

National Pollutant Discharge Elimination System (NPDES) Permit Program

F A C T S H E E T

Regarding a Modification to an NPDES Permit To Discharge to Waters of the State of Ohio
for the Elyria Wastewater Treatment Plant

Public Notice No.: 08-09-016
Public Notice Date: September 12, 2008
Comment Period Ends: October 13, 2008

OEPA Permit No.: 3PD00034*KD
Application No.: OH0025003

Name and Address of Applicant:

City of Elyria
328 Broad Street
Elyria, Ohio 44035

Name and Address of Facility Where
Discharge Occurs:

Elyria Wastewater Pollution Control
1194 Gulf Road
Elyria, Ohio

Receiving Water: Black River

Subsequent
Stream Network: Lake Erie

Introduction

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations, 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, 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 and Ohio Water Pollution Control Law (ORC 6111). Decisions to award variances to Water Quality Standards or promulgated effluent guidelines for economic or technological reasons will also be justified in the Fact Sheet where necessary.

Procedures for Participation in the Formulation of Final Determinations

The proposed modification is tentative but shall become final on the effective date unless (1) an adjudication hearing is requested, (2) the Director withdraws and revises the proposed modification after consideration of the record of a public meeting or written comments, or (3) upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty (30) days of publication of this notice, any person may submit written comments, a statement as to why the proposed modification should be changed, a request for a public meeting on the proposed modification and/or a request for notice of further actions concerning the modification. All communications timely received will be considered in the final formulation of the modification. If significant public interest is shown a public meeting will be held prior to finalization of the modification.

Within thirty (30) days of the issuance of the proposed modification any officer of an agency of the state or of a political subdivision, acting in his representative capacity or any person aggrieved or adversely affected by issuance of it may request an adjudication hearing by submitting a written objection in accordance with Ohio Revised Code Section 3745.07. Since all other conditions of the permit remain in effect, a hearing may not be requested on any issues other than the proposed modification. If an adjudication hearing is requested, the existing NPDES permit will remain in effect until the hearing is resolved. Following the finalization of the modification by the Director, any person who was a party to an adjudication hearing may appeal to the Environmental Review Appeals Commission.

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
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049**

Interested persons are invited to submit written comments upon the proposed modification. 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 and Compliance Section
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049**

The OEPA 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.

Location of Discharge/Receiving Water Use Classification

The Elyria wastewater treatment plant discharges at approximately river mile 10.6 to the Black River, which flows into Lake Erie. The Black River is designated for the following uses under Ohio's Water Quality Standards (OAC 3745-1-27): Warmwater Habitat, Season Salmonid, Agricultural Water Supply, Industrial Water Supply, and Primary Contact Recreation. This section of the Black River is designated by Ohio EPA River Code 20-002 and by USEPA River Reach number 04110001-004. Figure 1 shows the approximate location of this facility.

Facility Description

The Elyria wastewater plant is an advanced treatment facility with an average daily design flow of 13.0 MGD (million gallons per day). Wet stream processes are screening, grit and scum removal, ferric

chloride addition for phosphorus removal, primary settling, biological treatment with trickling filters and activated sludge aeration, secondary clarification, disinfection by chlorination, dechlorination and post aeration. Solid stream processes include anaerobic digestion, dewatering by belt filter press, and sludge disposal at the PPG Lime Lakes Reclamation Facility.

Elyria implements an Ohio EPA-approved industrial pretreatment program. Based on information in the 2007 annual program report, four categorical industrial users and five significant noncategorical industrial users discharge to the wastewater plant.

Collection System – Combined Sewer Overflows and Sanitary Sewer Overflows

Elyria's collection system is approximately 94 percent separate sanitary sewers and 6 percent combined sewers. Twenty seven (27) CSOs (combined sewer overflows) are authorized in the City's NPDES permit. A 1.6 million gallon wet weather storage tank is available at the Elyria plant to store flows greater than 30 MGD for subsequent treatment. The operating practice at the plant includes automatic diversion of any flow greater than 30 MGD to the wet weather storage tank, with bypass to the stream through station 003 occurring if the tank becomes full.

Under the terms of its previous NPDES permit, the City submitted an operational plan that documented implementation of the nine minimum CSO control measures, which was approved in May 1997. The City submitted a long-term control plan for its CSOs on June 29, 1998. The City completed certain recommendations of the plan under the terms of its previous NPDES permit:

- Complete a dry weather outfall survey of entire Black River within Elyria City limits. Investigate and where possible eliminate all sources of pollution. (Completed)
- Install sumped catch basins in combined sewer areas tributary to East Avenue and 4th Street Siphon to keep grit out of the collection system. (Completed)
- Raise weir 18 inches at West River and Bond Street Overflow regulator CSO 130A, and raise weir 5 inches at the Barres Lane and West Avenue flow regulator number 143. (Completed)
- Maximize the Mussey Avenue sewer by diverting CSO 104 from existing 15 inch sewer to a 27 inch sewer. (Completed)

The City had also been conducting additional modeling work both to characterize the existing wet weather overflows from the collection system and also to evaluate potential control options. Overflows from the City's CSOs had been substantially reduced. Based on discussions during the renewal of its current NPDES permit, Ohio EPA and the City agreed that the best strategy for the City was to conduct a comprehensive study that would address overflows system wide - both combined sewer overflows and sanitary sewer overflows (SSOs).

The City's current NPDES permit includes a compliance schedule for the City to address both CSOs and SSOs in a comprehensive, system wide study. This compliance schedule was acceptable to Ohio EPA, the Ohio Attorney General's Office and U.S. EPA.

Basis of the Modification

Compliance schedule Item E in the current NPDES permit requires the City to submit a comprehensive sewer overflow plan no later than August 1, 2008. This modification, which was requested by the City, would extend this compliance date by four months until December 1, 2008. This additional time will allow the City to implement its Public Notification and Participation Plan", which was submitted to the Ohio

EPA on February 1, 2008. The additional time will also provide city personnel time to review and comment on the proposed plan, its costs and proposed implementation schedule.

