor -----				WET
Chronic	TU <sub>c</sub>	----- Monitor -----				WET
pH	S.U.	----- 6.5 to 9.0 -----				WQS, EP
CBOD <sub>5</sub> <sup>d</sup>	mg/L	10.0	15.0 <sup>c</sup>	152.0	228.0 <sup>c</sup>	PD, EP

<sup>a</sup> Effluent loadings based on average design discharge flow of 4.0 MGD.

<sup>b</sup> **Definitions:** BEJ = Best Engineering Judgment;  
 EP = Existing Permit;  
 M = BEJ of Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges;  
 PD = Plant Design Criteria;  
 PT = Phosphorus treatment required under OAC 3745-33-06(C)  
 RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits [OAC 3745-33-07(A)];  
 SB1 = Implementation of Senate Bill 1 [ORC 6111.03]  
 VAR = Mercury variance-based limits [OAC 3745-33-07(D)(10)]  
 WET = Whole effluent toxicity required under [40 CFR Part 132, Appendix F, Procedure 6]  
 WQS = Ohio Water Quality Standards (OAC 3745-1-07).

<sup>c</sup> Weekly average limit.

<sup>d</sup> CBOD<sub>5</sub> = 5-day carbonaceous biochemical oxygen demand