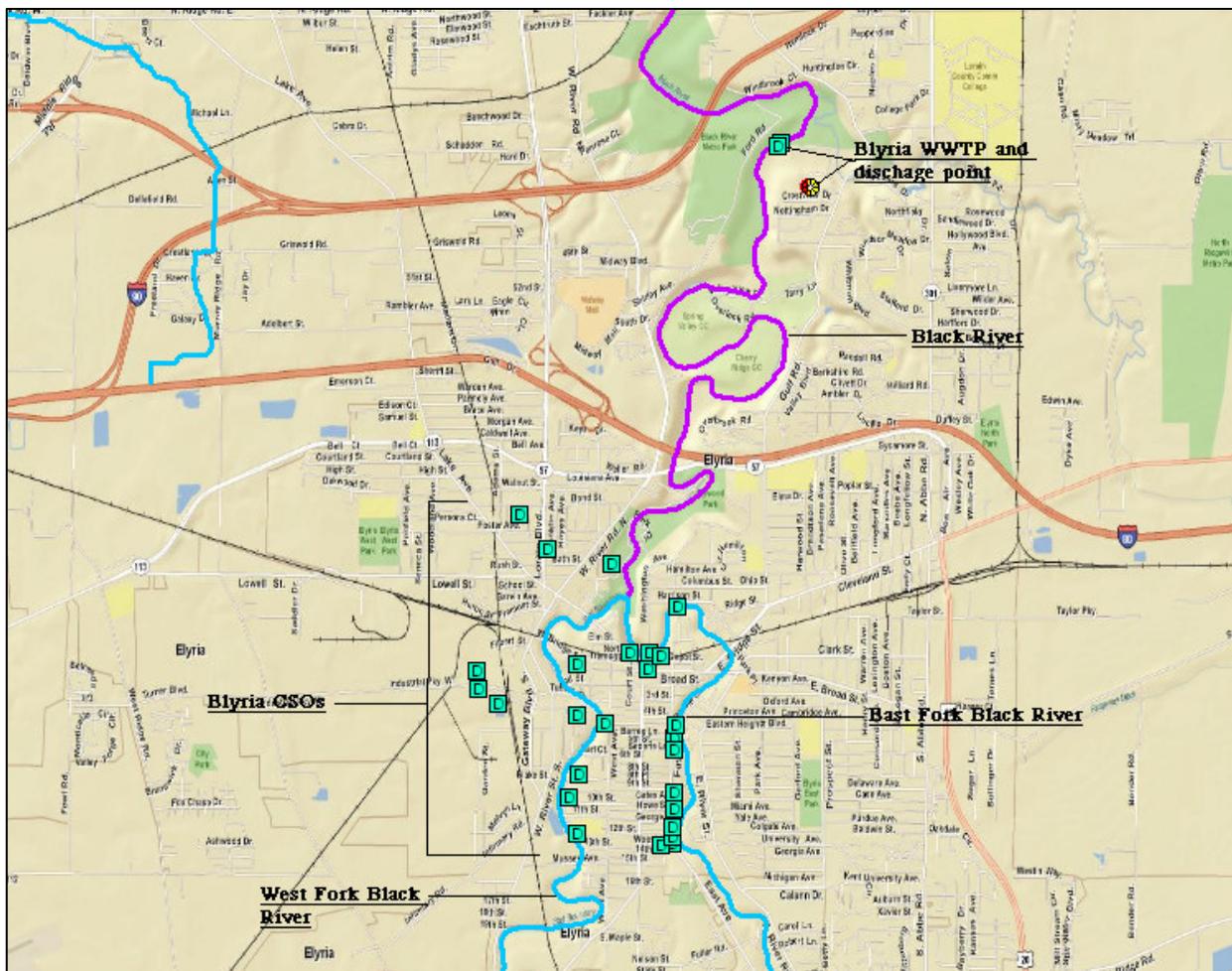


Figure 1. Approximate location of Elyria wastewater treatment plant.

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 Elyria Wastewater Treatment Plant

Public Notice No.: 05-05-048
Public Notice Date: May 16, 2005
Comment Period Ends: June 14, 2005

OEPA Permit No.: 3PD00034*JD
Application No.: OH0025003

Name and Address of Applicant:

City of Elyria
328 Broad Street
Elyria, Ohio 44035

Name and Address of Facility Where
Discharge Occurs:

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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 and Ohio Water Pollution Control Law (ORC 6111). Decisions to award variances to Water Quality Standards 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 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 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 wasteload allocation for a pollutant to a measure of the effluent quality. The measure of effluent quality is called PEQ - Projected Effluent Quality. 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

- Water quality based effluent limits are proposed for mercury, selenium and total dissolved solids. These limits were not included in the current permit. A water quality based effluent limit for total residual chlorine is proposed that is slightly lower than the limit in the current permit.
- Monitoring is proposed for whole effluent toxicity. Depending on the results of this monitoring, final effluent limits for toxicity might be required. Language is proposed that specifies the conditions that will trigger the imposition of the toxicity limits and require a toxicity reduction evaluation (TRE).
- Limits for dissolved oxygen, CBOD₅ (5-day carbonaceous biochemical oxygen demand), total suspended solids, ammonia-nitrogen, phosphorus, oil and grease, pH, and fecal coliform bacteria are proposed to continue from the current permit.
- Current permit limits for copper are being removed because effluent data shows that it no longer has the reasonable potential to contribute to exceedances of water quality standards.
- Current monitoring requirements for barium and antimony are being removed from the permit because effluent data shows that they are present at levels that do not pose an environmental hazard.
- Compliance schedules are proposed that address mercury variance coverage, a special study to identify potential sources of bis(2-ethylhexyl)phthalate, meeting final effluent limits for selenium and total dissolved solids, evaluating local limits for industrial users, and evaluating and updating the long term control plan for combined sewer overflows.

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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**

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Attention: Division of Surface Water
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Elyria's collection system is approximately 94 percent separate sanitary sewers and 6 percent combined sewers. Twenty seven (27) CSOs (combined sewer overflows) are authorized in the City's NPDES permit. A 1.6 million gallon wet weather storage tank is available at the Elyria plant to store flows greater than 30 MGD for subsequent treatment. The operating practice at the plant includes automatic diversion of any flow greater than 30 MGD to the wet weather storage tank, with bypass to the stream through station 003 occurring if the tank becomes full. Based on monthly operating report data for the period January 1999 through July 2004, discharges through station 003 occurred 60 times (median flow = 3.68 MG; range = 0.054 - 14.8 MGD). The number of discharges for each year are as follows: 2004 (through July) - 9; 2003 - 14; 2002 - 12; 2001 - 5; 2000 - 13; and 1999 - 7. During the same period, no discharges occurred through the plant's other bypass stations - 002, the junction chamber inlet to wet weather storage; 004, the emergency outlet for primary settling tank number 6; and 005, the primary effluent junction chamber.

Under the terms of its current NPDES permit, the City was required to implement the nine minimum controls (NMC) for the 27 CSOs authorized in its permit. An operational plan that documented implementation of the NMC was approved in May 1997. A long-term control plan for the CSOs was submitted to Ohio EPA on June 29, 1998. The current NPDES permit included a compliance schedule for the City to implement the five recommendations of the plan:

- Complete a dry weather outfall survey of entire Black River within Elyria City limits. Investigate and where possible eliminate all sources of pollution. (Completed)
- Install sumped catch basins in combined sewer areas tributary to East Avenue and 4th Street Siphon to keep grit out of the collection system. (Completed)
- Raise weir 18 inches at West River and Bond Street Overflow regulator CSO 130A, and raise weir 5 inches at the Barres Lane and West Avenue flow regulator number 143. (Completed)
- Maximize the Mussey Avenue sewer by diverting CSO 104 from existing 15 inch sewer to a 27 inch

sewer. (Completed)

- Install new storm sewer to separate portion of Depot area, and install new sewer line to reduce overflows at CSO 170.

Elyria implements an Ohio EPA-approved industrial pretreatment program. Based on information in the 2004 annual program report, six categorical industrial users and five significant noncategorical industrial users discharge to the wastewater plant.

Description of Existing Discharge

Table 1 presents a summary of unaltered monthly operating report data for Elyria outfall 3PD00034001. Data are presented for the period January 1999 through December 2003, and current permit limits are provided for comparison. Table 2 presents additional chemical specific data reported by the City as part of its industrial pretreatment program. Table 3 summarizes the chemical specific data for outfall 001 and presents the average and maximum Projected Effluent Quality (PEQ) values. Tables 4 and 5 summarize the results of acute and chronic whole effluent toxicity tests of outfall 001 effluent conducted by the City under the terms of its current NPDES permit.

Receiving Water Quality/Environmental Hazard Assessment

Figure 2 presents the watershed assessment unit summary for the Black River that is included in the *Ohio 2004 Integrated Water Quality Monitoring and Assessment Report* (Ohio EPA). The summary indicates impairment of the river's aquatic life (Warm Water Habitat) and recreational (Primary Contact) designated uses. Unknown toxicity, priority organics, nutrients, and organic enrichment/dissolved oxygen are listed as "High Magnitude Causes". Industrial point source, major municipal point source, combined sewer overflows, and unknown are listed as "High Magnitude Sources". A TMDL (total maximum daily load) report for pollutants causing aquatic life use impairment is scheduled to be completed in December 2005.

The report, *Biological and Water Quality Study of the Black River Basin. Lorain and Medina Counties, Ohio.*, (1998, Ohio EPA) is the most recent Ohio EPA study that is available for the Black River in the vicinity of Elyria. The report is available here: http://www.epa.state.oh.us/dsw/document_index/psdindx.html.

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. The available assimilative capacity was distributed between the various discharges using the Ohio EPA CONSWLA model. The study area is shown in Figure 3.

Parameter Selection Effluent data for the Elyria wastewater treatment plant were used to determine what parameters should undergo wasteload allocation. The sources of effluent data are as follows:

Self-monitoring data (LEAPS)	January 1999 through December 2003
Pretreatment program	1999 through 2003

The effluent data were checked for outliers and no extremes were found. The average and maximum projected effluent quality (PEQ) values are presented in Table 3. See Table 15 for a summary of the screening results.

Wasteload Allocation For those parameters that require a wasteload allocation (WLA), the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. The applicable waterbody uses for this facility's discharge and the associated stream design flows are as follows:

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

Allocations are developed using a percentage of stream design flow as specified in Tables 12 and 13, and allocations cannot exceed the Inside Mixing Zone Maximum criteria.

The data used in the WLA are listed in Tables 6 through 13. The wasteload allocation results to maintain all applicable criteria are presented in Table 14.

Ohio EPA evaluated the DO model provided by Black River dischargers as a condition of their current NPDES permits, and it does not reflect critical conditions. Therefore, it can not be used to define ammonia-nitrogen limits for the dischargers.

Dissolved Metals Translators A dissolved metals translator (DMT) is the factor used to convert a dissolved metal aquatic life criterion to an effective total recoverable aquatic life criterion with which a total recoverable aquatic life allocation can be calculated as required in the NPDES permit process. Currently, a DMT is based on site- or area-specific field data; each field data sample consists of a total recoverable measurement paired with a dissolved metal measurement. To account for the limited quantity of data, the DMT for each of these metals was determined as the lower end of the 95% confidence interval (1-tail) about the geometric mean of the total recoverable-to-dissolved ratios of the sample pairs. Each DMT is metal-specific and is applied by multiplying the dissolved criteria by the DMT, resulting in total effective recoverable criteria which can be used in the wasteload allocation procedures.

In some cases, it is possible that the use of a DMT may result in instream concentrations of metals that may increase the risk of non-attainment of the aquatic life use designation. This was evaluated for the Elyria wastewater plant. The application of the dissolved metal translators resulted in effective total recoverable criteria for copper and lead that were higher than the total recoverable criteria listed in OAC 3745-1. The Black River near the Elyria wastewater treatment plant is not attaining its designated use and the discharge of metals from the plant is contributing to the non-attainment. Therefore, in order to provide an adequate margin of safety for protection of aquatic life, the effective total recoverable criteria that resulted from the application of the DMTs for copper and lead were adjusted to levels that are protective of applicable aquatic life use designation and biological criteria.

Whole Effluent Toxicity

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

Water quality standards (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). Wasteload allocations can then be calculated using TUs as if they were water quality criteria.

The wasteload allocation calculations for whole effluent toxicity are similar to those for aquatic life criteria [using the chronic toxicity unit (TU_c) and 7Q10 flow for average and the acute toxicity unit (TU_a) and 1Q10 flow for maximum]. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For the Elyria treatment plant, the wasteload allocation values are 0.34 TU_a and 1.05 TU_c .

When the acute wasteload allocation 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

The acute wasteload allocation for Elyria is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.1 to 1.

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the water quality standards must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a water quality standard or do not require a wasteload allocation 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 wasteload allocations are selected from Table 14. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 3, 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 15.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 16 presents the final effluent limits and monitoring requirements proposed for Elyria outfall 3PD00034001 and the basis for their recommendation.

Based on best engineering judgment, it is proposed that the current permit limits for dissolved oxygen, CBOD₅ (5-day carbonaceous biochemical oxygen demand), ammonia-nitrogen and total suspended

solids be continued.

The limits proposed for oil and grease, pH and fecal coliform are based on Ohio Water Quality Standards (OAC 3745-1-07). Phosphorus is limited based on provisions of the 1988 revision of the 1972 Great Lakes Water Quality Agreement of the International Joint Commission.

The limit proposed for total residual chlorine is based on wasteload allocation. The effluent limit for chlorine at outfall 3PD00034001 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.

Based on reasonable potential for requiring final effluent limits in NPDES permits [OAC 3745-33-07(A)], water quality based effluent limits are proposed for total dissolved solids (residue), selenium, and mercury. These pollutants are included in Group 5 under the risk assessment procedures (Table 15). The limits proposed for total dissolved solids (TDS) and selenium are based on wasteload allocation (Table 14). A review of monthly operating data from 1999 to the present shows that the treatment plant is not able to comply with the proposed TDS limit. A review for the same time period shows that while concentrations of selenium in the plant's effluent have come down over time, the plant still may not be able to consistently comply with the proposed limit. A compliance schedule for meeting the final effluent limits is proposed for both of these pollutants. Monitoring is proposed during the interim period.

The draft permit includes a provision in the Schedule of Compliance regarding monitoring mercury to comply with the proposed effluent limits. EPA Method 1631 for low level mercury analysis has a method detection level (MDL) of 0.2 ng/l and a quantification level of 0.5 ng/l. Considering the magnitude of the proposed effluent limits for mercury, it is proposed that the permit holder use EPA Method 1631 to comply with the mercury monitoring requirements of this permit.

Because the quantification level for Method 1631 is lower than the proposed mercury effluent limits, it is possible to directly evaluate compliance with the limits. If compliance with the proposed limits is not possible, a variance from the mercury water quality standards is available under section D of rule 3745-33-07. The proposed compliance schedule provides an interim quantification level of 1000 ng/l (1.0 ug/l) and allows time for the City to collect additional mercury data using Method 1631. The City must then decide if it can comply with the average mercury limit or if it will apply for coverage under the mercury variance.

Bis(2-ethylhexyl)phthalate is included in Group 5 under the risk assessment procedure (Table 15). However, using best engineering judgment, quarterly monitoring, rather than effluent limits, is proposed for this pollutant. The purpose of the proposed monitoring is to maintain current data on its frequency of occurrence and variability in the plant's effluent.

Bis(2-ethylhexyl)phthalate (BEHP) is a widely used phthalate ester plasticizer. It is commonly used in the production of polyvinyl chloride (PVC) resins to impart flexibility to the finished product, improve workability during fabrication and extend or modify properties not present in the original resins. PVC resins are used in a wide variety of products including cable insulation, flooring, furniture upholstery, wall coverings, car upholstery and seat covers, footwear and food and medical packaging material. Phthalate ester plasticizers also are used in cosmetics, industrial oils and insect repellants. To address

reducing the level of BEHP in the plant's effluent to a point where it can consistently comply with the water quality-based effluent limit, a compliance schedule is proposed that requires the City to conduct a special study to determine if any of its industrial users are a concentrated source of BEHP to its sanitary sewers.

If a concentrated source of BEHP is identified, additional efforts to reduce its level in the plant effluent can be taken through the City's industrial pretreatment program. In addition, a special condition is proposed at Part II, Item M of the draft permit for the City to collect manual composite effluent samples for BEHP testing. The purpose of this condition is to avoid sample contamination by BEHP leaching out of plastic tubing and other plastic components used in automatic sampling.

Based on reasonable potential for requiring monitoring in NPDES permits [OAC 3745-33-07(A)], monitoring is proposed for copper. This pollutant is included in Group 4 under the risk assessment procedures (Table 15).

Based on reasonable potential for requiring monitoring in NPDES permits [OAC 3745-33-07(A)], monitoring is proposed for free cyanide, cadmium, total chromium, dissolved hexavalent chromium, lead, nickel and zinc. Because these pollutants were included in Groups 2 and 3 under the risk assessment procedures (Table 15), monitoring at a reduced frequency of once per month is proposed. The purpose of the monitoring is to maintain a current data base on the level of these pollutants in the plant effluent. This data will be used to assess reasonable potential at future permit renewals.

Evaluating the acute and chronic toxicity results in Tables 4 and 5 under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, gives an acute PEQ value of "below detection" and a chronic PEQ of 3.2 TU_c. Reasonable potential for toxicity is demonstrated, since the chronic PEQ exceeds the wasteload allocation of 1.05 TU_c. Consistent with Procedure 6 and OAC 3745-33-07(B)(10), effluent limits are proposed for whole effluent toxicity. It is proposed that the final effluent limits for toxicity become effective 52 months from the permit effective date if a toxicity reduction evaluation (TRE) is triggered under the conditions specified in Part II, Item Y of the permit. Quarterly monitoring for 24 months with the trigger mechanism is proposed as the interim condition.

The proposed limits for toxicity were derived from the wasteload allocation values of 0.34 TU_a and 1.05 TU_c using the procedures in section 5.4, "Permit Limit Derivation", of the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001, U.S. EPA, March 1991). A coefficient of variation of 0.6 and an acute-to-chronic ratio of 10 were used in the calculations. Based on the calculations, a daily maximum limit of 1.7 TU_c is proposed. It is proposed that the average limit of 1.0 TU_c be applied as an annual average of quarterly samples.

Provisions for reporting sanitary sewer overflows (SSOs) are proposed. 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, although the permits did not explicitly state their application to SSOs.

Additional monitoring requirements proposed for the final effluent, influent, upstream/downstream and sludge stations are based on best engineering judgment 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, for designing plant improvements, and conducting future

stream studies.

The following pollutants were included in Group 2 under the risk assessment procedure (Table 15), and based on reasonable potential for requiring monitoring in NPDES permits [OAC 3745-33-07(A)], no monitoring is proposed: antimony, arsenic, barium, chlorodibromomethane, chloroform, dichlorobromomethane, molybdenum, silver.

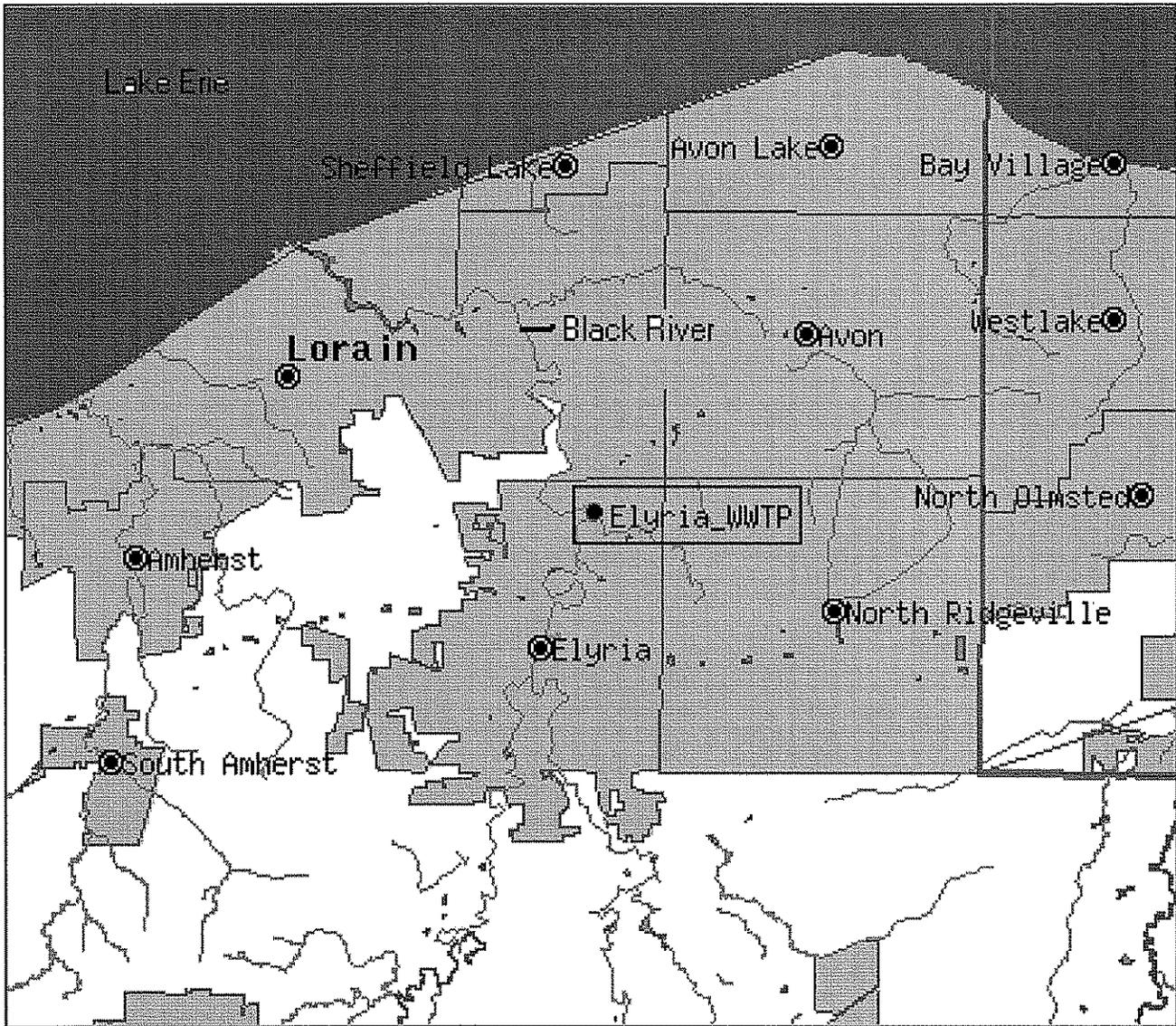


Figure 1. Approximate location of Elyria wastewater treatment plant.

Table 1. Effluent Characterization Summary of current permit limits and unaltered monthly operating report data for Elyria wastewater treatment plant outfall 3PD00034001. All values are based on annual records unless otherwise indicated. N = number of analyses; a = 7 day average; * = for pH, 5th percentile shown in place of 50th percentile; ** = for dissolved oxygen, 5th percentile shown in place of 95th percentile.

PARAMETER	SEASON	UNITS	CURRENT PERMIT		PERIOD = JAN99 THRU DEC03			
			30 DAY	DAILY	N	50 PCTL	95 PCTL	RANGE
AMMONIA NH3-N	MAY-OCT	MG/L	#	#	611	0	0.55	0-3.57
	NOV-APR	MG/L			603	0	0.02	0-4.2
ANTIMONY TOT REC	ANNUAL	UG/L	Monitor		99	0	6	0-9.1
BARIUM TOT REC	ANNUAL	UG/L	Monitor		99	7.2	11.9	3.4-56
BIS(2-ETHYLHEXL)	ANNUAL	UG/L	Monitor		14	0	0	0-25
CADMIUM TOT REC	ANNUAL	UG/L	Monitor		137	0	0.6	0-4
CBOD 5 DAY	MAY-OCT	MG/L	10	15 ^a	612	1	3	0-22
	NOV-APR	MG/L	15	23 ^a	603	2	4	0-10
CHLORINE TOT RESD	ANNUAL	MG/L	--	0.022	1221	0	0	0-1.3
CHROMIUM HEX-DIS	ANNUAL	UG/L	Monitor		84	0	0	0-0
CHROMIUM TOT REC	ANNUAL	UG/L	Monitor		140	1.6	4	0-7
FECAL COLIFORM	ANNUAL	/100ML	1000	2000 ^a	638	16	1500	1-100000
CONDUIT FLOW	ANNUAL	MGD	Monitor		1795	6.905	16.322	4.933-44.301
	MAY-OCT	MGD			889	6.597	13.916	4.95-41.389
	NOV-APR	MGD			906	7.335	17.729	4.933-44.301
COPPER TOT REC	ANNUAL	UG/L	20	34	140	9.6	17.6	0-40
CYANIDE FREE	ANNUAL	MG/L	Monitor		43	0	0.003	0-0.005
CYANIDE FREE	ANNUAL	MG/L	Monitor		41	0	0.002	0-0.002
DISSOLVED OXYGEN	MAY-OCT	MG/L	5.0 minimum		889	8.3	6.8**	6-10.7
	NOV-APR	MG/L	5.0 minimum		902	10	7.6**	5.7-11.9
LEAD TOT REC	ANNUAL	UG/L	Monitor		140	0	0	0-2
MERCURY TOT REC	ANNUAL	UG/L	Monitor		40	0	0.0067	0-0.0197
NICKEL TOT REC	ANNUAL	UG/L	Monitor		140	7.3	16	2.1-76
NITRITE+NITRATE N	ANNUAL	MG/L	Monitor		133	30.4	53.3	1-75
OIL&GREASE	ANNUAL	MG/L	10	10	82	0.6	2.9	0-3.7
	ANNUAL	MG/L	10	10	89	1.6	5.7	0-18
pH MAX	ANNUAL	S.U.	6.5 - 9.0		609	7.5*	7.9	7.3-9
pH MAX	ANNUAL	S.U.	6.5 - 9.0		1184	7.6	7.8	7-8.2
pH MIN	ANNUAL	S.U.	6.5 - 9.0		609	7.2*	7.8	7-7.9
pH MIN	ANNUAL	S.U.	6.5 - 9.0		1184	7.3	7.7	6.6-8
PHOSPHORUS T	ANNUAL	MG/L	1.0	1.5 ^a	547	0.42	1.3	0.1-4.4
DISSOLVED SOLIDS T	ANNUAL	MG/L	Monitor		88	1730	2240	718-2440
SUSPENDED SOLIDS	ANNUAL	MG/L	20	30 ^a	1220	5	18	0-36
SELENIUM TOT REC	ANNUAL	UG/L	Monitor		99	6.5	14	0-20.2
WATER TEMP.	ANNUAL	DEG C	Monitor		1795	16	22	8-24
ZINC TOT REC	ANNUAL	UG/L	Monitor		140	20.6	33.2	8.2-72.2

Ammonia limits May - September 1.5 mg/l (monthly) 2.0 mg/l (weekly)
 December - March 8.0 12.0
 April, October, November 3.0 5.0

Table 2. Effluent Characterization

Summary of analytical results for the Elyria wastewater treatment plant outfall 3PD00034001. All values are in µg/l unless otherwise indicated. OEPA = data from analyses by Ohio EPA; PT = data from pretreatment program reports;; ND = below detection (reporting level or detection limit); NA = not analyzed.

PARAMETER	PT 7/29/03	PT 7/25/02	PT 8/1/01	PT 8/16/00	PT 6/8/99
Arsenic	ND(5)	ND(20)	ND(5)	9	ND(5)
Cadmium	0.5	ND(2)	0.8	0.3	0.5
Copper	ND(5)	7.3	10	20	ND(10)
Lead	ND(2)	ND(10)	2	ND(2)	ND(2)
Nickel	6.6	ND(6)	ND(10)	10	ND(10)
Zinc	18.6	38	20	ND(20)	40
Chloroform	3.3	ND(10)	ND(2)	ND(2)	ND(2)
Dibromomethane	3.3	ND(10)	ND(2)	ND(2)	ND(2)
Chloroform	5.5	ND(10)	6	3	ND(2)
Dichlorobromomethane	6.1	ND(10)	ND(2)	ND(2)	ND(2)

Table 3. Projected effluent quality values for Elyria wastewater treatment plant

Parameter		Units	# of Samples	# > MDL	Average PEQ	Maximum PEQ
<u>Source: Elyria self monitoring (LEAPS) data (1999-2003)</u>						
Ammonia	summer	mg/l	400	57	2.35	3.21
	winter	mg/l	296	18	0.85	1.16
Antimony		ug/l	99	45	4.26	6.6
Barium		ug/l	99	99	10.778	14.1
BIS(2-Ethylhexyl)phthalate ^A		ug/l	14	1	27.375	37.5
Cadmium		ug/l	137	25	0.858	0.89
Chlorine, total res.		ug/l	1221	8	850.	1170.
Chromium, diss-hex		ug/l	84	0	--	--
Chromium, total		ug/l	140	111	3.19	4.7
Copper		ug/l	140	137	14.54	19.59
Cyanide, free		ug/l	43	6	2.5	4.0
Lead		ug/l	140	1	1.31	1.8
Mercury		ug/l	40	13	.0092	.014
Nickel		ug/l	140	140	13.77	19.42
Nitrite + Nitrate		mg/l	133	133	49.28	67.5
Phosphorus		mg/l	547	547	0.745	1.25
Selenium		ug/l	99	93	11.5	16.78
Total Dissolved Solids		mg/l	88	88	1603.	2196.
Zinc		ug/l	140	140	28.92	37.32

Source: Elyria self monitoring (OEPA) data (1999-2003)

Arsenic		ug/l	5	1	17.1	23.4
Chlorodibromomethane ^A		ug/l	5	1	6.26	8.58
Chloroform ^A		ug/l	5	3	11.39	15.6
Dibromochloromethane ^A		ug/l	5	1	11.58	15.86

^A Carcinogen

Table 4. Summary of acute toxicity test results on the Elyria wastewater treatment plant effluent.

Test Date(a)	<i>Ceriodaphnia dubia</i> 48 hour							<i>Fathead Minnows</i> 96 hour								
	UP ^b	C ^c	LC ₅₀ ^d	EC ₅₀ ^e	%A ^f	%M ^g	TUa ^h	NF ⁱ	UP ^b	C ^c	LC ₅₀ ^d	EC ₅₀ ^e	%A ^f	%M ^g	TUa ^h	NF ⁱ
12-6-99(E)	0	0	>100	>100	0	0	BD	0	NT	NT	NT	NT	NT	NT	NT	NT
6-5-00(E)	0	0	>100	>100	0	0	BD	0	NT	NT	NT	NT	NT	NT	NT	NT
9-25-01(E)							BD		NT	NT	NT	NT	NT	NT	NT	NT
9-16-02(E)	0	0	>100	>100	0	0	BD	0	NT	NT	NT	NT	NT	NT	NT	NT
4-29-03(E)	NT	0	>100	>100	0	0	BD	NT	0	>100	>100	0	0	0	BD	NT
9-16-03(E)	0	0	>100	>100	0	0	BD	0	NT	NT	NT	NT	NT	NT	NT	NT
9-13-04(E)	0	0	>100	>100	0	0	BD	0	NT	NT	NT	NT	NT	NT	NT	NT

^a O = EPA test; E = entity test
^b UP = upstream control water
^c C = laboratory water control
^d LC₅₀ = median lethal concentration
^e EC₅₀ = median effects concentration
 NT = not tested

^f %A = percent adversely affected in 100% effluent
^g %M = percent mortality in 100% effluent
^h TUa = acute toxicity units
ⁱ NF = near field sample in Black River
 ND = not determined
 BD = below detection

Table 5. Summary of chronic toxicity test results on Elyria wastewater treatment plant effluent.

Test Date (a)	Ceriodaphnia dubia 7-Day										Fathead Minnows 7-Day					
	UP ^b	C ^c	IC ₂₅ ^d	TU _c ^e	Survival		Reproduction		FF ⁱ	UP ^b	C ^c	IC ₂₅ ^d	TU _c ^e	Survival	Growth	FF ⁱ
					LOEC ^f	NOEC ^g	TU _c ^h	LOEC ^f								
12-6-99(E)	0	0	ND	ND	>100	100	BD	80	60	1.4	0	NT	NT	NT	NT	NT
6-5-00(E)	0	0	>100	BD	>100	100	BD	>100	100	BD	0	NT	NT	NT	NT	NT
9-25-01(E)				BD			BD			BD		NT	NT	NT	NT	NT
9-16-02(E)	0	0	>100	BD	>100	100	BD	>100	100	BD	0	NT	NT	NT	NT	NT
9-16-03(E)	0	0	>100	BD	>100	100	BD	100	80	1.1	0	NT	NT	NT	NT	NT
9-13-04(E)	10	11	>100	BD	>100	100	BD	80	60	1.4	0	NT	NT	NT	NT	NT

^a0 = EPA test; E = entity test

^bUP = upstream control water

^cC = laboratory water control

^dIC₂₅ = inhibition concentration twenty-five

^eTU_c = chronic toxicity units based on IC₂₅

^fLOEC = lowest observed effects concentration

^gNOEC = no observed effects concentration

^hTU_c = chronic toxicity units based on LOEC and NOEC

ⁱFF = far-field effect

^jSTU_c = TU_c based on LOEC and NOEC for survival

^kGTU_c = TU_c based on LOEC and NOEC for growth

BD = below detection

NT = not tested

* = 48 hr acute screening test

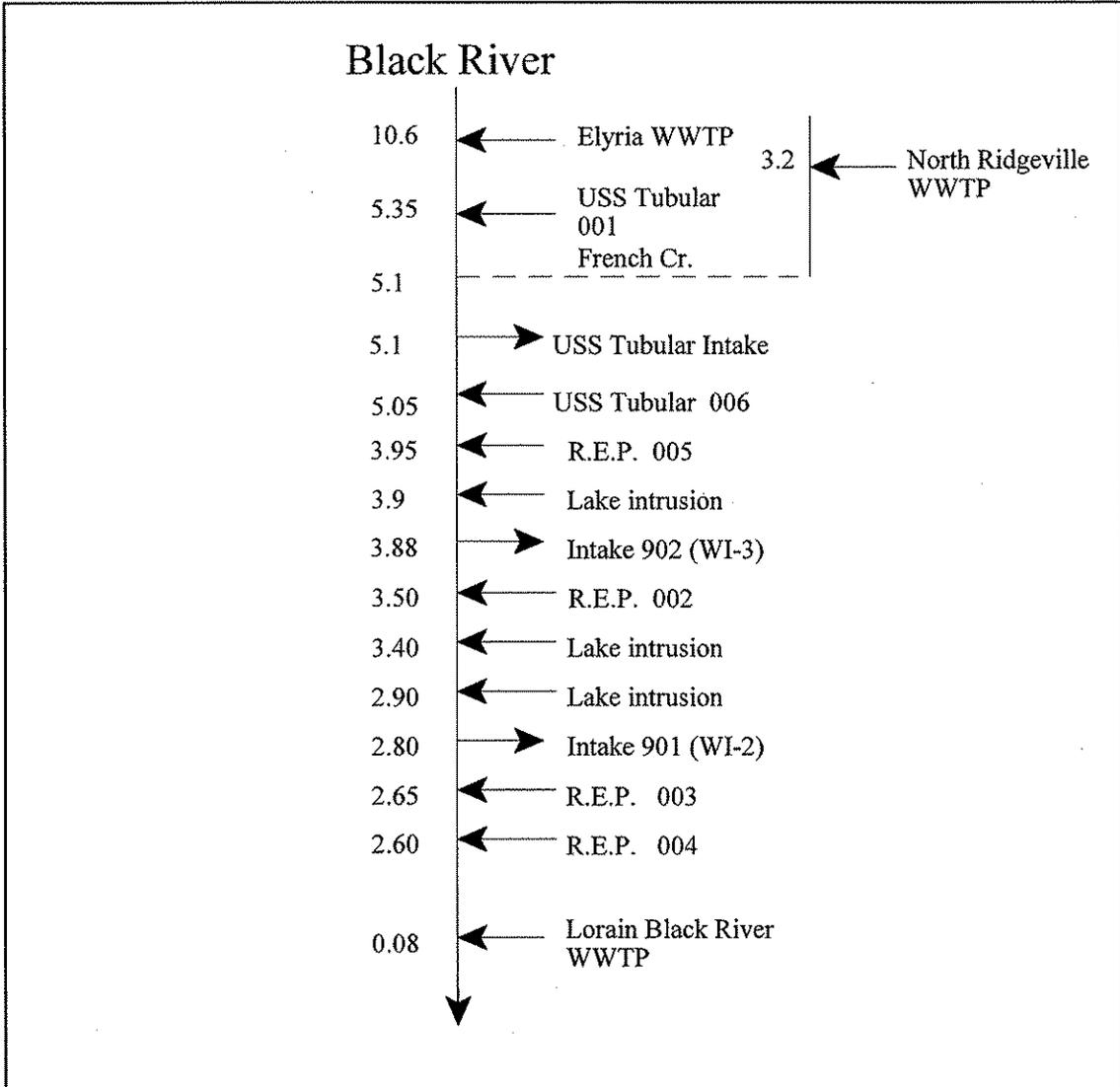


Figure 3. Black River Study Area

Table 6. Water Quality Criteria for Black River and French Creek (not hardness dependent)

Parameter	Units	Human Health ^A	Outside Mixing Zone Criteria				Inside Zone Maximum ^A
			Wildlife	Average		Aquatic Life ^A	
				Agri-culture	Aquatic Life ^A		
Acenaphthene	ug/l	890 ^B	--	--	15	19	38
Aluminum	ug/l	4500 ^B	--	--	--	--	--
Antimony	ug/l	780	--	--	190 ^B	900 ^B	1800 ^B
Arsenic	ug/l	580	--	100	150	340	680
Barium	ug/l	160000	--	--	220 ^B	2000 ^B	4000 ^B
Bis(2-ethylhexyl)phthal.	ug/l	32 ^C	--	--	8.4 ^B	1100 ^B	2100 ^B
Boron	ug/l	200000	--	--	950 ^B	8500 ^B	17000 ^B
Bromodichloromethane	ug/l	180 ^C	--	--	340 ^D	3100 ^D	6200 ^D
Bromoform	ug/l	890 ^C	--	--	230 ^B	1100 ^B	2200 ^B
Chlorine, tot. res.	ug/l	--	--	--	11	19	38
Chloroform	ug/l	1700 ^C	--	--	140 ^B	1300 ^B	2600 ^B
Chromium, diss-hex	ug/l	14000	--	--	11	16	31
Cyanide, free	ug/l	48000	--	--	5.2	22	44
Cyanide, total	ug/l	48000	--	--	--	--	--
Dibromochloromethane	ug/l	150 ^C	--	--	320 ^D	2900 ^D	5800 ^D
Dieldrin	ug/l	.0000065 ^C	--	--	0.056	0.24	0.47
Diethyl phthalate	ug/l	--	--	--	220 ^B	980 ^B	2000 ^B
Di-n-butyl phthalate	ug/l	31 ^B	--	--	--	--	--
Endrin	ug/l	--	--	--	0.036	0.086	0.17
Fluoranthene	ug/l	9.5 ^B	--	--	0.8 ^B	3.7 ^B	7.4 ^B
Fluorene	ug/l	320 ^B	--	--	19 ^B	110	220
Fluoride	ug/l	--	--	2000	--	--	--
Gamma-BHC	ug/l	0.5	--	--	0.057 ^B	0.95	1.9
Iron	ug/l	--	--	5000	--	--	--
Manganese	ug/l	61000	--	--	--	--	--
Mercury	ug/l	0.0031	0.0013	10	0.91	1.7	3.4
Molybdenum	ug/l	10000	--	--	110 ^B	2400 ^B	4700 ^B
Naphthalene	ug/l	1200	--	--	21 ^B	170 ^B	340 ^B
Nitrate + Nitrite	mg/l	--	--	100	--	--	--
Pyrene	ug/l	15	--	--	4.6 ^B	42 ^B	83 ^B
Selenium	ug/l	3100	--	50	5.0	--	--
Total dissolved solids	mg/l	--	--	--	1500	--	--

^A Human Health and Aquatic Life criteria are Tier I unless otherwise indicated.

^B Tier II criterion.

^C Carcinogen.

^D Screening value

Table 7. Water Quality Criteria for Black River downstream of intake 901 (hardness = 140 mg/l)

Parameter	Units	Human Health ^A	Outside Mixing Zone Criteria				Inside Maximum Zone Maximum ^A
			Wildlife	Average		Aquatic Life ^A	
				Agri-culture	Aquatic Life ^A		
Cadmium	ug/l	730	--	50	4.4 ^B	9.5 ^B	19 ^B
Chromium	ug/l	14000	--	100	330 ^B	2500 ^B	5100 ^B
Copper	ug/l	64000	--	500	16 ^B	25 ^B	50 ^B
Lead	ug/l	190	--	100	110 ^B	2100 ^B	4200 ^B
Nickel	ug/l	43000	--	200	83 ^B	750 ^B	1500 ^B
Silver	ug/l	11000	--	--	1.3	2.9	5.7
Zinc	ug/l	35000	--	25000	430 ^B	420 ^B	840 ^B

^A Human Health and Aquatic Life criteria are Tier I unless otherwise indicated.

^B Total effective criteria based on application of dissolved metals translators.

Table 8. Water Quality Criteria for Black River from intake 902 to intake 901 (hardness = 193 mg/l)

Parameter	Units	Human Health ^A	Outside Mixing Zone Criteria				Inside Maximum Zone Maximum ^A
			Wildlife	Average		Aquatic Life ^A	
				Agri-culture	Aquatic Life ^A		
Cadmium	ug/l	730	--	50	4.0 ^B	9.5 ^B	19 ^B
Chromium	ug/l	14000	--	100	210 ^B	1600 ^B	3200 ^B
Copper	ug/l	64000	--	500	19 ^B	30 ^B	61 ^B
Lead	ug/l	190	--	100	73 ^B	1400 ^B	2800 ^B
Nickel	ug/l	43000	--	200	92 ^B	830 ^B	1700 ^B
Silver	ug/l	11000	--	--	1.3	5	9.9
Zinc	ug/l	35000	--	25000	280 ^B	270 ^B	550 ^B

^A Human Health and Aquatic Life criteria are Tier I unless otherwise indicated.

^B Total effective criteria based on application of dissolved metals translators.

Table 9. Water Quality Criteria for Black River downstream outfall 006 to intake 902 (hardness = 233 mg/l)

Parameter	Units	Human Health ^A	Outside Mixing Zone Criteria				Inside Zone Maximum ^A
			Wildlife	Average		Aquatic Life ^A	
				Agri-culture	Aquatic Life ^A		
Cadmium	ug/l	730	--	50	4.6 ^B	12. ^B	24 ^B
Chromium	ug/l	14000	--	100	250 ^B	1900 ^B	3800 ^B
Copper	ug/l	64000	--	500	22 ^B	36 ^B	72 ^B
Lead	ug/l	190	--	100	93 ^B (22) ^C	1800 ^B	3500 ^B
Nickel	ug/l	43000	--	200	110 ^B	970 ^B	1900 ^B
Silver	ug/l	11000	--	--	1.3	6.8	14
Zinc	ug/l	35000	--	25000	320 ^B (170) ^C	320 ^B	640 ^B

^A Human Health and Aquatic Life criteria are Tier I unless otherwise indicated.

^B Total effective criteria based on application of dissolved metals translators.

^C The value in parentheses is a biological threshold value and only applies to RTI outfall 001.

Table 10. Water Quality Criteria for Black River from Elyria to outfall 006 (hardness = 233 mg/l)

Parameter	Units	Human Health ^A	Outside Mixing Zone Criteria				Inside Zone Maximum ^A
			Wildlife	Average		Aquatic Life ^A	
				Agri-culture	Aquatic Life ^A		
Cadmium	ug/l	730	--	50	4.7 ^B	12 ^B	24 ^B
Chromium	ug/l	14000	--	100	280 ^B	2100 ^B	4200 ^B
Copper	ug/l	64000	--	500	20 ^B	32 ^B	64 ^B
Lead	ug/l	190	--	100	22 ^C	810 ^B	1600 ^B
Nickel	ug/l	43000	--	200	110 ^B	980 ^B	2000 ^B
Silver	ug/l	11000	--	--	1.3	6.8	14
Zinc	ug/l	35000	--	25000	250 ^B	250 ^B	500 ^B

^A Human Health and Aquatic Life criteria are Tier I unless otherwise indicated.

^B Total effective criteria based on application of dissolved metals translators.

^C Biological threshold value.

Table 11. Water Quality Criteria for French Creek (hardness = 266 mg/l)

Parameter	Units	Outside Mixing Zone Criteria					Inside Zone Maximum ^A
		Human Health ^A	Wildlife	Agri-culture	Average Aquatic Life ^A	Aquatic Life ^A	
Cadmium	ug/l	730	--	50	5.3	14	27
Chromium	ug/l	14000	--	100	190	4000	8000
Copper	ug/l	64000	--	500	22 ^B	36 ^B	72 ^B
Lead	ug/l	190	--	100	27 ^C	560 ^B	1100 ^B
Nickel	ug/l	43000	--	200	120	1100	2100
Silver	ug/l	11000	--	--	1.3	8.6	17
Zinc	ug/l	35000	--	25000	270	270	550

^A Human Health and Aquatic Life criteria are Tier I unless otherwise indicated.

^B Total effective criteria based on application of dissolved metal translators.

^C Biological threshold value.

Table 12. Instream Conditions and Discharger Flow for Black River Mainstem

Parameter	Units	Value	Basis
Upstream flows			
7Q10	cfs	annual	4.29 USGS gage #04200500, 1944-97 data
1Q10	cfs	annual	2.90 USGS gage #04200500, 1944-97 data
90Q10	cfs	annual	9.55 USGS gage #04200500, 1944-97 data
Harmonic Mean Flow	cfs	annual	30.48 USGS gage #04200500, 1944-97 data
Lake Intrusion flows @ RM 3.9			
7Q10	cfs	annual	2.77 USS/Kobe
1Q10	cfs	annual	3.11 USS/Kobe
90Q10	cfs	annual	1.90 USS/Kobe
Harmonic Mean Flow	cfs	annual	0.32 USS/Kobe
Lake Intrusion flows @ RM 3.4			
7Q10	cfs	annual	9.18 USS/Kobe
1Q10	cfs	annual	10.47 USS/Kobe
90Q10	cfs	annual	6.17 USS/Kobe
Harmonic Mean Flow	cfs	annual	0.89 USS/Kobe
Lake Intrusion flows @ RM 2.9			
7Q10	cfs	annual	116. USS/Kobe
1Q10	cfs	annual	117.11 USS/Kobe
90Q10	cfs	annual	110.29 USS/Kobe
Harmonic Mean Flow	cfs	annual	86.41 USS/Kobe

Table 12. Instream Conditions and Discharger Flow for Black River Mainstem (Continued)

Parameter	Units		Value	Basis
Mixing Assumption	%	average	25	Chronic criteria default
	%	maximum	100	Stream-to-discharge ratio
Instream Hardness	mg/l	annual		
downstream of intake 901			140	STORET
from intake 902 to 901			193	calculated
from Elyria to intake 902			233	STORET
Background Water Quality for Black River Mainstem				
Antimony	ug/l	annual	0.	No representative data available
Arsenic	ug/l	annual	3.4	STORET 10 values, 1 < MDL, 1997 ~ 2001
Barium	ug/l	annual	30.6	STORET 5 values, 2 < MDL, 2001
Bis(2-EHP)	ug/l	annual	0.	No representative data available
Boron	ug/l	annual	0.	No representative data available
Bromoform	ug/l	annual	0,	No representative data available
Cadmium	ug/l	annual	0.415	STORET 10 values, 0 < MDL, 1997 ~ 2001
Chlorine, tot. res.	ug/l	annual	0.	No representative data available
Chromium total	ug/l	annual	15.	STORET 10 values, 5 < MDL, 1997 ~ 2001
Chromium +6	ug/l	annual	0.	No representative data available
Copper	ug/l	annual	5.	LEAPS 10 values, 2 < MDL, 1997 ~ 2001
Cyanide, free	ug/l	annual	0.	No representative data available
Di-n-butyl phthalate	ug/l	annual	0.	No representative data available
Fluoride	ug/l	annual	0.	No representative data available
Iron	ug/l	annual	752.	STORET 8 values, 0 < MDL, 1997 ~ 2001
Lead	ug/l	annual	1.	STORET 10 values, 3 < MDL, 1997 ~ 2001
Mercury	ug/l	annual	0.	No representative data available
Molybdenum	ug/l	annual	0.	No representative data available
Nickel	ug/l	annual	20.	STORET 9 values, 5 < MDL, 1997 ~ 2001
Nitrite + Nitrate	mg/l	annual	8.35	STORET 54 values, 1 < MDL, 1997 ~ 2001
Selenium	ug/l	annual	2.34	STORET 5 values, 2 < MDL, 2001
Silver	ug/l	annual	0.	No representative data available
TDS	mg/l	annual	546.	STORET 54 values, 0 < MDL, 1997 ~ 2001
Zinc	ug/l	annual	7.5	STORET 10 values, 1 < MDL, 1997 ~ 2001

Table 12. Instream Conditions and Discharger Flow for Black River Mainstem (Continued)

Parameter	Units		Value	Basis
Background Water Quality for Lake Intrusion Flow				
Note: unlisted parameters are the same as background for Black River Mainstem				
Cadmium	ug/l	annual	0.25	BWQR 1696 values, 1365 < MDL
Chromium, total	ug/l	annual	15.	BWQR 1641 values, 1388 < MDL
Copper	ug/l	annual	5.	BWQR 2867 values, 1597 < MDL
Iron	ug/l	annual	650.	BWQR 3018 values, 15 < MDL
Lead	ug/l	annual	2.	BWQR 2814 values, 1458 < MDL
Nickel	ug/l	annual	20.	BWQR 1259 values, 1105 < MDL
TDS	mg/l	annual	382.	BWQR 3755 values, 0 < MDL
Zinc	ug/l	annual	15.	BWQR 2284 values, 1117 < MDL
Effluent Flows				
Elyria WWTP	cfs		20.11	DSW
R.E.P. 002	cfs		36.87	DSW
R.E.P. 003	cfs		82.76	DSW
R.E.P. 004	cfs		61.46	DSW
R.E.P. 005	cfs		13.49	DSW
USS Tubular 001	cfs		0.03	DSW
USS Tubular 006	cfs		3.99	DSW
Lorain Black River WWTP	cfs		23.21	DSW
Dissolved Metal Translators for Black River downstream of intake 901				
Cadmium			1.523	n=7, 1997
Chromium			3.392	n=5, 1997
Copper			1.344	n=7, 1997
Lead			13.983	n=7, 1997
Nickel			1.201	n=7, 1997
Zinc			2.708	n=7, 1997
Dissolved Metal Translators for Black River downstream outfall 006 to intake 901				
Cadmium			1.062	n=7, 1997
Chromium			1.670	n=7, 1997
Copper			1.212	n=7, 1997
Lead			6.220	n=7, 1997
Nickel			1.012	n=7, 1997
Zinc			1.337	n=7, 1997

Table 12. Instream Conditions and Discharger Flow for Black River Mainstem (Continued)

Parameter	Units	Value	Basis
Dissolved Metal Translators for Black River from Elyria to outfall 001			
Cadmium		1.074	n=6, 1997
Chromium		1.861	n=6, 1997
Copper		1.080	n=6, 1997
Lead		2.854	n=6, 1997
Nickel		1.023	n=6, 1997
Zinc		1.039	n=6, 1997

Table 13. Instream Conditions and Discharger Flow for French Creek

Parameter	Units	Value	Basis
Upstream flows			
7Q10	cfs annual	0.39	USGS gage #04200500, 1944-97 data
1Q10	cfs annual	0.26	USGS gage #04200500, 1944-97 data
90Q10	cfs annual	0.87	USGS gage #04200500, 1944-97 data
Harmonic Mean Flow	cfs annual	2.78	USGS gage #04200500, 1944-97 data
Mixing Assumption	% average	25	Chronic criteria default
	% maximum	100	Stream-to-discharge ratio
Instream Hardness	mg/l annual	266	LEAPS 117 values, 0 < MDL, 1994-98
Background Water Quality for French Creek			
Note: unlisted parameters are the same as background for Black River Mainstem			
Arsenic	ug/l annual	2.	STORET 5 values, 1 < MDL, 1997
Cadmium	ug/l annual	0.	STORET 5 values, 5 < MDL, 1997
Chromium, total	ug/l annual	0.	STORET 5 values, 5 < MDL, 1997
Copper	ug/l annual	2.6	STORET 5 values, 0 < MDL, 1997
Iron	ug/l annual	583.	STORET 3 values, 0 < MDL, 1997
Lead	ug/l annual	0.	STORET 5 values, 5 < MDL, 1997
Nickel	ug/l annual	0.	STORET 4 values, 4 < MDL, 1997
TDS	mg/l annual	435.	STORET 5 values, 0 < MDL, 1997
Zinc	ug/l annual	8.6	STORET 5 values, 2 < MDL, 1997
Effluent Flows			
North Ridgeville WWTP	cfs	17.40	DSW
Dissolved Metal Translators for French Creek			
Copper		1.064	n=6, 1997
Lead		1.675	n=6, 1997

Table 14. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Average				Maximum Aquatic Life	Inside Mixing Zone Maximum
		Human Health	Wild-life	Agri-culture	Aquatic Life		
Arsenic ^B	ug/l	798. ^A	--	137.	158.	389.	680.
Bis(2-EHP)	ug/l	44.	--	--	8.8	1259.	2100.
Cadmium ^B	ug/l	1006. ^A	--	69. ^A	4.7 ^C	13. ^C	24. ^C
Chlorine, tot. res.	ug/l	--	--	--	11.	20.	38.
Chromium, diss-hex ^B	ug/l	19310. ^A	--	--	12.	18.	31.
Chromium, total ^B	ug/l	19300. ^A	--	132.	294. ^C	2060. ^C	4200. ^C
Copper	ug/l	70850. ^A	--	553. ^A	20. ^C	33. ^C	64. ^C
Cyanide, free	ug/l	66190. ^A	--	--	5.5	25.	44.
Lead ^B	ug/l	250.	--	131.	23. ^C	926. ^C	1600. ^C
Mercury	ng/l	4.	1.3	14000. ^A	1000	1900	3400
Molybdenum ^B	ug/l	13160. ^A	--	--	12.	18.	31.
Nickel ^B	ug/l	56570. ^A	--	257.	113. ^C	1045. ^C	2000. ^C
Nitrate + Nitrite	mg/l	--	--	135.	--	--	--
Selenium	ug/l	4272.	--	68.	5.1	--	--
Silver ^B	ug/l	15160. ^A	--	--	1.4	7.4	14.
Total Dissolved Solids	mg/l	--	--	--	1551.	--	--
Zinc ^B	ug/l	38750. ^A	--	27680. ^A	174. ^C	270. ^C	500. ^C

^A Allocation must not exceed the Inside Mixing Zone Maximum.

^B Parameter would not require a WLA based on reasonable potential procedures, but allocation requested for use in pretreatment program.

^C WLA based on applicable dissolved metal translator.

Table 16. Final effluent limits and monitoring requirements for Elyria outfall 3PD00034001 and the basis for their recommendation.

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day) ^a		
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Flow	MGD	----- Monitor -----				M
Temperature	°C	----- Monitor -----				M
Dissolved Oxygen	mg/l	5.0 minimum		-	-	BEJ, EP
CBOD ₅	mg/l					
Summer		10	15 ^c	492	738 ^c	BEJ, EP
Winter		15	23 ^c	738	1135 ^c	BEJ, EP
Suspended Solids	mg/l	20	30 ^c	985	1478 ^c	BEJ, EP
Ammonia-N	mg/l					
May-Sept		1.5	2.0 ^c	73.7	98.3 ^c	BEJ, EP
Apr, Oct, Nov		3.0	5.0 ^c	147.5	245.8 ^c	BEJ, EP
Dec-March		8.0	12.0 ^c	393.4	590.1 ^c	BEJ, EP
Oil and Grease	mg/l	Not to exceed 10 at any time				WQS
pH	S.U.	----- 6.5 to 9.0 -----				WQS
Fecal Coliform						
Summer Only	#/100ml	1000	2000 ^c	--	--	WQS
Chlorine Residual						
Summer Only	mg/l	-	0.020	--	--	WLA
Phosphorus	mg/l	1.0	1.5 ^c	49.1	73.7	IJC, EP
Nitrate(N) + Nitrite(N)	mg/l	----- Monitor -----				M
Cyanide, Free	mg/l	----- Monitor -----				RP, M
Cadmium, T. R.	µg/l	----- Monitor -----				RP, M
Chromium, T. R.	µg/l	----- Monitor -----				RP, M
Hex. Chromium (Dissolved)	µg/l	----- Monitor -----				RP, M
Copper, T. R.	µg/l	----- Monitor -----				RP
Lead, T. R.	µg/l	----- Monitor -----				RP, M
Mercury, T.	ng/l	1.3	1900	0.00006	0.0935	WLA
Nickel, T. R.	µg/l	----- Monitor -----				RP, M
Selenium, T. R.	µg/l	5.1	-	0.25	-	WLA
Zinc, T. R.	µg/l	----- Monitor -----				RP, M
Dissolved Residue (Solids), Total	mg/l	1551	-	76325	-	WLA
Bis(2-ethylhexyl) phthalate	µg/l	----- Monitor -----				RP
Whole Effluent Toxicity						
Chronic	TUc	1.0 ^{d, e}	1.7	-	--	WET

Table 16. (Continued)

^a Effluent loadings based on average design discharge flow of 13.0 MGD.

^b Definitions: BEJ = Best Engineering Judgment; EP = Existing Permit; IJC = 1988 revision of the 1972 Great Lakes Water Quality Agreement of the International Joint Commission; M = BEJ of Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits [OAC 3745-33-07(A)]; WET = whole effluent toxicity requirements [40 CFR Part 132, Appendix F, Procedure 6) and OAC 3745-33-07(B)]; WLA = Wasteload Allocation procedures (OAC 3745-2); WQS = Ohio Water Quality Standards (OAC 3745-1-07).

^c Weekly average limit.

^d Annual average limit.

^e Final effluent limits of 1.0 TU_c (annual average) and 1.7 TU_c (daily maximum) become effective 52 months from the effective date of the permit if a TRE is triggered.